



Sustainable food packaging and recycling in restaurants and cafes

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BACHELOR'S THESIS
December 2021

Degree Programme
Energy and Environmental Engineering

ABSTRACT

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences
Bachelor of Engineering
Energy and Environmental Engineering

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Sustainable food packaging and recycling in restaurants and cafes

Bachelor's thesis 26 pages
December 2021

“Waste is a by-product of affluence, and packaging contributes greatly to the overuse of natural resources on the front end, and excessive waste on the back end.” (cf. Boylston. 2009)

Nowadays the restaurant industry is developing quite rapidly. Especially now when we are facing the COVID19 pandemic, take-away seems like the only option for restaurants to sell food, and customers are more concerned about the environment and how take-away packaging influences it. Currently many restaurants are aiming to create more environmentally friendly packaging to replace plastic containers and attract more customers. The purpose of the thesis is to analyse and provide information about recycling and packaging ways in Finnish restaurants of different cuisines.

The study was conducted by analysing two ways of leading restaurant business as well as comparing take-away packaging techniques and customer behaviour towards it. Also, various articles and publications on sustainable and environmentally friendly packaging were reviewed and used for the thesis.

The results of the study are presented in the thesis work and represent the comparison of two restaurants and their packaging techniques as well as improvements for businesses. And finally, it presents a good image to consumers and aims to raise their awareness of sustainability which is beneficial not only for the restaurants but also the world.

Key words: Sustainability, packaging, recycling, waste management

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1 INTRODUCTION

Plastics represent a consumer most chosen material when talking about packaging options.

But at the end of the use of plastic containers, they are usually being thrown in the environment where can negatively affect animal and human health as they pollute land and water bodies and even find their way into the food chain. That is why, there is a growing need to find packaging material which is economic, relatively cheap, and environmentally friendly.

Nowadays food culture plays an important and significant role in our lives. Basically, it is impossible to live without energy and the main source of energy for humans is food. And since the food culture increased drastically in the late 40s with the opening and widely spreading of fast-food restaurants it became obvious that we need to utilize waste in the most sustainable way.

The topic of takeaway and packaging became even more important when the humanity faced COVID19 epidemic in 2019. Even though it is believed that the hardest coronavirus times are over, people still prefer to use takeaway more as it is sustainable.

This chapter represents the background of the study as well as the aim of thesis and methodology and research questions.

1.1 Study methodology and aim of the thesis

The purpose of the study is to analyse and provide information about recycling and packaging ways in Finnish restaurants of different cuisine.

The aim of this thesis work is to compare takeaway packaging of two different restaurants from sustainability point of view.

To provide the readers with the relevant information, the study includes literature review regarding rules and regulations the restaurants must follow and two examples of packaging from different restaurants.

The aim of my thesis is to find sustainable ways for the restaurants to pack food for the takeaway.

1.2 Methodology and research

The study is based on the research of literature about sustainability and sustainable food packaging. All the information provided in this thesis is founded on recent publications, books, own experience gained through studies and during my practical training experience.

In order to provide the readers with sufficient information this thesis includes methodological description of packaging operations in a way of comparing them from the material usage point of view as well as waste handling.

The theoretical part represents an overview of packaging that the restaurant industry is using nowadays.

2 LITERATURE REVIEW ON SUSTAINABLE PACKAGING

Sustainability nowadays is facing the challenges of the world community related to population growth, poverty and over usage of waste. The economic, ecological, social, technological and systems perspectives of sustainability need to be understood in order to link the events of functioning of natural components like ecosystems, biodiversity, etc. to the structure and operation of the related human components like social systems, economy, etc. (Cabezas et al. 2003).

2.1 Eco-friendly packaging and material selection for that

Ecologically friendly packaging may even be defined as green packaging is a type of packaging which uses sustainable and ecologically friendly materials for packaging, which has to consist of safe and effective products for humans and environment. (Gonzalo Wandosell, María C. Parra-Meroño¹, Alfredo Alcayde, Raúl Baños, 2021)

In the past, packaging was traditionally defined as the process which includes preservation and drying, and materials which include plastic, paper, cardboard, glass, and metal used to contain and store, protect, handle and transport a product (Business dictionary 2006).

The main and therefore the most significant role of food packaging is to protect food products from outside influences and damage, in order to preserve food in great quality to delivery to customers with nutrition information (Marsh K, Bugusu B, 2007)

The definition of green packaging is described best by a project called GreenBlue, Green Packaging is known as all packaging which is responsibly sourced, effectively designed and well sheltered. All packaging should be made from materials that could be renewed, reused and effectively recycled. Moreover, they should lower the use of materials and energy. And the most importantly, all eco packaging should lead to positive results for the environment and most importantly human health.

Most people who take food from restaurants are not informed what material is used for packaging of their food, this chapter mostly focuses on three main points of green packaging that includes reduce, reuse, and recycle.

Reduce represents the most important of them all. It is best known as minimizing the number of packaging that restaurants are using nowadays.

By reusing is generally meant that the package can be used more than once.

And finally recycling can be defined as a process of making new products from waste materials, it helps to prevent air and water pollution.

3 RULES AND REGULATIONS OF FOOD AND TAKEAWAY PACKAGING

3.1 Directive 94/62/EC on Packaging and Packaging Waste

The document explained all different types and materials for packaging presented on the European Unions market. This also regulates the amount and kinds of heavy metals and chemicals used while making packaging materials.

According not the European Legislation, EU countries must follow certain criteria for the packaging. For example, restaurants must be able to minimize the amount of hazardous substances presented in the packaging containers. Also, packaging material needs to be as light as possible but still meet the needed level of safety of the Waste Framework Directive.

The European Unions commission on waste and recycling tries to reach the recycling level up to 70% by the end of 2030.

Another rule which must be followed is related to the concentration levels of heavy materials such as lead, cadmium, and mercury. Shortly, the level of heavy metals located in packaging materials must not be more than 100 ppm by weight five years after the date referred to in the directive.

It is also mentioned in the directive, that the while packaging, certain rules must be followed. Using of biodegradable materials is highly recommended for the manufacturers as well as using reusable or recyclable packaging materials. (Directive (EU) 2018/852 of the European parliament and of the council of 30 May 2018)

3.2 REACH

According to the European Chemicals Agency, REACH can be described as a regulation which is used for protection of human health from the risks that can arise from chemicals. Also, it is responsible for the assessment of chemicals and chemical substances in case to minimize animal testing.

According to REACH regulation, all materials can be divided and classified and if it complies with at least one or more criteria presented below the material can receive a name of SVHC (substances of very high concern):

- Substances marked as a carcinogenic category under Directive 67/548/EEC
- Substances marked as a mutagenic category under Directive 67/548/EEC
- Substances marked as toxic for reproduction category under Directive 67/548/EEC

REACH regulation is commonly applied when using plastic, paperboard, wood or steel packaging and focuses on hazardous substances presented in packaging materials like bisphenol P, lead cyanamide, cadmium oxide.

To conclude, if the packaging material contains numerous amounts of hazardous components, it is prohibited to sell them inside the European Union (Commission regulation (EU) 2020/878)

3.3 CE Mark and Food Contact Material Symbol

During the production processes, it is important to put labels on the packaging containers, these are the most important ones.



CE mark must be always indicated if the product is made according to the EUs standards and laws.



The most important principles of safety for all Food Contact Materials (FCMs) are presented in regulation EC No 1935/2004.

This mark is strictly mandatory for materials and goods that is not mainly used in contact with food, that is why this symbol marks that it is absolutely safe to use it in contact with food.

Finally, on the products that are not edible “DO NOT EAT” should be written in compliance with the directive in the EU regulation No 450/2009 (Commission regulation (EC) no 450/2009)

3.4 Why should restaurants change its present ways of packaging?

Some years ago, restaurants and cafes were able to make good sales having a great menu only. But nowadays when people are more aware over climate change and the damage that have been brought to our ecosystems through buyers' consciousness, many customers will prefer sustainability of restaurant business over bills they receive.

It is stated that mostly customers feel powerless when it comes to helping the planet and when restaurants stand toward sustainability, customers feel that they can also improve the present ways and impact on the environment. Restaurant sustainability practices influence customers decision when eating out.

Furthermore, there are plenty of beneficial aspects related to the restaurant sustainability: for example, increasing of profit and recovered costs. Also supply chain improvements are a part of a sustainable restaurant as well as improved awareness

4 RESTAURANT WASTE MANAGEMENT

4.1 Causes of food wastage

It is estimated that one third of food produced is lost or wasted in the world, which amounts to about 1.3 billion tons per annum (Gustavsson et al. 2011). It is considered ecologically and economically unsustainable to throw good food rather than reuse it, that is why in order to reduce food waste, the society has to first evaluate the reasons and causes that led to it. According to statistics, it is measured that the amount of food waste of the Finnish wholesale and retail business is equal to 65 – 75 million kg annually, meaning 12–14 kg per Finnish citizen.

It is stated that the main product groups leading to food waste in stores are mostly fruits, vegetables and bread. Also, dairy products, fresh meat and fish and ready food. According to Finnish Law, perishable products may not be sold after 'best before' or 'use before' dates, then they have to be removed from the shelves and thrown. The least food waste was found for tinned goods, dried or frozen food and other non-perishable goods. To conclude, these product groups were relatively same in all Nordic Countries (Stenmark et al. 2010).

Communal food services represent an important sector of Finnish food culture because they are mostly providing nearly half of the meals consumed outside the home. It is estimated that nearly 30 percent of the Finnish population uses communal food services everyday, and all Finnish schools give their students free lunch. School meals are very important for everyday schooling, they are having a great nutritional value and also serve a pedagogical use: children and learn to eat a varied, balanced diet contained of different food.

This obviously brings in additional food waste but luckily Finnish schools also provide all pupils home economics and money saving lessons, where they learn about sustainable use of materials and reducing food waste. It is stated that the use of waste in communal food services depended on how catering was organized. In restaurants, cafes and fast food chains the amount of food waste remains large. Food waste discarded by customers varied from 4% to 8%, which is relatively lower than stated in international studies (Engstrom and Carlsson-

Kanyama 2004, The School Food Trust 2009). Finally, the majority of food waste was produced by making too much food, which could not be stored or served as a different dish later.

4.2 General waste legislation

4.2.1 Waste act 2021

According to the Ministry of Environment, the new waste act has some major changes in comparison with the previous waste act.

For example, nowadays waste handlers are forced to keep track of the materials and products made by recycling of waste.

Moreover, waste incineration plants in Finland must keep track and record if metals have been separated from the bottom ash and waste for recycling.

Also, all municipalities are required to keep records of the waste and where it came from, and to share the above information to the waste company.

Finally, municipalities should be able to keep records of the processing methods of the recycling of waste produced in the operation.

4.2.2 Municipal waste legislation of the Central Finland

In Finland municipalities must ensure that the domestic waste is disposed and distributed according to the law. Moreover, municipal authorities are also supervising that the businesses follow the Waste Act. (Ministry of Environment)

In the Central Finland region, there is one main company responsible for waste management and waste collection as well as recycling, its Mustankorkea Oy.

Mustankorkea Oy is a municipally owned waste management company that provides all services related to the day-to-day management of the property. Mustankorkea is responsible for the practical implementation of waste management, i.e. it provides municipal waste management services by taking care of waste collection, transport, reception, treatment and utilization, and waste advice. Services also include the Mustankorkea waste center and sorting yard, municipal collection points, fixed reception points for hazardous waste and recyclable collection. The area of Mustankorkea covers the city of Jyväskylä and

the municipalities of Laukaa, Muurame and Toivakka and has about 174,000 inhabitants (Fonecta, 2021)

In Finland, and in particular in central region, waste sorting is regulated by different housing companies and is divided in categories which includes biowaste, carton, glass, metal, plastic and mixed waste.

But there are also other collection points for the certain type of waste which includes batteries and electrical equipment (InfoFinland, 2021)

5 FINNISH CAFÉ CASE

5.1 Wilhelmina Konditoria Oy

Wilhelmiina Konditoria Oy was founded in 1989. It is a limited liability company founded in Muurame, and its main business is Café. The company's CEO is Minna Johanna Lähteenmäki. The company's turnover was 1 million in 2020 and the result for the financial year was 13 thousand. Net sales decreased by 34.2% in comparison to 2019

The operating profit margin was 1.7%. The information is based on the company's latest financial statements for 2020 provided on the Fonecta webpage (2020).

In the financial year which was affected by coronavirus, the company had 19 employees. The number of employees decreased by 17.4% from the previous financial year (23 in 2019).

The amount of every day customers has also decreased drastically, it decreased from more than a thousand per day to hundred as the cafes financial report states (2020).

Before the pandemic, people used to spend plenty of time in the cafes premises, there was space for students, workers and even mothers. So, takeaway option was not really popular among Wilhelmiina's customers as everyone preferred to spend time inside.

5.2 Takeaway in Konditoria Wilhelmiina

Picture 1 and Picture 2 represent how takeaway orders are packed in Wilhelmiina Konditoria in Jyväskylä. Cardboard packaging represents more sustainable way of packaging allowing to minimize the use of plastics and minimize environmental impact on the planet.

Moreover, this way of packaging can be used for delivering warm pastry, but it keeps food warm for a limited amount of time.

Cardboard takeaway packaging represents a good way of replacing plastics containers but unfortunately it is not suitable for the transportation of liquid ingredients like sauces or other oily ingredients.

In March 2020, when Finland faced the lockdown, all public places were closed for visitors, and it means that some other ways of keeping the profits needed to be found.

Wilhelmiina is a busy place and plenty of workers were there on everyday basis but due to COVID19, many of them were forced to stay on a paid vacation.

In April 2020 Wilhelmiina closed its doors and stayed closed until July 2020. But since opening in July, the owners were able to continue working, returned some workers and now it is opened for customers full time.

And nowadays customers prefer not to spend plenty of time in crowded places and takeaway is getting more and more popular. And the cafes owners are ready to face the challenge of increasing take away interest among its customers.



Picture1. Way of takeaway packaging in Wilhelmiina Konditoria



Picture2. The idea of cardboard packaging

5.3 Suggestions for sustainable takeaway

Sustainability is nowadays representing a big consideration for the restaurant industry. In my opinion some small changes for restaurants are able to increase eco friendliness and sustainability.

I think that biodegradable packaging can be more suitable for this café rather than plastics. For example, bagasse (sugarcane pulp) is totally sustainable. Among its benefits it is home compostable, renewable, and strong (BioPak, 2020). Bagasse packaging is also available in Finland and can be ordered from, for example, Heino's webpage. (Heino, 2021)

My second suggestion is bringing customers own containers when ordering takeaway. It can reduce the use of containers as people will bring their own and they can be reusable too.

5.4 How COVID19 affected the business

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6 NEPALESE RESTAURANT CASE

The Everest Cuisine was founded in 2016. It is a limited liability company domiciled in Tampere and its main business is Restaurant. The official name of the company is The Everest Cuisine Oy.

The company's turnover of The Everest Cuisine was 7 thousand and the result for the financial year was -10 thousand. Net sales decreased by 95.2%. The operating profit margin was -111.1%. The information is based on the company's latest financial statements for 2020.

6.1 Short description of the business

The restaurant was a place owned by a foreign national and functioned within 2018-2020. Having been located in the heart of Tampere, unfortunately it did not survive the economic crisis brought by the COVID-19 and closed its doors in the end of 2020.

Even though, the food quality was on a high level and according to Finnish standards, the restaurant could not compete with other businesses in the area and all the investments towards raising the quality of service did not work successfully for attracting of new customers.

Moreover, one of the main reasons for closing the restaurant was lack of workforce. Potential workers were not satisfied with the working hours and the amount of salary which was according to the lowest Finnish standard no matter what the qualification is. New workers came each week, been to the place for a couple of weeks and then left. The main reason for them to leave was a huge amount of work which was incompatible with the salary. Furthermore, the owner tried to hire workers from abroad and was rejected many times by Finnish immigration office.

Additionally, the rent of the place was quite high (3500 euros per month) and in comparison, with the rent, the total monthly profit (total income-rent-food and electricity bills) was quite small due to the lack of customers and relatively high prices for the evening menu (during lunch time the price was 9 euros, evenings average bill was about 35 euros per person).

Finally, the owner faced many problems with the neighbours and maintenance company of the building where the restaurant was located. Many people

complained that the smell of food is coming through ventilation to their apartments, and they were quite negatively concerned about the use of gas stoves in the restaurant. The boiling point was reached when the canalization system broke in the restaurant and the pipe renovation took around 2 months forcing the restaurant to close its doors.

Overall, it was a good place, but in my opinion, it needed more investments and knowledge of leading and owning a huge property.

6.2 Takeaway packaging option presented in the restaurant

As represented on pictures below, the restaurant was using plastics as the primary packaging way. Amongst all benefits of plastic packaging like low cost and its durability there were more drawbacks in it.

Plastics represents a huge impact on the environment. of course, nowadays it is possible to recycle plastic containers after they have been used but many people still prefer to ignore it.

Moreover, plastic used for containers is not biodegradable, meaning that it is not possible to dissolve it naturally into soil.

From the restaurant perspective, plastics absorbs flavours easily which plays a negative role in the whole process.



Picture3. Plastic food packaging for takeaway



Picture4. Visual representation of hot food takeaway packaging

6.3 How COVID19 affected the business

As it has been already mentioned, the business was not able to survive during the coronavirus crisis in 2020 and was closed. According to Fonecta, the profit of the restaurant in 2020 was 95,2% lower than in previous year (2019).

When Finnish authorities realised that the coronavirus lockdown is inevitable, first of all, it forced all restaurants to close its doors to customers for 2 months (so called March shutdown). As businesses have never faced anything like that before in the 21st century, people had to find out how to keep restaurants alive even if dining in was strictly forbidden.

As per this restaurant, when the restrictions came into force, lunch buffet option was impossible and something else needed to be done. People used to love the buffet option in the restaurant and the only one option was to introduce take away during the lunch time. Due to the low competition in the area, people who

continued to work nearby, they continued to come to the restaurant for lunch takeaway.

But, since the coronavirus epidemic started, many people were too scared to go out. They tried to minimize human contacts as much as possible and preferred not to go anywhere.

To sum it up, when it was introduced, that restaurants are able to sell food only as a takeaway, it seemed very promising for this restaurant. But the expenses were much more bigger than profits during the pandemic leading to the termination of the renting contract of the restaurant as the owner was not able to pay the bills, and it led to the permanent closure of the restaurant.

7 WAYS TO IMPROVE RESTAURANTS SUSTAINABILITY

Restaurant sustainability can be applied when restaurant owners try to minimize the negative impact on the environment, including reducing the carbon footprint, food waste as well as water and energy consumption and many more. (Saint Paul page 39, 2003).

In my opinion, to improve restaurant sustainability, it is essential to start with small things, for example printing menus using recyclable paper and minimize paper printed receipts and bills. Moreover, replacing paper napkins with linen ones is a way to increase restaurants sustainability.

According to HUB programme, recycling and minimizing carbon impact drastically improving restaurants sustainability.

Introducing vegetarian and vegan dishes as well as using eco-friendly utilities and equipment improves customer satisfaction and attracts more audience to the restaurant.

It is important to take into consideration that moving towards a sustainable way of leading a business is not the fastest process, it requires many actions, effort and analytics. But sustainable restaurant will be standing out from others and attract more attention and customers.

8 DISCUSSION

In my opinion successful product packaging should be based on the needs, perceptions, and expectations of consumers (in my case it is restaurant visitors).

And it is very important that restaurants are able to maintain high standards and move towards sustainable, more ecologically friendly ways of packaging for the food they produce.

Even though many restaurants in Europe have already changed its ways of packaging, there are still some that prefer to use cheaper materials which may be hard to recycle and are harmful to the environment.

No doubt, coronavirus which happened in 2019 forced many restaurants to change its present ways of working and they were focused more on packaging. That is why it is very important nowadays to maintain and try to improve packaging containers and move it more and more towards sustainability.

9 CONCLUSION

These days we have a very important choice to make, for example, we can continue with our current way and pollute the environment more or we can move towards a more sustainable route which consists of recycling and using more sustainable materials.

If we move towards the sustainable way of packaging, it will improve the shelf life and sales as well as protect the product all the way from the manufacturer to the consumer.

As a result, sustainable packaging in restaurants is beneficial nowadays as it contributes to an increase in the volume of its sales and attract more customers. And finally, if restaurants will learn how to minimize or reduce food waste, it will be helpful not only for the environment, but it also will be beneficial for businesses and make them profitable and more attractive to customers in a long run.

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