LAB University of Applied Sciences
Faculty of Tourism and Hospitality, Lappeenranta
Degree Programme in Tourism and Hospitality Management

Tran To Linh

Guideline to the Reduction of Food Waste in Restaurant Business.
Case: Restaurant Fabrik - Helsinki

Thesis 2020

Abstract

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Guideline to the Reduction of Food Waste in Restaurant Business. Case: Restaurant Fabrik, 36 pages, 2 appendices
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Instructor: Mr Jukka Moilanen, Senior Lecturer, LAB University of Applied Sciences

The purpose of the thesis was to build a practical guideline for Fabrik restaurant, Helsinki to reduce its food waste. The work also investigated economic impact as well as environmental impact of food waste on the global scale. Major causes to food waste, and food waste management process were also discussed.

The study was carried out at Fabrik restaurant. Data for this study were collected from academic books and articles related to the topic of reducing food waste. Methodology of the study was observing while the author was working at the restaurant and interviewing the head chef Kevin Lin.

The final result of the thesis was the practical guideline that can be applied in Fabrik restaurant in order to minimize its current food wastage. The guideline indicated Fabrik restaurant's strength when tackling the issue as well as suggested practices that can be applied to minimize its weaknesses.

Keywords: food waste, sustainability, restaurant business, guideline, reduce, food waste management, causes to food waste, restaurant management.

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1 Introduction

Hospitality industry is an umbrella definition comprised of various types of businesses. Restaurant business is mostly recognized as one of the main components of this industry. Food and drinks are not only a part related to many experiences provided by hospitality industry, they also account significantly for the negative impact of the industry on the environment (Melissen & Sauer 2019.) A surprising fact shows that 30 to 50 percent of all food produced in the entire world is never eaten and goes straight to trash bin. According to World Wildlife Fund in 2012, food waste is responsible for about three percent of greenhouse gas emissions annually (Sloan, Legrand & Chen 2013, p. 74). On the social aspect, if the amount of food waste in the Western world could be reduced by half and distributed to those people who need it, the issue of global hunger would be solved. In addition to environmental and social impacts, food waste also has negatively economic impact on restaurant business. One of the key factors of restaurant business management is trimming the cost, which means minimizing waste, specifically food waste. (Sloan et al. 2013.)

Being a student in the Faculty of Tourism and Hospitality of LAB University of Applied Sciences and working as a waitress in Fabrik restaurant, the author of this thesis has recognized food waste is an inevitable issue in restaurant business and has several negative impacts both on the business and on the environment. Food waste management is an emerging issue in restaurant business, yet it has not got enough serious attention from restaurateurs in general. The author would like to contribute a small effort to reduction of food waste in restaurant business by conducting this thesis.

This thesis investigates the negative affects of food waste and approaches employed in reducing food waste. The first chapter is going to describe the global picture of food waste in order to help the readers to understand how severe the impact of food waste is and why food waste management is important. The second chapter is going to discuss food waste particularly in restaurant business, its definition and major causes. In the third chapter the approaches to food waste management in restaurant business are discussed. The last chapters of the thesis include an actual guideline built specifically for Fabrik restaurant to reduce

food waste, evaluation of the guideline, its risks and limitations. Due to limitation of the time frame, the thesis is limited to building the guideline and does not include the phase of applying the guideline into practice and following up the result. Qualitative research including discussion and observing is the main methodology used in this thesis.

2 Global picture of food wastage

This chapter is going to give the readers an overview of the current food wastage situation on the global scale. It helps the readers to understand the severe impact of food waste on the environment and why it is important to reduce food waste.

2.1 General facts and numbers

According to an estimate of the Food and Agriculture Organization of the United Nations (FAO) in 2011, one-third of all the produced food in the world has never reached consumers and goes to waste. The amount is equivalent to about 1.3 billion tonnes, consisting of roughly 670 million tonnes from developed countries and 630 million tonnes from developing countries. From the economical perspective, developed countries waste 680 billion US dollars, while developing countries waste 310 billion US dollars due to food wastage (FAO 2019.)

On the other hand, according to an update of FAO on 28th December 2016, 815 million people of the 7.6 billion of world's population were suffering from hunger, equivalent to 10 percent of the world's population (Hunger Notes 2016). The contrast between the amount of wasted food and the number of hunger victims deserve the attention and actions from us, the human race.

2.2 The carbon footprint of food wastage

Food wastage not only threatens the world's food security and the economy, but also causes a huge waste of natural resources employed in the process of making food, from growing, manufacturing, packaging, transporting to consuming. *"If food wastage were a country, it would be the third largest emitting country in the world"*, preceded by China and USA. (FAO 2015.)

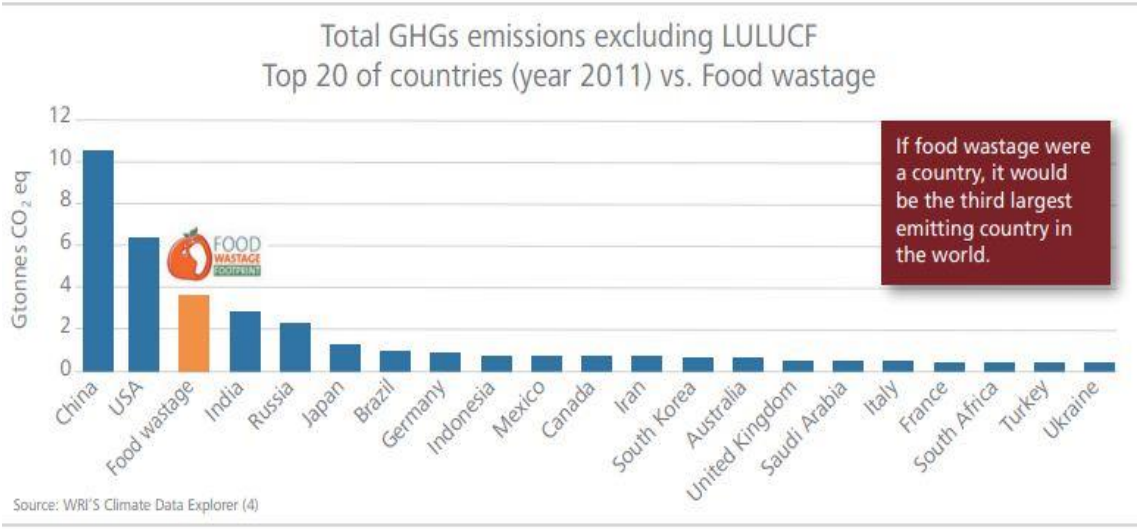


Figure 1. Top 20 countries of Greenhouse Gases (GHGs) emissions in 2011 (FAO 2015)

The carbon footprint of a food product is calculated based on the total amount of GHGs emitted in the entire life cycle of that product, in term of kilograms and CO2 (FAO 2015). According to FAO, cereals, vegetables and meat are among the largest contributors to carbon footprint and food waste. The figure below shows the specific percentages of each contributor:

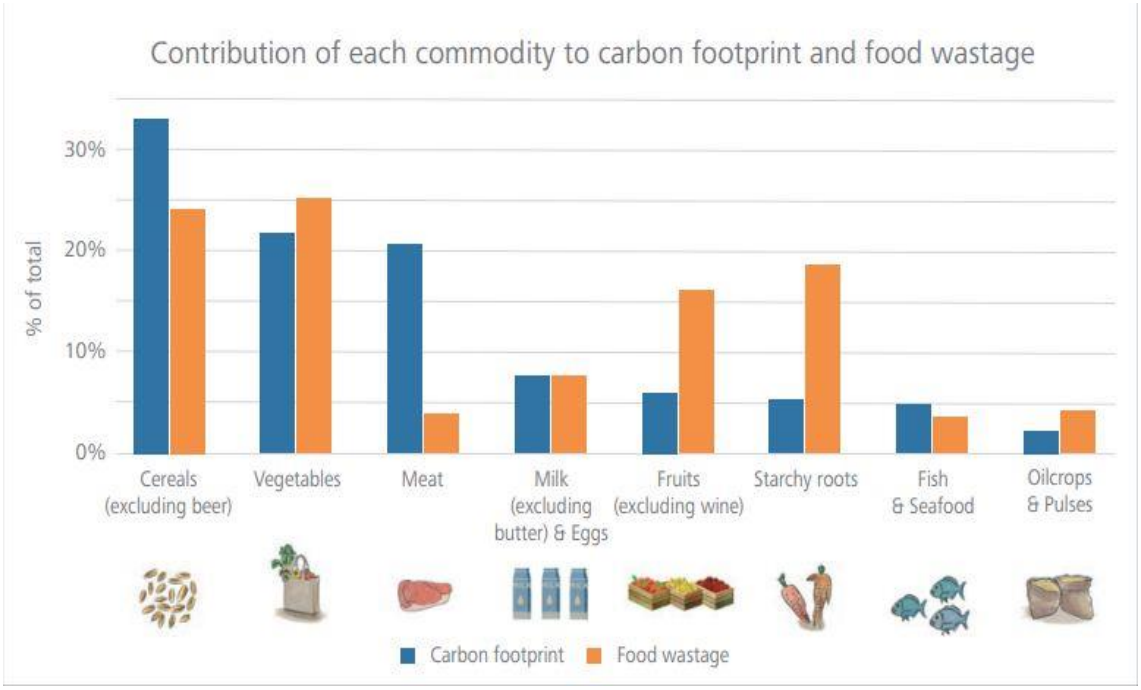


Figure 2. Percentages of each contributor to carbon footprint and food wastage (FAO 2015)

From the chart it can be seen clearly that in spite of the fact that meat only contributes less than 5 percent of the total volume of wasted food, its contribution to carbon footprint reaches above 20 percent. The reason is that the emission of the production of meat include the GHGs emitted by livestock as well as by feeding process and manure process. Hence, the focus of reducing food wastage and carbon footprint of food wastage should be on meat and cereals. (FAO 2015.)

Based on the estimate of wasted food's quantity and its emissions factors in 2011, FAO concluded that on the international scale, food wastage produces 4.4 Gt CO2 per year, which is equivalent to about 8 percent of total anthropogenic GHGs emissions. This is a thought-provoking number because it means that food wastage emissions are almost equivalent to global road transport emissions, in term of contribution to global warming. If we look from the economical perspective, the market value of food wastage in 2012 was 936 billion US dollars, which is equivalent to the GDP of countries such as Indonesia or the Netherlands. (FAO 2015.)

2.3 The carbon footprint of the food supply chain

The food supply chain includes 5 phases as listed below:

- Agricultural production.
- Postharvest handling and storage.
- Processing.
- Distribution.
- Consumption.

The contribution of each phase of the food supply chain is shown in the chart below:

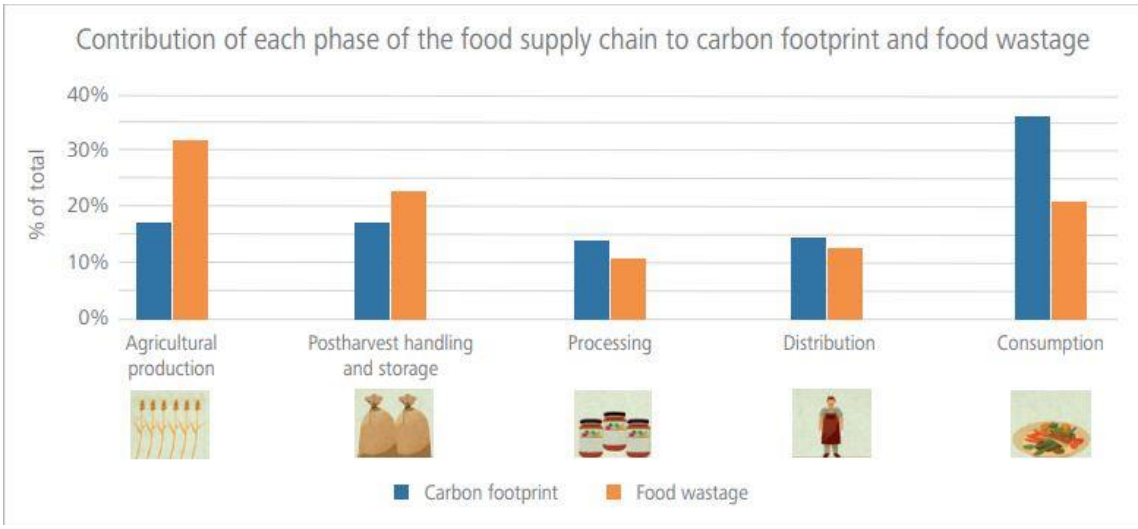


Figure 3. Percentage of the contribution of each phase of the food supply chain to carbon footprint and food wastage (FAO 2015)

From the chart it can be seen that although the consumption stage accounts for about 20 percent of the total food wastage, its contribution to carbon footprint is nearly 40 percent. This is because when the food wastage occurs in later phases of the food supply chain, the extent of the carbon footprint is larger than when it does in early phases. For instance, a fresh potato that goes to trash bin when being harvested produces less GHGs than canned potato chips because it does not involve the processing phase and distribution phase which emit much more GHGs.

There is also difference in the amount of food wastage that each stage accounts for in different regions of the world:

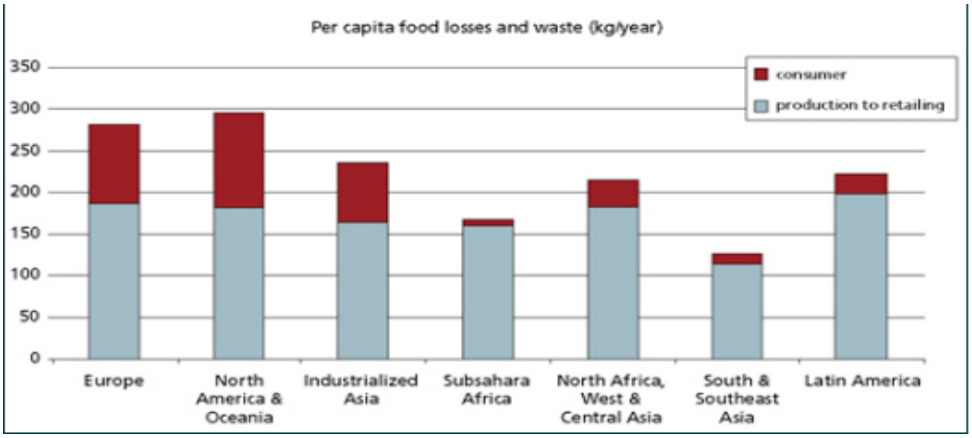


Figure 4. Per capita food waste in different regions (FAO 2019)

From the chart a difference between food wastage pattern in developing countries and developed countries can be detected. In developing countries, the wastage usually occurs in early stages. The problem can be prevented by improving the harvesting technique as well as storage facilities. In the other hand, in developed countries, the wastage mainly occurs at later phases, especially in consumption stage. This is due to high quality standards and the behaviour of consumers. Raising awareness among retailers and consumers could help reducing the extent of the issue (FAO 2019.)

In terms of carbon footprint per capita, from the chart below we can see that the average amount of CO2 per capita in developed countries is almost four times of that in the poorest regions of the world (860kg CO2 per capita in North America and Oceania compared to 210kg CO2 per capita in Sub Saharan Africa). According to FAO, this could be explained by consumers' pattern and behaviour in developed countries.

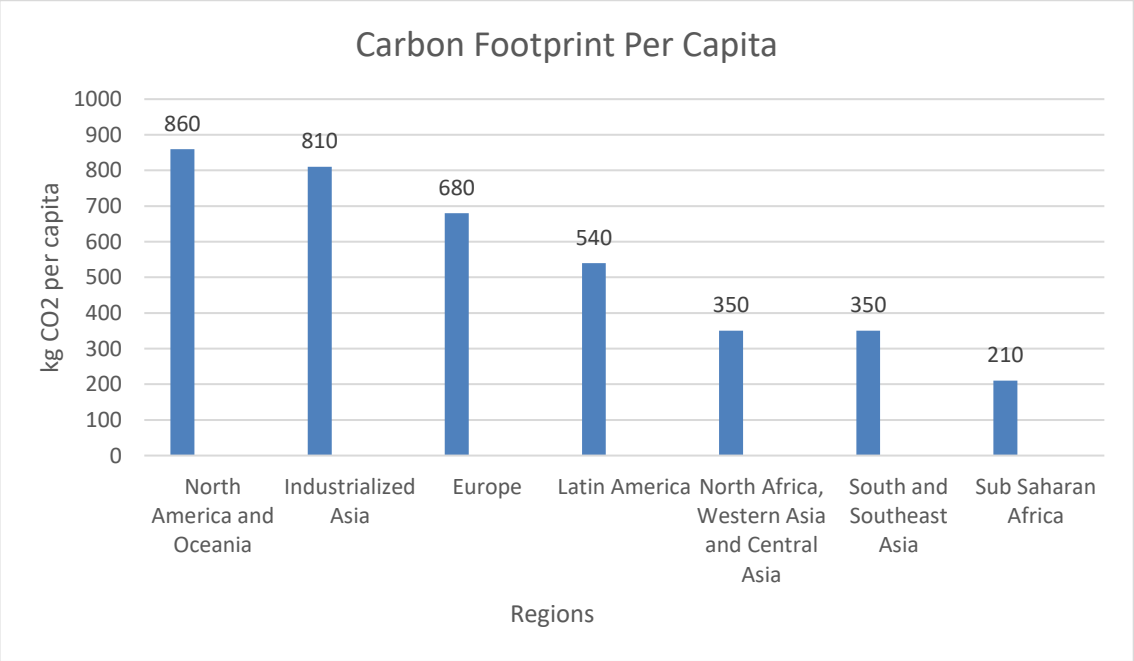


Figure 5. Carbon footprint per capita in different regions (FAO 2015)

In conclusion, numbers and facts mentioned above are undeniable proofs showing that food wastage is a global issue which has negative impact on both the environment and the economy. Therefore, goals need to be set and actions need to be taken to tackle the issue. According to FAO, United Nations

Sustainable Development Goal 12 (SDG 12) includes the goal to reduce food wastage amount of 2011 at distribution and consumption stage by half in 2030 in all regions.

3 Food waste in restaurant business

Although reducing food wastage seems to be a tremendous goal on the global scale, it could be tackled with good strategy and management. Each phase of the food supply chain has opportunity for improvement (Baldwin 2015, p. 146). Due to the limitations of this thesis, the author only focuses on later phases including distribution and consumption as they are related directly to hospitality and restaurant business. This chapter is going to discuss specifically the food waste in restaurant business: definition of food waste and main reasons for food waste.

3.1 What is food waste in restaurant business?

According to California Integrated Waste Management Board (CIWMB) 2006, among all sources of waste in food services, food waste is the largest source. A food item is called waste when it missed the opportunity to be used by employees or to be consumed by customers of a food service operation. (Baldwin, Shakman & Turenne 2012, p. 57.)

There are many approaches to break down food waste into sub-categories. Based on origin, there are two types of food waste: pre-consumer food waste and post-consumer food waste. Pre-consumer food waste could be divided into two sub-categories: kitchen waste and service waste. Post-consumer is also defined as customer leftovers. Food waste could also be divided into two sub-categories based on its nature: originally edible (OE) and originally inedible (OIE) such as vegetable peelings, bones and coffee grounds. (Baldwin et al. 2012; Silvennoinen, Heikkilä, Katajajuuri & Reinikainen 2015.)

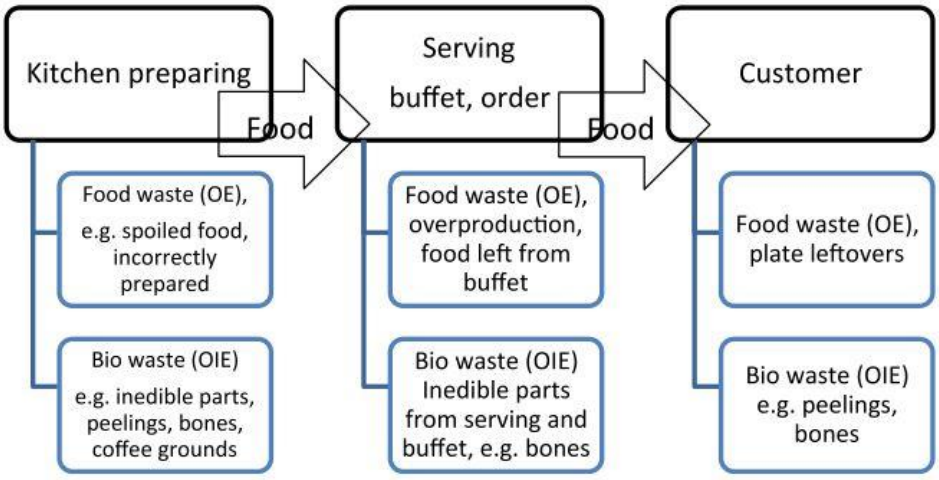


Figure 6. Division of food waste (Silvennoinen et al. 2015)

From the figure 1 it can be seen that food waste, both edible and inedible, appears in all phases of consumption. To control and reduce food waste, restaurateurs and food service owners need to control edible food waste which is still in good condition for consumption but wasted for certain reasons. In the following sub-chapter the author is going to discuss more the major causes of food waste in restaurant business.

3.2 Major causes of food wastage

According to Baldwin et al. 2012, there are eight reasons for food waste in pre-consumer phase and three reasons for food waste in post-consumer phase. The table below summarizes all the reasons:

Pre-consumer phase	Post-consumer phase
Unknown demand	Large portion size
Desire not to run out	Lax service models
Inefficient production procedures	Menu acceptance
Poor communication	
Staff behaviour	

Unskilled trimming	
Prioritizing merchandising	
Safety	

Table 1. Reasons for food waste in restaurant business (Baldwin et al. 2012)

Major causes to food waste in pre-consumer phase include:

1. Unknown demand: it is challenging for restaurateurs to estimate the number of guests they are going to receive and which item on the menu will be ordered the most. Seasonality, competition with other restaurants, weather and climate changes could make the forecast even more difficult.
2. Desire not to run out: Most of restaurateurs do not want to tell customers that he or she is unable to fulfil their orders. This could lead to preparing food much more than the actual need.
3. Inefficient production procedures: This usually happens at buffet service where a large amount of food needs to be cooked to serve customers. For instance, lunch buffet is served from 11.00 until 14.30. In order to maintain service quality at a certain level, the restaurant wants to keep their buffet full of food and options until closing time. However, after 13.30 there are usually not many guests. If the restaurant keeps cooking and serving food in large amount although the closing is near, this could lead into waste.
4. Poor communication: Lack of communication or inefficient communication between staff in a restaurant could lead to food waste, especially between waitering staff and kitchen staff.
5. Staff behaviour: This reason is in one way or another related to the reason of inefficient production procedures. For instance, a staff in a buffet service can act based on their own assumption and judgement, thus prepare much more food than needed.
6. Unskilled trimming: Food items such as vegetable or fruits need to be trimmed for many different purposes such as decoration. An unskilful staff could lead to unexpected waste of trimmed food.

7. Prioritizing merchandising: Food outlets such as confectionery or pastry shops usually want to display their products in such an appealing way in order to attract customers, which possibly could lead to unnecessary food waste.
8. Safety: Due to hygiene reason, food items which are not handled with proper temperature, time or method should be discarded.

Causes to food waste in post-consumer stage include the three following:

1. Large portion sizes: The size of the portion may be so big that customers are not able to finish.
2. Service models: Self-service models such as buffet or cafeteria where customers usually take more food into their plates than what they can actually eat.
3. Menu acceptance: Food waste occurs when a customer dislikes the flavour, quality… etc of the food offered to them.

Leanpath, based in the USA, the UK, Spain and Australia, is an organization inventing automated food waste tracking technology and offering food waste prevention solution since 2004 (Leanpath 2019). According to them, regardless consumption phases, there are 5 main factors driving food waste in food service outlets:

1. Overproduction: According to Leanpath's data, overproduction is the most significant cause to food waste in restaurant business. An inappropriate estimation could lead kitchen staff to producing much more food than what is actually needed. Buffet service in most cases accounts for food waste.
2. Over-merchandising: In attempt to attract customers visually, food service operations create beautiful display of their food and this could lead to an unnecessary food waste.
3. Confusing food safety policies: Although food safety is the most important issue in restaurant business, an irrational food safety margin or error could lead to food waste.
4. False labour/waste trade-offs: In some cases, in order to save labour cost, restaurant owners prefer to produce food in large quantity which costs

kitchen staff less time so that they are able to finish their job earlier. However, large quantity of food leads to food waste, and the cost usually ends up much more expensive than labour cost.

5. Customer choice: In pursuit of ensuring customers' satisfaction, restaurateurs may want to keep their menu selections full from the opening until the last minute of closing time. However, this practice is a reason leading to food waste.

In conclusion, there are similarities between the reasons stated by Baldwin et al. (2012) and Leanpath (2016). It proves that in order to tackle food waste, there are some common obstacles restauranteurs need to overcome such as overproduction, choosing of business concept, controlling storage/inventory or qualification of kitchen staff etc.

3.3 Food waste in Finnish food service sector

3.3.1 Amount of food waste in Finnish food sector

During the summer and autumn of 2010 in Finland, a study was conducted by Natural Resources Institute Finland (Luke) to find out about food waste volume and origin in Finnish food service sector (Silvennoinen et al. 2015). There were 51 food service establishments from towns of Helsinki and Tampere participating in the project in totally 211 days. Forty of them were communal food service outlets such as day-care centres, workplace and student canteens. Communal food services play a significant part in Finnish food service sector as they provide up to 50 percent the amount of meals consumed outside households. Moreover, according to Vikstedt et al. 2011, one-third of the population consume food at communal food service establishments daily (Silvennoinen et al. 2015). Although the sample of the study was limited and the result could not represent the whole Finland, it did give a basic insight into food waste situation in Finland.

The result of the study showed that about 20 percent of all food produced in the participating food service outlets (OE) was wasted. Day-care centres and workplace and student canteens accounted for the biggest contribution to food waste, mostly as serving waste as shown in the following figure. The main source

of food waste (OE) was serving waste caused by buffet services and overproduction.

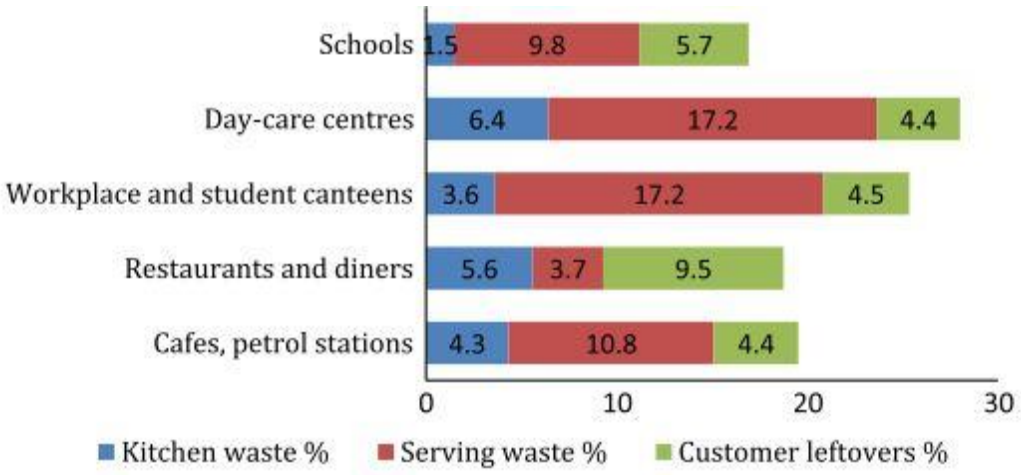


Figure 7. Percentages of food waste (OE) over total amount of food prepared (Silvennoinen et al. 2015)

3.3.2 Reasons for food waste in Finnish food service sector

There was another study conducted by Natural Resources Institute Finland (Luke) in March 2011 about elements affecting food waste in Finnish food service sector (Heikkilä, Reinikainen, Katajajuuri, Silvennoinen & Hartikainen 2016). Three workshops were organized with the participation of three case companies. Two of them were communal food services and one was providing catering for the restaurants of Helsinki University. Thirty-four participants coming from those three case companies were invited to the workshops. They were either kitchen staff or staff on management level. The participants were asked about their opinions of reasons for food waste. After collecting ideas and analysing data, the conclusion was that there were eight main elements affecting food waste in Finnish food service sector. The table below summarizes the findings:

Types of food waste	**Eight reasons for food waste**
Kitchen waste	Society
Serving loss	Business concept

Plate leftovers	Product development and procurement
	Management
	Professional skills
	Diners
	Competitors
	Communication

Table 2. Eight elements affecting food waste in Finnish food service sector (Heikkilä et al. 2016)

The eight elements will be described in more detail as follows:

1. Society: A certain society with its norms and legislation has immense effect on how people living in that society deal with food. For instance, the strict food legislation in Finland may cause food to be discarded while it is still good for consumption.
2. Business concept: The concept of a restaurant could be an element affecting the amount of food waste it generates. For instance, buffet-style restaurants are more likely to produce more food waste than other styles of restaurant.
3. Product development and procurement: The quality and size of the ingredients as well as equipment could affect the amount of food wasted. For instance, if food is cooked from low-quality ingredients, chances are there will be more food left on customers' plates. On the other hand, not all ingredients are available in suitable size to purchase. The consequence is that more unused ingredients will be left in the storage.
4. Management: The managerial skills of a manager play a significant role in the amount of food waste including kitchen waste, serving loss and plate leftovers. The reason is that managerial tasks in restaurant business involve decisions on the amount of food to be prepared, menu planning,

stocking and inventories. Moreover, a manager's tasks also include managing people. Training staff and planning staff's duties help to improve their performance in the kitchen and thus help to reduce food waste.

5. Professional skills: An untrained cook is likely to make more mistakes and thus generates more food waste. Professional skills also refer to the employee's "common sense" and their ability to learn from mistakes as well as skills of estimating and ordering appropriate amounts of food.
6. Diners: Diners' expectations and their personal tastes, values and attitudes also affect food waste. If the food does not look good or taste good and does not meet customer's expectation, he or she may leave it on the plate. On the other hand, customer's ethical values and attitude affect their manner to deal with food. A person who appreciate food is less likely to leave food on his or her plate.
7. Competitors: Competitors of a restaurant account for affecting the amount of food waste that restaurant produces. For instance, in order to attract more customers, a restaurant needs to keep its buffet full and tempting all the time, otherwise customers will head to the competitor's buffet. This will lead to generating more food waste.
8. Communication: Inefficient communication between the restaurant and its suppliers as well as its customers could lead to food waste. Internal communication between staff inside a restaurant also affects the amount of food waste. For instance, when a waiter misunderstands what a customer orders, he will end up order the kitchen to cook a wrong dish which would lead to food waste.

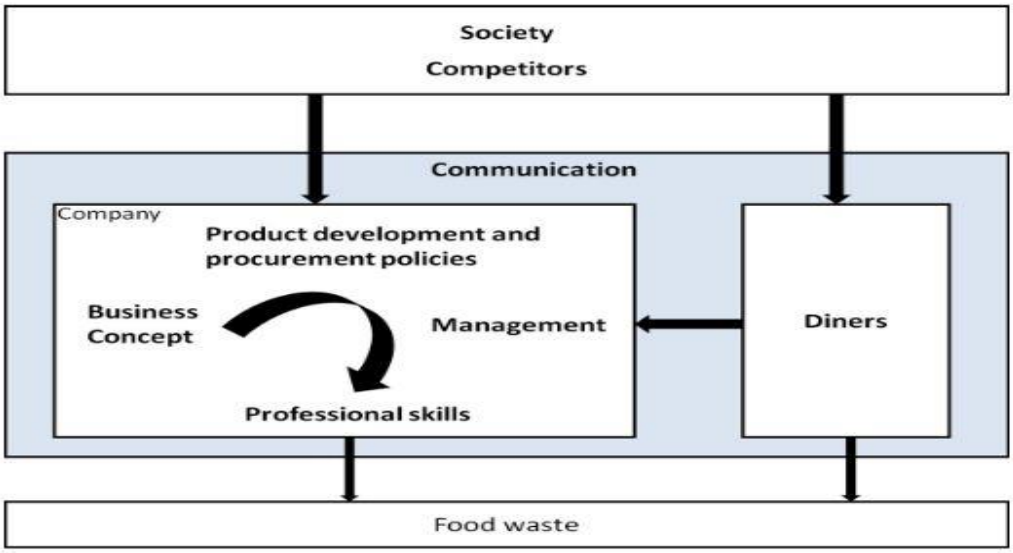


Figure 8. The relationship between the eight elements affecting food waste (Heikkilä et al. 2016)

Two of the eight elements which have direct effect on food waste are professional skills and diners. The other six elements have an indirect effect through one or more elements. Society indirectly influences diners and companies through its values, norms, legislation and culture. Those factors affect how people deal with food and how companies establish their activities within food service establishments. Moreover, each company builds its own business concept within the framework shaped by society. A company's product development, procurement and management are influenced by the business concept. Management affects professional skills which directly lead to food waste. Competitors, as in the example mentioned above, force a restaurant to keep their display full and tempting all the time thus directly leading to food waste. Communication plays the role as a bridge between all the elements, excluding society and competitors. Effective communication helps to reduce mistakes and misunderstanding between staff and staff, and staff and customers, hence reducing food waste.

4 Food waste management in restaurant business

4.1 Food wastage hierarchy

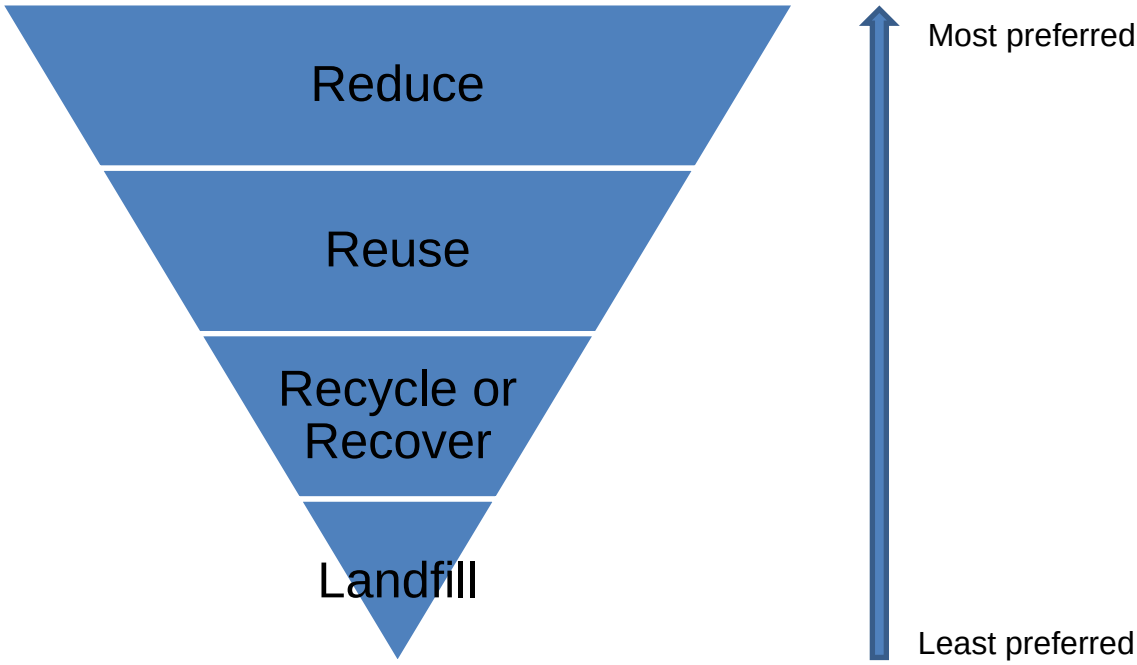


Figure 9. Food wastage hierarchy (Baldwin 2015; HOTREC 2017)

According to Baldwin (2015), the food wastage hierarchy includes four levels which are Reduce, Reuse, Recycle or Recover and Landfill. When it comes to dealing with food wastage, reducing food wastage is the most preferable method, while sending to landfill is the least preferable.

Reducing food wastage is the most preferable method as it allows us to reduce the usage of all resources needed to produce food (Baldwin 2015), thus reducing the impact on the environment.

The second most preferable method is reusing, including reusing for human beings and for animals such as livestock. For human beings, wasted food can be used either to make other products such as sauces or salads, or to donate to people who are suffering from hunger and in need of food. With food that cannot be reused for human being, feeding animals such as livestock is a method that is commonly used. It helps to reduce the environmental burden of some diet options and from time to time can improve the performance of the animal. (Baldwin 2015.)

Recycling basically means turning food into another substance such as compost, and recovering means producing energy such as electricity from food waste. This approach is not a superior choice compared to the other two approaches since the fundamental value of the food is lost, hence the environmental burden is not avoided.

Sending food waste to landfill is the least desirable approach since all the burdens of wasted food still remain. It causes GHGs into soil and water. Moreover, an additional cost is required in order to send wasted food to landfill.

4.2 Food waste management process

Regardless food service model, the food waste management in restaurant business has common process as shown in the following figure (Baldwin 2015):

Figure 10. General process of food waste management (Baldwin 2015, p. 151)

The first three steps in the process (including Measure Waste, Set Goals and Plan, Take Action and Track Progress) begin with an internal focus within the food service establishment itself, while the last step, which is Continuously Improve and Engage Externally, is related to external collaboration (Baldwin 2015). The empirical part in the following chapter of this thesis is going to deal with measuring the food waste and setting goals and plan for Fabrik restaurant. The author of the thesis eliminates the phase of taking action and tracking the progress as well as improving the guideline and engaging externally due to limitation of the thesis.

The first step to tackle food waste is to understand where the waste comes from (also known as source of the waste), where it is sent to (for instance landfill or composting… etc), how much waste there is and what the waste is. To measure all the aspects related to food waste, a food waste audit is the best method. The audit will provide the restaurateur with the food waste situation of his/her restaurant. Based on the knowledge gained from the audit, the restaurateur is enabled to take the second step: setting goals and building the plan to tackle food waste. The plan should follow the food hierarchy which means prioritizing reducing the amount of food waste (see Figure 9). There are several approaches to set goals and build plan. This is the reason why it is important to justify the options and choose the best approaches that are suitable for the establishment. After the plan is set, actions could be taken and the progress could be tracked. In long-term, as the progress is carrying on, there will be space for improvement and chances for external cooperation. (Baldwin 2015, p. 150 - 151.)

5 Guideline to the reduction of food waste. Case: Restaurant Fabrik

In this chapter the author is going to discuss the methodology she is using to build the guideline to the reduction of food waste. The author also introduces shortly the Fabrik restaurant. The main part of this chapter is the guideline to the reduction of food waste built for Fabrik restaurant.

5.1 Methodology

5.1.1 Justification for choosing the methodology

Qualitative research approach is chosen to conduct the empirical part of this thesis. Qualitative research is usually applied when an insight into a phenomenon is needed to *"describe and understand a phenomenon and give it a reasonable interpretation"* (Kananen 2013). The primary purpose of this thesis is to build a guideline for Fabrik restaurant to reduce its current food waste through analysing and evaluating the restaurant's activities and procedure. Moreover, qualitative research also suits when *"there is no information, theories, research on a phenomenon"* (Kananen 2013, p. 31). There has never been a guideline built for

Fabrik restaurant beforehand, thus qualitative research approach suits best in this case.

5.1.2 Data collecting methods

According to Kananen (2013), there are three most relevant data collecting methods of qualitative research: observation, theme interview and different documents. In this thesis the first two methods are chosen: observation and theme interview.

As the author of this thesis is working at Fabrik restaurant as a waitress, participative observation is extremely useful as the authenticity of the situation is assured. The author, also known as the observer, is capable of being present in the natural environment, which is Fabrik restaurant in this case, where the phenomenon happens. The tool of observation is a structured observation: the author will focus on observing inventory controlling, menu planning, staff training and internal communication between staff and communication with customers.

The second data collecting method for this thesis is theme interview. An individual interview will be conducted with the head chef Kevin Lin. The head chef is considered as the most suitable interviewee because he is involved in every aspect of the kitchen. Based on his deep knowledge of Fabrik's kitchen, the head chef could help to identify strengths and weaknesses of the current procedure of the restaurant.

5.2 Introduction to Fabrik restaurant

Fabrik restaurant, located at Tehtaankatu 25, Helsinki, Finland, was opened in September 2017. The food concept of Fabrik is inspired by French and Italian cuisine. The restaurant prioritizes sourcing high-quality ingredients directly from France and Italy to create authentic flavors, while also supporting local Finnish products as much as possible. Besides operating on-premises at Tehtaankatu 25, Fabrik also provides off-premises services such as catering for private events and groups events.

The vision of Fabrik is to create a casual and approachable atmosphere where customers can enjoy delicious food, great wine and good company. In general,

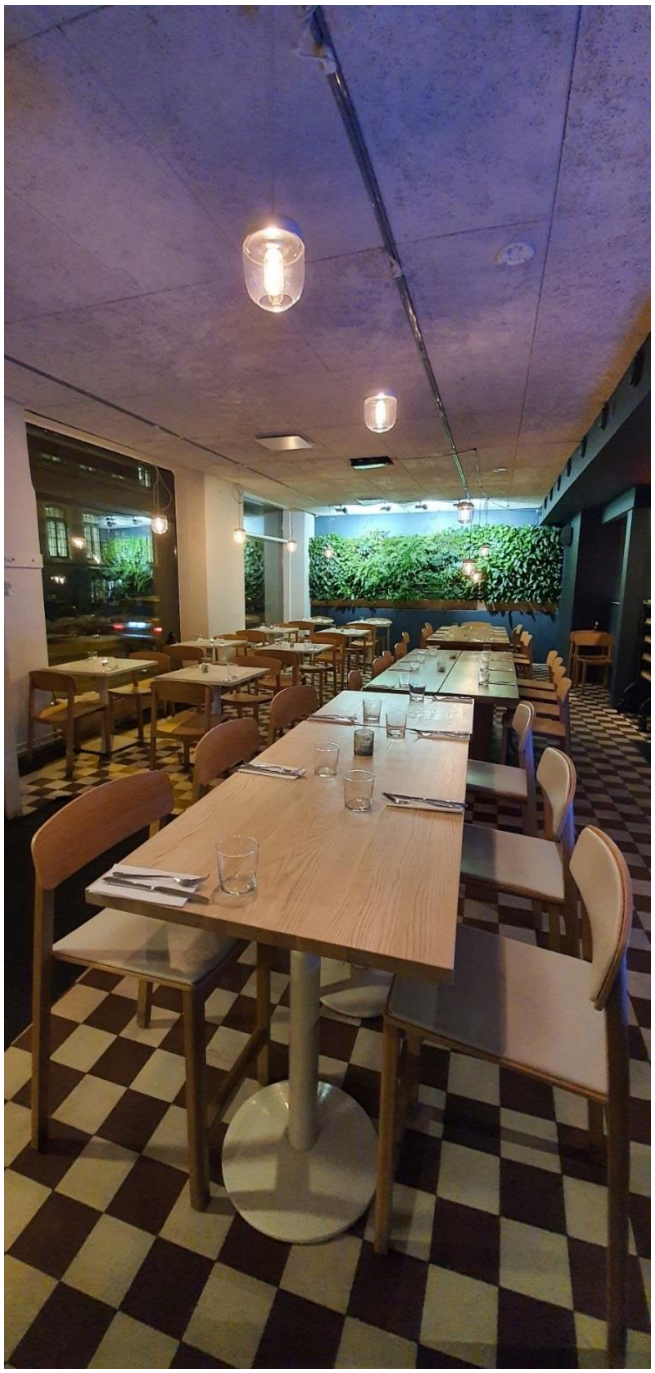
the atmosphere Fabrik provides to customers is not only casual enough to have relaxing gatherings with friends and families, but also suitable for serious business meetings. The main target groups of Fabrik restaurant are middle class people and above, ranging from young professionals with urban life style to business men and retired people. The age of customers ranges from about 25 to 70. The maximum capacity of the restaurant is 80 seats.

The opening hours of Fabrik restaurant are as follows:

- Lunch time: Monday to Friday 11.00 – 14.30. Lunch menu is changed every day.
- Dinner time: Tuesday to Friday 17.00 – 00.00, Saturday 16.00 – 00.00. Dinner menu is changed every 4 or 6 weeks. (Fabrik restaurant 2019.)

Currently there is a staff of seven in the kitchen including two head chefs. Kevin Lin is the head chef who is responsible for on-premises service, the other head chef is responsible for off-premises catering. In the restaurant section there is a staff of eight including one restaurant manager. Both staff in kitchen and staff in restaurant are divided into two main shifts: lunch shift and dinner shift.

Picture 1. Bar counter of Fabrik restaurant



Picture 2. The interior of Fabrik restaurant

5.3 Guideline to the reduction of food waste in Fabrik restaurant

According to the Cambridge dictionary, guideline is *"information intended to advise people on how something should be done or what something should be"*. In this sub-chapter the author is going to investigate how food waste is being handled at Fabrik restaurant through observation and discussion with the head chef. The ultimate aim is to identify strengths and weaknesses of the routine in

Fabrik's kitchen. The guideline is written based on evaluation of the routine and helps to point out what could be done to tackle the weaknesses and reduce more food waste in Fabrik's kitchen. Due to the shortage of time, the thesis is only limited to building the guideline and does not include the phase of applying the guideline into practice and following up the result.

5.3.1 Daily food waste tracking

As discussed in chapter 4, every approach to food waste management begins with measuring the waste. In order to minimize food waste, firstly the amount and types of food waste should be identified: how much waste is the restaurant producing on a daily basis? What items are in the waste and where do they come from (pre-consumer food waste or post-consumer food waste)? It is impossible to further the practice of reducing food waste without this first step.

Currently in Fabrik restaurant there is no practice to track food waste. Pre-consumer food waste and post-consumer food waste should be measured separately. For a medium-sized restaurant like Fabrik, it does not require a complicated method to measure both types of the waste.

For pre-consumer food waste, MBWA (management by walking around) might be done by the head chef as a method to monitoring food waste (Baldwin et al. 2012, p. 63). In addition, a simple Microsoft Excel spreadsheet could be used for daily food waste tracking. There are at least four types of information that should be included in the spreadsheet: type of the discarded food (for instance: pastry, salad, meat… etc), reason for discarding (overproduction, expiration), discarded quantity by weight or portion, date of discarding. Before disposal, all discarded food should be measured, including trimming waste, expiration, overproduction and spoilage, mistakes caused by staff (Baldwin et al. 2012.) The same methods could be used to track post-consumer food waste. An example spreadsheet is included in the appendix 2 of this thesis.

The concept of this practice is moderately simple to apply without causing massive shift in daily working procedure. In order to avoid costing staff more time, the tracking spreadsheet should be placed next to the point of disposal. In addition, the responsibility of tracking food waste should be on everyone.

Whenever a staff member causes food waste, he or she is responsible for filling out the spreadsheet. The purpose of this is to raise awareness about food waste in all staff members. If only a few staff members take care of tracking food waste, other staff members are unaware of the situation and will not give effort to reduce food waste. (Baldwin et al. 2012.) Moreover, the staff member who produces the least food waste could be recognized and rewarded. This shall encourage all staff members to share the responsibility of reducing food waste.

Food waste tracking should be done in long-term on a daily basis. If the practice is only done for a short time, the amount of food waste might increase again after stopping the practice. When done on a daily basis, all staff members are constantly involved and aware of food waste reduction, thus the effectiveness of the practice is preserved. Moreover, there are always inevitable changes in menu, in staff members, new emerging problems. Because of this reason, the practice of food waste tracking should be kept permanently. (Baldwin et al. 2012.)

Picture 3. Kitchen of Fabrik restaurant

Picture 4. Kitchen waste in Fabrik restaurant

5.3.2 Inventory control

In Fabrik restaurant, the practices of FIFO (First In First Out) and FEFO (First Expired First Out) are applied in controlling the inventory. It is considered a good practice since stock is rotated frequently, new stock is always placed behind old stock so that close-to-date stock can be used first before they expire.

Stock is delivered to Fabrik restaurant three times per week. This is a good practice which enables chefs to adjust the quantities of their orders properly, thus they are able to avoid overstocking and produce less waste. When the delivery arrives, there is always at least one staff member of the kitchen who is in charge of checking all the packages, especially perishable products such as vegetable or meat to detect any possible damage. It is considered a good practice to maximize shelf life of products which needs to be maintained at Fabrik restaurant.

However, there are still few points that need to be improved. Kitchen staff need to pay more attention to organizing stock in a proper way. Close-to-date stock should be labelled, for instance with “Use First” sticker, or with expiry date clearly

written on the sticker, so that staff can recognize easily and exactly which products they should use first to avoid spoilage. Another practice that kitchen staff in Fabrik should keep in mind is to check the inventory in their refrigerators on a daily basis. This practice will help them to know exactly what products are still in stock and what products are missing. Knowing the inventory on a daily basis enables chefs to place suitable orders and have a better control of possible spoilage.

5.3.3 Menu planning

There are two types of menus at Fabrik restaurant: lunch menu and dinner menu. Lunch menu is changed on a daily basis, offering two options: customers can choose either meat/fish dish or vegetarian dish. The price for one dish is €12.5 including tea and coffee. Dinner menu is ala-carte menu and changes every four to six weeks. Currently the menu consists of five sections: snacks (five items), starters (three items), classics (three items), main courses (three items) and desserts (five items). The detailed menu is presented in the appendix 1 of this thesis.

The philosophy of creating menu at Fabrik is keeping the menu authentic and simple as much as possible. As mentioned above, for lunch menu there are only two options. Besides that, the quantity of sections and items in each section of the ala-carte menu are not high. Moreover, each dish consists of only one main ingredient and three to four side ingredients. This is a positive approach when it comes to menu planning to minimize food waste. Thanks to the simple menus and recipes, chefs in Fabrik are enabled to control their inventory better and thus produce much less food waste compared to those restaurants with diverse and complicated menus.

However, to keep the menus tempting to customers, the frequency of changing menus at Fabrik is high. Lunch menu is changed every day while ala-carte menu is changed every four or six weeks. This fact makes it more challenging for chefs to control inventory and reduce food waste. Yet there are a few practices that could be done to tackle the issue:

- First of all, the issue could be tackled by observing and analyzing the frequency of customers. Average number of customers in lunch time falls within 150 – 250 customers per day. In dinner time, Fridays and Saturdays are usually fully booked, while services on Tuesdays, Wednesdays and Thursday are much lower. Seasonality also affects the quantity of customers. For instance, Christmas party season witnesses a surge in reservations. In addition to the fact that stock is delivered to Fabrik three times a week, observing the frequency of customers helps to control the inventory and thus reduce food waste.
- As mentioned in the introduction to the restaurant, Fabrik also offers off-premises services. The leftover ingredients of the previous menu could be used to create menu for private events which Fabrik caters for.
- Lastly, leftover ingredients and food could be used to cooked meals for staff.

In conclusion, Fabrik restaurant has been doing effective menu planning in terms of reducing food waste. The only improvement that should be done is to observe and analyze the frequency of customers in order to forecast the number of customers better.

5.3.4 Staff training

According to Kevin Lin, the Head Chef of Fabrik restaurant, the key to reduction of food waste in restaurant business is the personnel. A food service establishment could always build a perfect procedure to reduce food waste. However, if the staff do not put effort accordingly and are unaware of reducing food waste, the procedure will fail. In other words, it is impossible to successfully reduce food waste in restaurant business without effort of staff.

At Fabrik restaurant, staff training is one of the issues that need to be improved in order to tackle food waste. Staff training should include skill training and raising staff's awareness. There are three junior cooks currently working at Fabrik restaurant. Based on observation and discussion with the head chef, the author noticed that those three junior cooks are more likely to waste food compared to senior chefs due to lack of proper skills and awareness. Therefore, their skills,

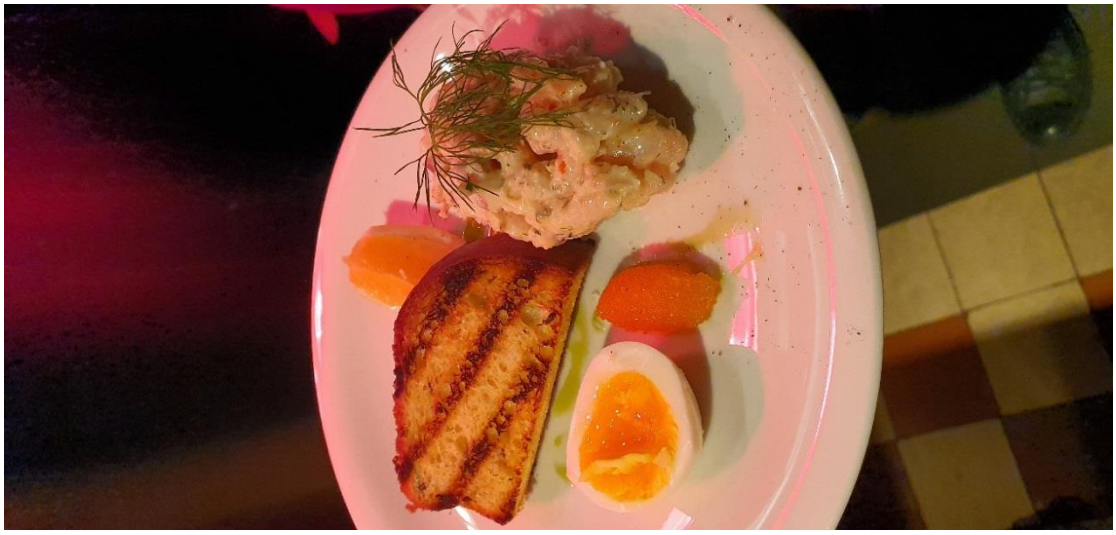
such as trimming or cutting skills, need to be improved to minimize food waste produced by them. The skill of reading and understanding orders from waitering staff also needs to be improved to avoid cooking wrong dish and wasting food. On the order hand, junior cooks should be educated to treat food at work the same way they do their own food. They need to realize that the more food they save, the more revenue the restaurant can generate, the more wage they can earn.

However, food waste does not only come from kitchen staff. It could also be caused by waitering staff as well. Especially in hectic service, waitering staff are more likely to make ordering mistakes. Besides improving one's own skill, this issue could be tackled by excellent team work and internal communication. This fact will be discussed in more detail in the next sub-chapter.

5.3.5 Internal communication and communication with customers

As mentioned in the previous sub-chapter, there are two separate services at Fabrik: lunch service and dinner service. Based on the author's observation when working at the restaurant, the portion size of dinner menu is appropriate and reasonable. There are hardly leftovers on customers' plates, nor comment from customers that the portion is too small for them. There is no separate menu for children, though it is always possible for parents to order half of the portion size or eliminate some ingredients and substitute for other ingredients. This helps to minimize the possibility of wasted food when serving children. On the other hand, lunch time causes much more food waste than dinner time does. There should be option of half-sized portion for customers to choose to minimize the leftovers. Customers should also be encouraged to inform waiters if they do not want green salad on their plates, because salad accounts for the most wasted item at lunch time, based on the author's observation.

Picture 5. Beef tartar French way, starter



Picture 6. Toast skagen, starter

Picture 7. Entrecôte béarnaise, main course

The second most wasted items at both lunch time and dinner time are bread and potato. At lunch time, a piece of focaccia is included in every plate, while at dinner time bread is brought to every table after food is ordered. The same practice with salad should be applied: encourage customers to inform waitering staff if they do not want bread or potato. It could be done with a small note printed in menu. This practice is simple yet effective to reduce the amount of bread and potato wasted.

At lunch time, coffee is included in the price and served throughout the serving time. Customers are able to take as much coffee as they would like to. It means that the restaurant faces the risk of wasting coffee while trying to ensure there is enough coffee served until the last minute of lunch time. Therefore, when the closing time is drawing near, coffee should only be made on-demand, when customers order. This small change could make a huge impact on saving coffee.

One of the obstacles when it comes to reducing food waste lies within communication with customers with special diets. In Fabrik restaurant there are occasionally misunderstandings between waitering staff and customers as well as between waitering staff and kitchen staff. To tackle this issue, communication with customers with special diets needs to be done carefully, all possible questions need to be asked by waitering staff to avoid mistakes. For instance, when a customer informs that he or she is allergic to onion, the waiter should ask for more details such as what kind of onion specifically, or if shallot and chives cause any allergy to customer. In addition, waitering staff should know what ingredients are included in every dish in order to successfully recommend alternative choices to customers. On the other hand, transferring information to the kitchen needs to be simple and transparent. Face- to-face communication should be done in complicated situations to avoid any possible misunderstanding. Moreover, in case of big group reservation, Fabrik restaurant usually requests customers to pre-order their food and state all the allergies. This practice helps to prepare sufficient amount of ingredients as well as avoid misunderstanding about special diets thus helps to reduce food waste.

According to an international study conducted by Unilever in 2017, one third of consumers prefer sustainable brands. It is crucial for Fabrik restaurant to raise awareness among its customers as a restaurant making effort to reduce food

waste. It helps to build a good reputation of the restaurant, thus helps to generate more revenue as customers have become more aware of where they are going to eat and prefer restaurants contributing to sustainability. Moreover, all of the practices mentioned above would not be successful without communicating with customers and telling them about the effort of Fabrik restaurant to tackle food waste.

6 Evaluation

The investigation into Fabrik restaurant's procedure showed that the restaurant has been making effort to reduce and reuse wasted food, which are the two most preferable methods in the food waste hierarchy shown in chapter 4. A number of effective practices have been applied at the restaurant in order to tackle the causes of food wastage discussed in chapter 3. In pre-consumer phase, inventory control and menu planning have been done efficiently at Fabrik. They are the proof of a successful business concept, management and production procedure. The restaurant offers adequate portion sizes, focuses on simple yet authentic menu. The leftover ingredients are effectively used for designing off-premises catering's menu, or for staff meals. The procedure of controlling inventory allows the restaurant manage its inventory with ease while still following strictly the food legislation in Finland.

However, there is still space for improvement. After the investigation, it is shown that Fabrik is currently lacking of an audit to measure its food waste. This is the first necessary step in the food waste management process discussed in chapter 4. Without this first step, the further plan to tackle food waste could not be implemented and goals could not be set. On the other hand, personnel and internal and external communication are the major weaknesses in Fabrik's procedure. Fabrik restaurant should pay extra attention to training its staff, especially junior cooks as professional skill is one of the most mentioned reason for food wastage. External communication with customers should also be more focused on by Fabrik's staff. This helps to increase customers' awareness about the issue Fabrik has been trying to tackle, thus helping to spread the restaurant's reputation. The guideline analyzed those weaknesses and suggested possible

approaches that can be done to improve the procedure and minimize food waste as much as possible. The suggested approaches are practical and uncomplicated to apply. Yet at the beginning the improvement might be considered as time-consuming and cost more work force, especially the food waste audit. The owners of the restaurant possibly hesitate to apply the guideline into practice. Nonetheless, in the long term when staff get used to the procedure, it would cost less time and effort from staff. Reduction of food wastage obviously helps to reduce cost, thus helps to generate more revenue in the long term and pay off the investment at the beginning.

7 Conclusion

The thesis reached its primary aim to build a guideline for Fabrik restaurant to reduce its current food waste based on theories related to the topic of food wastage in restaurant business. The guideline could possibly help other restaurateurs who are concerned about reduction of food wastage. However, as mentioned in the previous chapter, due to shortage of time, the thesis does not include the phase of applying the guideline into practice and following up the result. Hence evaluation of the guideline's effectiveness might not be accurate and objective. Improvement of the guideline and applying it into practice could be a topic for further studies conducted by audience who have the same concern and interest as the author of this thesis does.

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Appendices

Appendix 1. Fabrik restaurant's menus

Lunch

Suomeksi

Monday 2.12

Crispy chicken with spicy potato, tartar and green salad
or
Pasta all'arrabbiata with Grana Padana cheese and fresh rucola

Tuesday 3.12

Fabric classic lasagna with spinach and Parmigiano-Reggiano cheese

or

Avocado risotto with tapenade bruschetta and fresh rucola

Wednesday 4.12

Christmas meatballs with mashed potato, carrots, mushroom sauce and green salad

or

Italian classic *Parmigiana di melanzane* with sour dough bruschetta and sun-dried tomatoes

Thursday 5.12

Roasted salmon with roasted vegetables, couscous, tzatziki and green salad

or

Shevan's famous Meze plate with falafel, couscous, tzatziki and red cabbage salad

Friday 6.12

No lunch!

Lunch 11:00-14:30

12,50€ incl. coffee and tea

SNACKS

Suomeksi

Sausisson & cornichon

Selection of artisan cold cuts and french cornichons

6€

Obsiblue prawns

Prawns served with N'duja sausage and aioli

9€

Arancini

Italian rice ball with ceps and coffee mayo

6€

Rillette "Cabaret Punavuori" baguette

6€

Special selection of snacks

24€ / for two

STARTERS

Suomeksi

Salade Lyonnaise

Poched organic egg with crispy smoked bacon and croutons

starter 12 € / main 21 €

Dim sum

Wild mushroom dim sum with pickles and onion consommé

14€

Gravlax & potato salad

Salad with gravlax, potatoes, sour cream and black caviar

15€

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Suomeksi

CLASSICS

(starters & main)

Beef tartar French way

Finnish beef tartar with capers, cornichons, whole grain french

mustard and sour cream

starter 12 € / main 22 €

Toast skagen

Traditional nordic skagen, toasted dill seed brioche and

a 7 minutes egg

starter 12 € / main 22 €

Entrecôte béarnaise

Irish beef entrecôte, béarnaise sauce, roasted potatoes and salad

29 €

Page 3

Suomeksi

MAIN COURSES

Risotto with wild mushrooms

Risotto with seasonal mushrooms

24€

Organic happy duck

Organic French duck with pumpkin & potato cake and

sauce au poivre vert

27 €

Finnish arctic char

Finnish arctic char with crispy cauliflower, green apple and fennel slaw

and light curry sauce

27€

DESSERT

Suomeksi

Lemon illusion

Lemon quark mousse, lemon vodka granité with mint and

honey crumble

– just like in Hotel Meurice

10€

Mille-feuille aux pommes et Calvados

Apple and Calvados mille-feuille

10 €

Chocolate crumble

Chocolate crumble with cassis sorbet

9 €

Petra's chocolate

Selection of artisan chocolates by Pralina Chocolaterie

7 €

Cheese plate of the day

Assortment of cheeses and crispy bread

7 € / 9 € / 12 €

Appendix 2. Food waste tracking spreadsheet (Baldwin et al. 2012, p. 69)

Date					
Notes					
Time	**Recorded by**	**Food Type**	**Loss Reason**	**Quantity (choose one option)**	
				Portions	**Kilograms**