ISCTE Business School
Instituto Universitário de Lisboa

THE SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACT OF USING REUSABLE PLASTIC CUPS IN LISBON

Ana Lúcia Sousa Henriques

Dissertation submitted as partial requirement for the conferral of

Master in International Management

Supervisor:

Prof.ª Doutora Isabel Duarte de Almeida, Prof.ª Auxiliar, ISCTE Business School, Departamento de Marketing, Operações e Gestão Geral

September 2019

ISCTE Business School
Instituto Universitário de Lisboa

THE IMPACT OF USING REUSABLE CUPS IN LISBON

Ana Lúcia Sousa Henriques

Abstract

An effective way to decrease the use of disposable plastic, a source of growing concern due to its harmful effects on the environment, is by using reusable plastic cups, something that countries like Germany or Australia are already successfully using for several years.

Portugal is now starting, with the introduction of reusable cups in establishments selling takeaway drinks such as bars, coffee shops, and restaurants in Lisbon.

Therefore, this thesis indents to study the adaptation of clients and employees of establishments where takeaway drinks are sold, to the use of reusable cups: what are their main difficulties; environmental benefits resulting from it and how can the system be improved.

To do so, a questionnaire was applied to 50 establishments' employees working with reusable cups.

The results showed that the biggest difficulty for clients when using reusable cups is the extra price of the cup, although clients tend to accept this extra cost over time.

Regarding the environmental benefits, direct and indirect were identified. Direct effects include approximately 61.000 disposable cups speared, as reusables were used instead, and less pollution on public areas resulting from the consumption of takeaway drinks. Indirect effects include more interest in pro-environmental practices both by clients and employees.

Finally, results also showed that is very likely that the system can be improved through a better manager's perception of the economic impact: considering that the extra costs resulting from using reusable cups are negligible for employees and that using reusable cups does not affect sales.

Keywords: Reusable Cups; Environmental Consciousness; Pro-environmental Actions; Social impact, Environmental impact, Economic impact

JEL Classification System: Q5 - Environmental Economics; O35 - Social Innovation.

Sumário Executivo

Uma maneira eficaz de reduzir o consumo de plástico descartável, uma preocupação cada vez maior devido às graves consequências ambientais, passa pela utilização de copos reutilizáveis, prática implementada com sucesso há vários anos em países como a Alemanha e a Austrália.

Portugal está agora a começar, com a introdução de copos reutilizáveis em estabelecimentos de venda de bebidas *take-away*, tais como bares, cafés e restaurantes em Lisboa.

Com esta tese pretende-se então estudar a adaptação de consumidores e empregados de estabelecimentos de venda de bebidas *take-away* ao uso de copos reutilizáveis: identificar as principais dificuldades, benefícios ambientais resultantes e como é que o sistema pode ser melhorado.

Para isso, foi aplicado um questionário a 50 empregados de estabelecimentos onde já são usados copos reutilizáveis.

Os resultados mostraram que a maior dificuldade dos clientes está relacionada com o preço acrescido dos copos reutilizáveis, mas um custo extra que os clientes tendem a aceitar.

Relativamente aos benefícios ambientais, foram identificados diretos e indiretos. Efeitos diretos incluem aproximadamente 61.000 copos descartáveis poupados, uma vez que foram usados reutilizáveis em substituição e menos poluição do espaço público resultante do consumo de bebidas *take-away*. Efeitos indiretos incluem o aumento do interesse por práticas ambientais tanto por consumidores como por clientes.

Por último, os resultados mostraram que é muito provável o sistema poder ser melhorado através de uma melhor perceção do impacto económico: considerando que os custos extra resultante do uso de copos reutilizáveis para os empregados é considerado irrelevante e ainda que a sua utilização não afeta as vendas.

Palavras-chave: Copos reutilizáveis; Consciência ambiental; Ações ambientais; Impacto social; Impacto ambiental; Impacto económico.

JEL Classification System: Q5 - Environmental Economics; O35 - Social Innovation.

Acknowledgments

It took two years, a change of theme, a change of country, four supervisors, lots of tears and hours in front of the computer before I could finally find my way through this rough challenge of writing a master thesis. But I made it and I couldn't be happier with the result!

However, this was not a solo journey…

First, I want to thank my family for always supporting and believing in me, even and especially, in the moments I did not believe in myself.

Who's always been by my side – literally, in the study room of ISCTE – was my friend Rui, thanks for being my "thesis colleague" and thanks for introducing me to our supervisor, Professor Isabel Almeida.

To my dear supervisor Professor Isabel Almeida, thank you for your time, patience and capacity to smile and help me to find a solution after a long working day. You are truly an inspiration!

Also, I would like to thank my friends Marta Santos for always being available to answer my "thesis questions" and to Catarina Oliveira for helping me with the analysis of the data.

Finally, I want to say thank you to my boyfriend Miguel Costa. Thank you for cheering me up but also for the tough love – I know now that I needed it!

Table of Contents

List of figures

List of tables

Abbreviations

EU: European Union

HDPE: High Density Polyethylene

ISCTE-IUL: Instituto Universitário de Lisboa

IADE: Instituto de Artes Visuais, Design e Marketing

LCA: Life Cycle Assessment

LDPE: Low Density Polyethylene

OCBEs: organizational citizenship behaviours for the environment

PBC: perceived behaviour control

PET: Polyethylene terephthalate

PHA: Polyhydroxyalkanoate

PLA: Polylactic acid

PP: Polypropylene

PS: Polystyrene

PVC: Polyvinyl Chloride

UN: United Nations

USA: United States of America

UV: ultra-violet

Chapter 1 – Introduction

In this chapter, it will be presented a general framework of the use of reusable plastic cups. It is addressed the situation in Germany, the first country to use these cups in Europe, and in Australia, the country which invented reusable plastic cups, as good practices examples. Then, the Portuguese case will be introduced by presenting the consumption level of takeaway drinks of the Portuguese and what measures are being taken, especially in the city of Lisbon, to reduce the disposable plastic used to carry those drinks. After that, reusable cups systems available in the city of Lisbon will be explained. Lastly, my motivations for doing this study, objectives and research questions will be presented.

1.1. Background of the study

EU wants to ban the single-use plastics by 2021 and several countries are already working in ways of replacing disposable plastic in people's lives for some years. One of these countries is Germany, where takeaway coffee is very popular and about 300.000 cups of coffee are consumed per hour, making a total of about 2.8 billion per year. Normal disposable coffee cups are used during an average of 13 minutes before being disposed of (Martinko, 2017).

In Europe, one of the first initiatives to reduce the use of disposable plastic, happened in November 2016, precisely in Germany. In the city of Freiburg was launched a reusable cup system in which clients can use a reusable cup to carry their takeaway coffee for an extra one euro and give it back in the end, in any of the about 100 participating establishments, getting their deposit back. The coffee shops will wash and disinfect these cups up to 400 times before disposing of them (Martinko, 2017). By the same time, a similar project was born in Munich, called *ReCup*. Its success in the Bavarian city lead *Recup* to fuse with *JustSwapIt*, a startup which was operating a similar business in Berlin. Currently, *Recup* is working in Berlin, Munich, Cologne, Ludwigsburg, Oldenburg, Rosenheim, and Wasserburg (Make The Planet Great Again, 2019).

Way before Germany, in the year of 2009, Australia was already giving important steps towards going disposable free. In that same year, Abigail Forsyth and her brother Jamie Forsyth founded *KeepCup* in Melbourne, Australia. Initially, they searched for reusable cups they could sell to their clients in *Bluebag*, a small coffee chain they were managing, to reduce the huge

number of disposable coffee cups that were being thrown away. After being unable to find any reusable cup available in the market that could respond to their needs, they decided to develop their own reusable coffee cup. Between them and now, the company expanded to 32 countries (and set offices in three of them: Australia, United States of America and the United Kingdom), where the company has sold 8 million cups and estimates it will prevent 12 billion single-use cups from going into a landfill (Smyth, 2018).

In Portugal, the consumption of disposable plastic is still alarming, not so much due to the consumption of takeaway coffee, as in Germany and Australia, but because of the takeaway drinks Portuguese people enjoy taking socially, such as beer, sangria and cider, especially during summer in outside areas (eg: in garden of Arco do Cego). According to the report of the The Brewers of Europe (2018), Portugal is the 21st biggest consumer of beer in Europe, with 5,251 million of hectolitres consumed in 2017, which gives a consumption's average of 51 litres per person per year. Despite appearing below the EU average – which citizens drink in average 71 litres of beer per year – Portugal is the country where beer is consumed the most in public, 69% in public (which includes bars, restaurants, coffee shops, gardens and others) as opposed to the 31% in private.

In order to reduce the amount of disposable plastic consumed by the inhabitants of the city, the municipality of Lisbon announced in the beginning of 2019 that restaurants, coffee shops and bars in the capital of the country have until the end of this year to replace their disposable foodservice products, specially the disposable plastic cups, by more eco-friendly recipients such as glass or reusable plastic cups. The noncompliance with these measures will lead to the application of fines (Pincha, 2019).

Since 2018 that several alternatives for the disposable cups are being provided by the main beer producers in Portugal: Sagres and Super Bock, and also from an environmental project called Lisboa Limpa. All three provide reusable plastic cups to establishments selling takeaway drinks in Lisbon. Those cups are supposed to be borrowed to clients in exchange of a deposit of one euro that will be given back to clients when they finish their drinks and return the cup.

This change of paradigm, from using disposable cups to use reusable ones in the city of Lisbon is a very contemporary issue, which is happening right now and that will affect and change the habits of the inhabitants of the city during the next years. Perhaps not only as an isolated behaviour but as the beginning of a more sustainable attitude towards the environment. The novelty and the importance of the subject, together with my two-month experience working

with Lisboa Limpa and my personal interest in the area of sustainability were the main criteria when deciding the theme of this master thesis.

1.2. Problem and research questions

This research focuses on how the inhabitants of Lisbon are adapting to the change from disposable to reusable cups. This adaption includes, on one hand, the employees and owners of bars, restaurants and coffee shops, and on the other hand, the clients of the mentioned establishments. For clients, this change includes a raise in the price (which is, in fact, a deposit and not an extra cost) and a change of habits, which translates into having to give back the cup to recover the deposit. For employees and establishment owners it implies finding strategies to wash and storage the cups, and also to deal with clients, as not all of them will cooperate with this change. This research also looks over the environmental consequences of these market adaption, not only by itself but also as a propellant of more and bigger changes in social behaviour. Lastly, the economic impact of the reusable cups' implementation in drink sale businesses is also analysed.

Therefore, this study starts by analysing the hypothesis of: "whether bar owners and employees in Lisbon are already using reusable cups in their establishments" – as it is not mandatory yet. A brief exploratory study, done while working for the Project Lisboa Limpa, confirmed this first premise, and that has led to the formulation of three research questions:

RQ1: What are the main issues clients and employees are facing due to the use of reusable cups?

RQ2: What are the environmental benefits resulting from the use of reusable cups?

RQ3: How can the system of reusable cups be improved?

Chapter 2 – Literature review

2.1. Approaches on how to solve the littering problem

The consumption patterns of humans over the last decades led to an increasing amount of waste produced. This matter has been a source of concern because of its social, health, environmental, aesthetic and economic implications (Spotswood & Whitaker, 2017)

Research has shown that providing information to people on how to have a pro-environmental behaviour can lead to some improvements (Schultz, Bator, Large, Bruni, & Tabanico, 2013). In the USA, the studies Keep America Beautiful (2009) found a great decrease in littering after doing public campaigns and education sessions against it. Also leading by example was demonstrated to be important in this field (Boiral, Talbot & Paillé, 2013). Small, individual and informal pro-environmental actions, also called "organizational citizenship behaviours for the environment" (OCBEs) performed by managers contribute to the success of environmental management practices which therefore contributes to improve environmental performance. The authors also concluded about the influence of environmental values of managers on performing OCBEs. In fact, personal values had already been previously considered by several researchers as one of the core drivers of manager's commitment regarding pro-environmental corporate actions (Bansal & Roth, 2000; Cordano & Frieze, 2000; Williams & Schaefer, 2012). Moreover, Boiral *et al*., (2013) also found a relation between perceived behavioural control (PBC) and managers' OCBEs. PBC can be defined as the perception of control one has over the performance of a behaviour. PCB can be applied in environmental management, as the constrains to this perception of control can lead people believe they can or cannot perform a certain environmental action. Those constrains could be for example, lack of time, difficulties in changing personal habits, technical difficulties, extra costs, among others. Therefore, if for example someone believes recycling is too hard because one is not sure about which garbage should be placed in which trash bin and so their efforts will be useless, then their perception of control is negatively affected and might reach the conclusion that there is no point in doing recycling.

Nevertheless, recycling has been identified by European Environment Agency (2007) as a very important way of reducing waste. However, it does not solve the problem, as some

materials still cannot be recycled. Landfill is the solution for getting rid of those materials, which, although there are several ways to minimize the risk, represent a threat to public health and the environment (Siddiqui, Richards & Powrie, 2012).

From all the waste generated by humans, plastic waste is one of greater concern due to its durability and capacity of cause harm to human life and the environment, more about it will be explored within the next subchapter.

2.2. The environmental impact of the plastic

Plastic was one of the biggest discoveries of the XX century: it is cheap, lightweight, easy to make and its material properties allow it to adapt to many different products. As there are so many types of plastics available nowadays, to help consumers identify the different types, in 1988, The Society of the Plastics Industry categorized and attributed them a symbol with a number that can be found in plastic-based products. Those categories are:

1. *Polyethylene terephthalate* (PET) is mostly used for packaging and bottling (e.g. plastic water bottles);
2. *High Density Polyethylene* (HDPE) is used in stronger containers such as trash bins and detergents;
3. *Polyvinyl Chloride* (PVC) is soft and flexible, therefore, used, for example, as transparent plastic food wrapping;
4. *Low Density Polyethylene* (LDPE) is used for supermarket plastic bags, some clothing and furniture.
5. *Polypropylene* (PP) is strong, lightweight and heat resistant. Because of that, it is commonly used to package food and it is also used to produce reusable plastic cups.
6. *Polystyrene* (PS) also known as “styrofoam” is used a lot for disposable articles such as cups and takeaway recipients.
7. *Other* includes less common types of plastics and also mixed-plastic products. (Seaman, 2012).

Plastic waste is one of the trickiest materials to get rid of. Because it does not biodegrade, but instead it breaks down into smaller pieces - the microplastics - if not landfilled or incinerated, microplastics can remain in nature for years to centuries and even not degrade at all if not exposed to bacterial activity or UV radiation (Lambert, Sinclair & Boxall; 2014). It is also one

of the most produced materials in the world, most of it designed to be used only one time (United Nations Environmental Report, 2018) which creates the problem of how to get rid of a material which speed of production and consumption is far superior to the speed of decomposition.

It is estimated that between 4 and 12 million tonnes of plastic enter in the oceans annually (Jambeck, Geyer, Wilcox, Siegler, Perryman, Andrady, Narayan & Law, 2015). The plastic found in the oceans is a great source of concern, as plastic can threaten sea animals, mostly due to ingestion and entanglement (Panti, Baini, Lusher, Hernandez-Milan, Rebolledo, Unger, Syberg, Simmonds & Fossi, 2019).

According to Gall and Thompson (2015) 693 different species were identified as being affected by plastic *marine debris* - any man-made material that enters the water channels through littering - but some are more affected than others. Microplastics were found in more than 50% of the world's sea turtles (Schuyler, Hardesty, Wilcox & Townsend, 2013) and in more than 90% of the world's sea birds (Wilcox, Sebille & Hardesty, 2015). The ingestion of plastic by seabirds has been identified by these authors as a cause of slow poisoning from the chemicals presents on the plastics which has impacts on the mortality and reproduction of the species. Similar effects were observed in several species of marine fish (Savoca, Tyson, McGill & Slager, 2017).

Microplastics have been found in 114 aquatic species, more than half of those are consumed by humans. Fortunately, microplastics eaten by fish remain in its guts and do not move into muscle tissue - which is what people eat (Royte, 2018). However, as microplastics get smaller through the years, it will eventually turn into nanoplastics - plastics that measure, less than 100 billionths of a meter - and these nanoplastics can enter cells and move into tissues and organs (Royte, 2018).

Several options have been developed in the last years to replace traditional plastic and avoid all of the presented environmental consequences. Paper cups, for example, widely used by multinationals such as Starbucks, are usually perceived by the public as an eco-friendlier alternative to plastic cups, as they can be recycled. However, to hold liquids safely, these cups have an interior layer of plastic which makes difficult the recycling process, as the plastic cannot be separated from the paper in a standard recycling mill. Moreover, as the materials used to make these cups have high volume but low value it is expensive to transport them through long distances to get them recycled (Lenaghan, 2017). Another obstacle for the

recycling process of the paper cups is the contamination with organic materials (Gabbatiss, 2018). So in the end, paper cups end up being disposed via combustion or accumulates in a landfill, a dump, or even worse, directly in the natural environment (Ma, 2018; United Nations Environment Report, 2018).

Bioplastic could be a more efficient and ecological alternative for traditional plastic. This material imitates conventional plastic without using petroleum-based chemicals - which burning causes greenhouse emissions. There are two main types of bioplastics:

- *Polylactic acid* (PLA) – it is made from plant-based materials, typically from corn. It can be used to replace polyethylene, polystyrene or polypropylene as it can look and behave like these plastics.
- *Polyhydroxyalkanoate* (PHA) – it is made by microorganisms that create plastics from organic materials. PHA is safe to use for medical purposes and so it can also be used for food packaging.

Bioplastics are advertised as being compostable, which means they will decompose and return biological nutrients to the soil in a relatively short period of time (O'Connor, 2011). Moreover, contamination with organic material would not be a problem, as it is in recycling. The problem is, not all bioplastics degrade quickly or even completely, and most of them need high temperature composting facilities (Cho, 2017). Which makes of the process uneconomical, and so, a lot of bioplastics end up not being composted, but in a landfill. Moreover, it is not easy for consumers to distinguish plastics from bioplastics, if they all look similar, which reinforces the possibility of bioplastics ending up in a landfill. When landfilled, PLA bottles actually have higher greenhouse gas emissions than PET bottles, because of higher emissions on the production phase (Tabone, Cregg, Beckman & Landis, 2010) Therefore, considering the current circumstances, bioplastics are not a solution for problem of the disposable plastic.

2.3. Reusable food containers: its social, environmental and economic impact

According to several authors, reuse should be considered before any other option; (Babader, Ren, Jones & Wang, 2016; Ertz, Huang, Jo, Karakas & Sarigöllü, 2017; Sheehan, 2017) First, because it has been proven to be more effective than recycling when it comes to waste reduction

(Ertz et al., 2017); secondly, according to several Life Cycle Assessments (LCA) it leads to less greenhouse gas emissions and energy usage (Sheehan, 2017).

According to To and Chan (2006: 1), an LCA can be defined as "*an analysis of energy, material, and waste flows in the life time of a product. The life time starts from raw material acquisitions to ultimate disposal*". An LCA is used (among other purposes) to measure and compare the environmental impact of a product, and can be performed in terms of energy usage, greenhouse gas emissions or both. The point when the environmental benefits of using reusable containers overpasses disposables is called "break-even point" (Sheehan, 2017).

LCA studies have been conducted for several food and drinks' containers. Franklin Associates (2009) compared the impact of consuming tap water in reusable bottles or glasses with consuming it from single-use plastic bottles and concluded that using a reusable bottle, even if washing it with a not so sophisticated dishwasher, releases 79% less greenhouse gas during its life cycle then using the equivalent in PET water bottles and then throw it away. If instead of randomly disposing them, PET bottles get recycled, greenhouse gas emissions can only be reduced by 16%.

But not only are water bottles proven to have a smaller environmental impact when reusables are used. When it comes to clamshells, Copeland, Ormsby and Willingham, (2013) compared single-use foam clamshells and the equivalent reusable made of PP, in terms of greenhouse gas emissions and energy. They conclude that it only takes 15 usages for reusables to beat disposables, in terms of greenhouse gas impact and 30 usages considering the energy spent. Another study performed by To and Chan (2006) compared disposable paper plates and ceramic equivalents, considering ceramic plates to last two years (which is quite low) and found out that reusables have less global warming impact after the first year.

Using reusable foodservice products is not only good for the environment, but also for businesses. "*The number of times a product/packaging can be reused will help to decide cost factors and minimise any additional cost for recycling, waste disposal and waste management*" (Babader *et al*., 2016: 418). Despite a reusable container being much ticker then the disposable version and so, more expensive, several utilizations can compensate the cost and so an overall reduction of consumption of manufacturing materials (Gupta, Jarupan & Kamarthi, 2003).

Considering the savings together with the environmental benefits, several food companies have already adapted reusables. In 2010, Kentucky Fried Chicken introduced a reusable container made of PP and which is safe to wash and microwave (Business Wire, 2010). Starbucks is

giving clients a discount if they bring their own tumbler since 1985. The number of sales using reusable cups has been slowly increasing until it reached 1.3% by 2018 (Starbucks, 2018).

However, it seems that these kinds of initiatives are not getting a lot of attention from the public. According to Nemeroff and Rozin (1994) when consumers became aware that another person has used a product, their evaluation of the product and purchase intentions decrease. This is explained by Numata and Managi (2012) as stains and flaws being perceived as signs of contamination and, therefore, lack of safety and hygiene. The industry has taken advantage of this and, supported by technological advances, motivated the increase of the usage of single-use recipients (Ertz et al., 2017). However, if consumers are assured that reusables are as safe and clean as disposables, they may become more receptive to adopt reuse behaviours (Numata and Managi, 2012).

To understand how to enhance reuse behaviour, Babader *et al*., (2016) developed a model with three variables: influence from friends and relatives; influence from knowledge about packaging reuse and influence generated by the convenience, which the authors call the "behaviour control". The results from the model confirmed that all variables play an important role. Regarding the first variable, results confirmed that personal norms are influenced by family, friends and neighbours. Therefore, governments and policymakers must spend time and resources educating people about reuse because they will later pass that knowledge and influence their peers too. As expected, results also confirm that knowledge about reuse leads to reuse behaviour, therefore, social marketing strategies should be developed to inform people about how to reuse and what is the impact those actions have in the environment. Finally, regarding the third variable, it is important that manufacturers considerer the materials and the manufacturer process itself to make packages suitable to be reused and so, consumers will be able to more easily reuse them.

Ertz *et al*., (2017) also studied reuse behaviour and found out that the context in which people need to choose between single use or reusable containers influences "*motivation, perceived behavioural control, and attitudes*" (Ertz *et al*., 2017: 341). Therefore, to motivate people to use reusables, business owners need to create environmental-friendly contexts, such as coffee shops where employees ask people if they brought their own container instead of just serving orders in single use recipients. Moreover, the authors suggest price incentives, so people have an extra motive to bring their own recipients from home. Establishments should also have available reusable containers for the clients who cannot bring their own.

Finally, as legislation is an important component in the contexts of consumers (Stern, Dietz & Guagnano, 1995) the adoption of laws and regulations that encourage the consumption of reusables can also be a very important influence in boosting reusable behaviour. Furthermore, according to Poortinga, Whitmarsh and Suffolk (2013) people tend to become more acceptant of an environmental and behavioural change policies after its implementation, when they start to experiment its benefits.

The introduction of a cost for supermarket plastic bags is an example of a context change and where price incentives were successfully applied. In the last years, several countries adopted this measure with great success. According to the Guardian (Cocozza, 2015) the plastic bag tax introduced in Northern Ireland in 2013 were able to reduce plastic bag use by 81% by 2015. Also developing countries, such as China had successfully applied this measure in 2008, which resulted in a 49% reduction in the use of new plastic bags (He, 2010). Poortinga, *et al*., (2013) studied the effectiveness of charging for supermarket bags before and after the charge was introduced in Wales in 2011 and concluded that it was highly effective, as own bag increased from 62% to 82%. Not only more people were bringing their own bag to supermarkets (increase of 42% to 64%) but also to other shops (increase of 27% to 43%), which lead authors to conclude that the charge in carrier bags "established a change of habits in Wales" (Poortinga, *et al*., 2013:245).

Adopting environmental-friendly behaviour may lead to changes in the values and identity of consumers, which may lead to the adoption of other environmental-friendly behaviour (Whitmarsh & O'Neill, 2010). Therefore, if people already stopped buying supermarket bags and try to reuse their own instead, they might as well start using reusable cups. This spread of effects from a certain behaviour to other related behaviours is called behavioural spillover effect (Thøgersen, 1999).

The study conducted by Poortinga *et al*., (2013) could not find enough evidence to prove behaviour spillover effect. Therefore, a new study was conducted by Poortinga, Sautkina, Thomas and Wolstenholme, this one regarding consumer habits in England, Wales and Scotland, in 2016, a few months after the introduction of a charge in supermarket plastic bags in England. In this study, it was found evidence of policy spillover. Not only more people started to support charges on supermarket bags after its introduction in England, they also did regarding other charges to reduce waste. These results suggest that the introduction of a plastic bag charge raised awareness regarding environmental issues, which increases support for other

charges, such as a charge on single use cups or a deposit system with reusable cups, as people are willing to pay for them now.

In 2019 a follow-up study was made regarding this subject, by the authors Thomas, Sautkina, Poortinga, Wolstenholme and Whitmarsh. In this new study, the authors intended to find out if the small cost of the plastic bag affected only on small income groups of British society – as it would be expected due to the small charge – or if it affects high income groups too. The study came to prove that this charge is more than an economical instrument, but it is also a psychological one, as it helped change habits across all socio-economic groups, regardless of their incomes. This study also shows evidences of policy spillover effects regarding similar environmental behaviours, which means that consumers will most likely have a positive reaction regarding the introduction of similar policies regarding single use plastics and packaging.

2.3.1. The specific case of reusable cups: its social, environmental and economic impact

It is estimated that the world uses 600 billion disposable cups every year (Siegel, 2019). As mentioned before, these cups will most likely not be recycled, due to technical difficulties, such as unavailability of special facilities able to separate plastic from paper - which most disposable cups are made of. Moreover, as cups have low value but high volume, it is uneconomical to transport them over long distances (Lenaghan, 2017). But even before that, consumers would have to dispose single-use cups in appropriate bins or return them to the shop, but still, they could end up not being recycled due to contamination with organic materials, which complicates the recycling process (Gabbatiss, 2018).

The use of biodegradable cups does not seem to be the solution either, as most of nowadays commercial composters cannot reach high temperatures necessary to allow bioplastics to decompose (Cho, 2017), and if landfilled, these cups end up being more harmful to the environment than regular plastic due to the extra energy spent in the production phase (Tabone *et al*., 2010).

Many LCA comparing disposable and reusable cups have been done to prove that reusing is indeed a better solution than recycling. Throughout the years, due mainly to the improvements in dishwashing technology, the results of the calculations of break-even points when comparing

disposable cups with ceramic mugs have improved drastically. Tables 1 and 2 show the break-even points for polystyrene foam and paper when compared with ceramic mugs.

Table 1 – Break-even points for polystyrene foam cups with ceramic mugs (adapted from Sheehan, 2017)

	Polystyrene Foam					
Ceramic	Hocking 1994	Denison 1998	Ziada 2009	Carbon Clear 2012	Woods & Bakshi 2014	Woods & Bakshi 2014
	1000	260	127	354	110	70

Table 2 – Break-even points for paper cups with ceramic mugs (adapted from Sheehan, 2017)

	Paper				
Ceramic	Hocking 1994	Denison 1998	Starbucks 2000	Ziada 2009	Carbon Clear 2012
	39	120	70	18	31

The most recent studies, developed by Woods and Bakshi (2014) in the USA, obtained the lowest break-even point so far, due to the improvement of the dishwashing technology and the prevalence of hydroelectric power in the region where the study was made.

Reusable versus disposable cups were also studied at events. Vercalsteren, Spirinckx and Geerken (2010) studied the impacts of disposable, compostable and reusable cups at small and big festivals in Brussels and they concluded reusable had the smallest impacts in small festivals but not in large outdoor events where the reusable cups had lower return rates and manual cleaning is not enough.

The only study found regarding the social and financial impact of using reusable cups was conducted by Poortinga and Whitaker (2018). It involved twelve universities and coffee shops where all different sets of measures were applied. These measures included environmental messages (displayed in posters and/or social media) the arrangement of reusable cups and financial incentives to encourage the use of reusable coffee cups. The arrangement of the reusable cups could be of two types: available for sale or freely distributed. The financial incentives were of several types: in four places reusable cups were given for free; three places gave a discount for the clients who choose to use a reusable cup and finally, there was one place that charged for the reusable cup but then made a discount on the coffee equivalent to the

price of the reusable cup, therefore, clients would pay the price they were used to. All places had environmental messages exposed but some did not have reusable cups or discounts.

The authors concluded that, in general, the sales of coffee with reusable cups increases, even when only environmental messages were shown. Comparing discount with charge, charging was way more effective. Poortinga and Whitaker (2018) also concluded that the Prospect Theory, which states that people are more sensitive to losses than to gains, applies to reusable cups. Customers are more likely to use a reusable cup to avoid paying extra for a disposable cup then getting a discount by using a reusable cup. This is also in line with some cases already presented of coffee shops which have been making discounts on drinks for people who bring their own reusable cup for years (e.g. Starbucks) with little results. Opposing this, a charge on the use of disposable cups might increase consumers' consciousness of this environmental problem and change their habits the same way charging for supermarket bags did.

Another interesting conclusion was that the two establishments with better results were the ones which combined charge or discount with the sale and distribution of reusable cups. This can be explained by the fact that people change their behaviour if there are convenient alternatives to help them change (Steg & Vlek, 2009).

Finally, the study tried to understand if using reusable cups would have negative impacts on the sales, especially in the cases when coffee shops were supposed to extra charge for clients who want disposable cups - one of the measures that left the coffee shop owners most concerned. The study came to prove that these concerns were unfounded as none of the measures had a negative impact on the number of drinks sold.

While there are a lot of studies focused on plastic bags, its social, environmental and economic impact, there is not so much literature focused on reusable cups, perhaps because of the novelty of the system. Considering that, this study aims to show, analyse and evaluate the environmental and economic impact of using reusable cups instead of disposable and the social consequences of the change of paradigm.

Chapter 3 – Research hypotheses and conceptual model

This research applies the study and the framework of Boiral, *et al*., (2013), presented in figure 1, to build part of the conceptual model of the present research., as it applies several concepts used throughout this dissertation, such as environmental values, OCBE's, PBC, environmental management practices and environmental performance. The Boiral *et al*., (2013) study shows the positive influence of OCBE's in environmental management practices, which in turn also influences environmental performance. The study also explores the role of environmental values and PBC in the implementation of OCBE's.

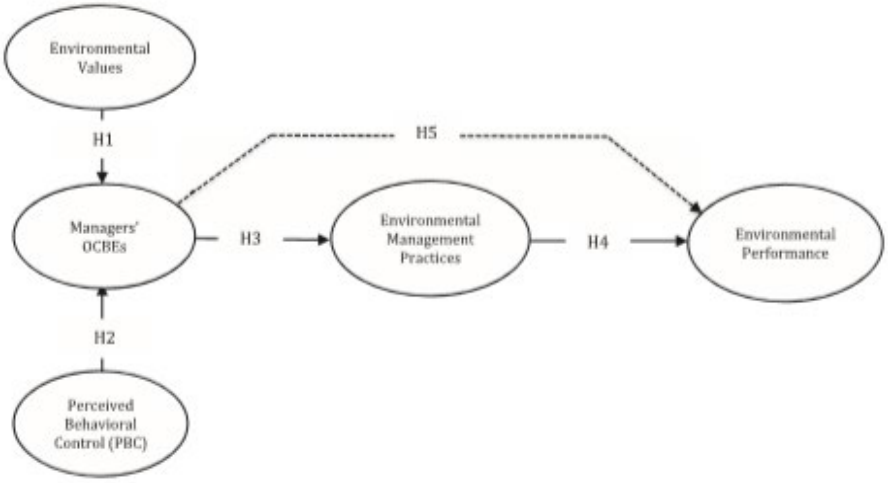

Figure 1: Framework of the study of Boiral, Talbot and Paillé (2013)

This model can be adapted and applied to the current study, considering OCBE's as all the small pro-environmental gestures that employees and owners of drink sale businesses apply (e.g., recycling). Moreover, in the current study, the concept "Managers" will be replaced by "Establishment owners and employees", and other constructs will be added, all of them presented in Table 4.

Furthermore, the conceptual model of this study also applies concepts and ideas explored by Poortinga *et al*., (2013), such as Behavioral Spillover Effect and the influence of the passage of time.

3.1. Research questions and hypotheses

After identifying the theories and framework of study and considering again the research questions already mentioned in the introduction, it is now possible to define the hypotheses.

RQ1: What are the main issues clients and employees are facing due to the use of reusable cups?

RQ2: What are the environmental benefits resulting from the use of reusable cups?

RQ3: How can the system of reusable cups be improved?

Table 3: Hypotheses and respective research questions

Hypotheses	**Research Questions**
H1 – The biggest barrier to the acceptance of reusable cups by the clients it is the extra cost of the cups.	1
H2 – The acceptance of reusable cups by clients is influenced by the number of establishments using the reusable cup system and the information available.	3
H3 -The clients' acceptance of reusable cups becomes easier over the time	1
H4 – The implementation of a reusable cup system positively influences clients to adopt other pro-environmental practices.	2
H5 – Establishments where reusable cups are used tend to adopt other pro-environmental practices.	2
H6 – Using a reusable cups system positively influences the amount of garbage on the streets resulting from the consumption of drinks.	2
H7 – The extra costs resulting from using reusable cups is less significant for environmental sensitive employees/ establishment owners.	1
H8 – The system of reusable cups can be improved through a better manager's perception of the economic impact: H8 a - The extra costs resulting for using reusable cups are not relevant for establishment owners and employees. H8 b – Using reusable cups does not affect sales.	3

3.2. Constructs of the conceptual model

Before moving to the development of a conceptual model representative of the current study, it is important to define and explain the constructs represented on the model.

Table 4: Constructs of the conceptual model

Construct	Explanation
Extra costs	This contract concerns the extra cost customers face for purchasing a drink in a reusable cup.
Influence of the passage of time	Customers need time to change their habits and become more acceptance of an environmental policy change after its implementation, when they start to experiment its benefits (Poortinga, *et al*., 2013).
Environmental values	This construct can be defined as a personal predisposition for the environment (Boiral *et al*., 2013).
Owners and employees' OCBEs	This construct regards the informal and individual pro-environmental practices performed, in this study, by employees and owners of establishments selling takeaway drinks (Boiral *et al*., 2013).
Perceived Behavioural Control (PBC)	This construct can be defined as the "*subjective degree of control over performance of the behaviour"* (Ajzen, 2002: 668)
Environmental Management Practices	This construct can be defined as formal and effective organizational level pro- environmental practices (Boiral *et al.*, 2013).
Behavioural Spillover Effect	This construct can be defined as a spread of effects from a certain behaviour to other related behaviours (Thøgersen, 1999).
Environmental Performance	According to Boiral *et al*., (2013) this contract results from managers' OCBEs influencing Environmental Management Practices which in turn influences Environmental Performance.
Smaller Environmental Impact	Environmental impact is defined as the effect caused by natural pressures which result of human activities and that lead to changes in the environment (European Commission, 2013).

3.3. Conceptual model

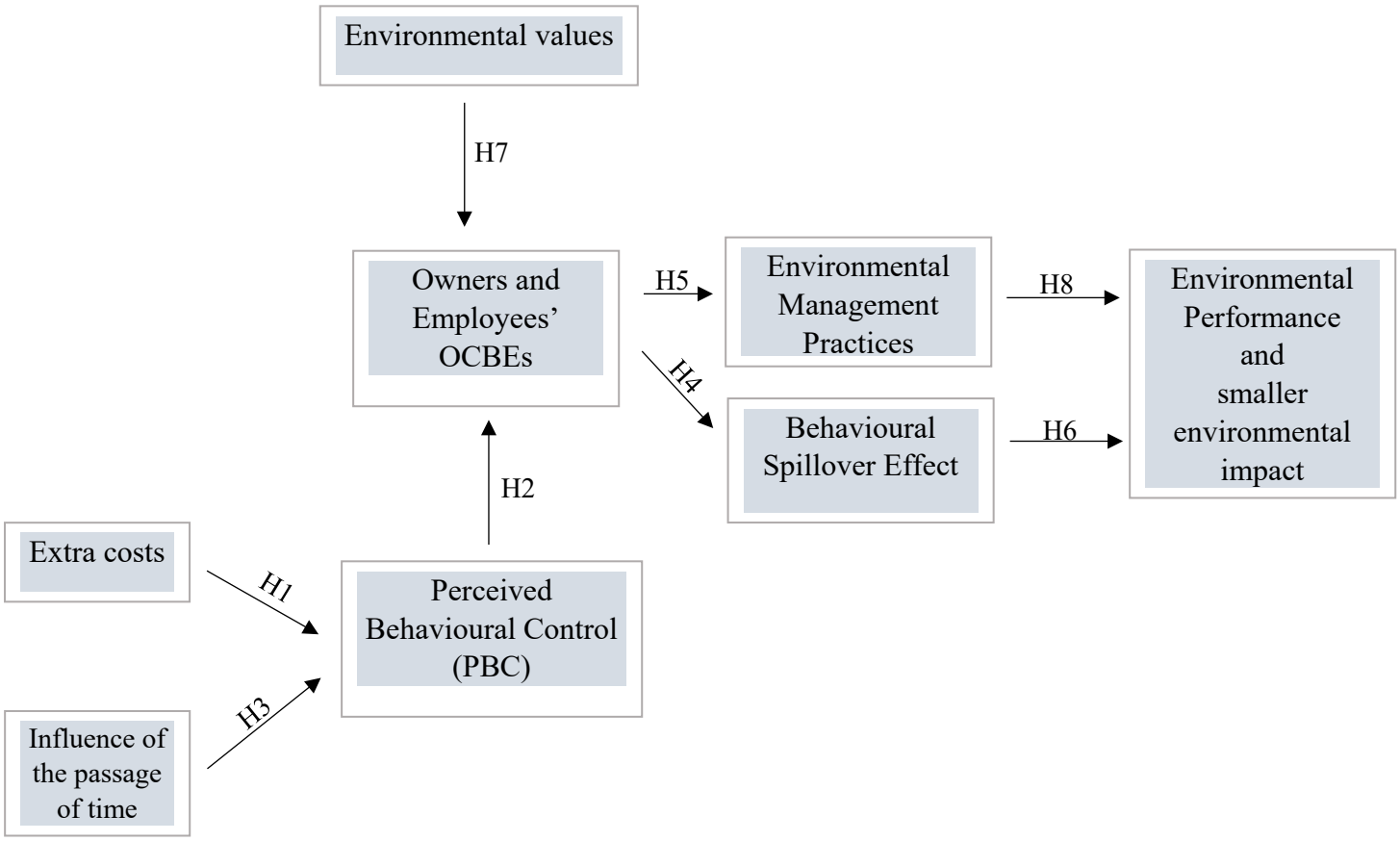

Figure 2: Conceptual model of the current study

Chapter 4 – Methodology

This chapter is divided in four sub-chapters. In the first it will be made a theoretical framework regarding the introduction of reusable cups in Lisbon. Then, the methodology of the study will be explained, starting by the Design Approach and followed by the Sample and the Data Collection Processes. The questionnaire structure will then be explained followed by the Data Analysis Methods.

4.1. Background of the study: the introduction of reusable cups in Lisbon

Currently, there are three main reusable plastic cups providers in Lisbon: *Lisboa Limpa, Super Bock* and *Sagres*. The three of them are presently delivering cups to all bars, restaurants, coffee shops and similar ones that would like to serve takeaway drinks in reusable plastic cups.

Lisboa Limpa is the main project of an environmental association called *Partícula Sustentável*, a Portuguese association created in February 2018 by Bianca Beyer. However, the project *Lisboa Limpa* was born even before, during the previous year[1], to create a city network of establishments selling drinks across Lisbon using its reusable cups. In this reusable cup system, customers can ask for a takeaway drink, consume it wherever they please and then return the cup to any establishment part of the network. To assure that customers do return the cup (or at least, do not throw it away, keeping it and taking it home is also an option). Using a reusable cup costs 1 euro, which will be returned when the cup is also returned. *Lisboa Limpa* has available three types of cups: 20, 25 and 50 centilitres.

Super Bock is one of the main producers of beer in Portugal. Together with the competitor *Sagres* account for 80% of the sales of beer in the country (Soares, 2019). As a beer provider of big events such as the music festivals *NOS Primavera Sound*, *Rock in Rio Lisboa*, *Super Bock Super Rock* and, *Meo Sudoeste*, and self-denominated as an eco-friendly brand, *Super Bock* has launched in 2016 an initiative of replacing disposable cups by reusable cups and, thanks to that, they claimed to have already reduced the usage of disposable cups by 3 million (Super Bock, 2019). For a few months now, *Super Bock* is also providing reusable cups for the establishments which sell the beer of the brand. Their reusable cup system works a little bit

[1] This information was given by Mrs. Bianca Beyer, the responsible of the project Lisboa Limpa.

different then *Lisboa Limpa*'s though, as *Super Bock* allows establishments to decide the conditions of returning the cup. Unlike *Lisboa Limpa*, in *100 Montaditos*, in Arco do Cego, for example, customers need to present a receipt, where the number of cups acquired in the restaurant is discriminated, and they only can receive the deposit stated on the receipt. Another example is the cups used by *Eclipse Bar* and *Grogs Bar* in Bairro Alto. Those two bars are owned by the same person and their cups can be returned only on these two bars. Apart from these differences, *Super Bock* reusable cups also cost 1 euro and are available in similar sizes.

To make sure that the number of cups returned correspond to the number of cups sold, and so, establishments do not lose money, some places decided to order their own reusable cups. Aware of this problem, *Super Bock* covers part of the costs of establishments which want their own cups, in exchange of using their logo in the design of the cups. It is the case of the already mentioned *Eclipse Bar* and *Grogs Bar*.

The reusable cup system of *Sagres* is very similar to the one of *Super Bock*. Such as its biggest competitor, *Sagres* also provides reusables cups to selling drinks establishments that cost 1 euro to customers and comes in the sizes of 25 or 50 centilitres. Moreover, *Sagres* also let establishments decide if they accept the return of any cup of *Sagres*, or if they only accept cups purchased on the establishment itself. The beer company also provides their reusable cups for big events, such as, for example, the Popular Festivals of Lisbon (Santos Populares de Lisboa), for which, according to Marketeer (2018), the company and the organizers of the festivals have a partnership until 2020.

When it comes to events, *Lisboa Limpa* only provides its cups to small events due to their limited capacity of washing, collecting and storing big amounts of cups[2].

Apart from these three reusable cups providers, there are also other smaller more recent initiatives, such as *Noite Limpa*, a project of the parish council of Misericórdia. This parish includes some of the most bohemian quarters of Lisbon, such as Bairro Alto, Cais do Sodré and Bica. Therefore, this initiative intends to reduce the number of disposable cups consumed in these neighbourhoods, starting by Bairro Alto. On specific nights advertised on the facebook of Noite Limpa (@noitelimpa) there are available in some locations reusable cups to sell, that visitants of Bairro Alto can buy for 1 euro and then return them until 3:15 am (closing time of the bars of Bairro Alto) receiving back their money. This system is very similar to the one

[2] This information was given by Mrs. Bianca Beyer, the responsible of the project Lisboa Limpa.

applied by *Lisboa Limpa, Sagres* and *Super Bock*, with the difference that drinks and cups are purchased in different locations, which, in one hand creates smaller queues, but in another, implies that people need to go to two places, instead of one, just to buy a drink.

Another initiative of reusable cups already very known by the public is *Outjazz Festival*. This festival lasts for 5 months during which the attendees of the festival can use and reusable the cups being sold by the several operating bars and restaurants for 1 euro.

Supporting and encouraging these initiatives, the municipality of Lisbon announced in the beginning of 2019 that establishments selling drinks which use disposable cups must replace them until the end of the year. Establishments are not obliged to use reusable plastic cups, they can also use glass cups or forbid the consumption of their drinks outside. According to Duarte Cordeiro, deputy mayor, the non-compliance with this law will lead to application of fines ranging from 150 EUR to 15.000 EUR (Pincha, 2019).

The EU is also acting upon this issue. The European Parliament approved on March 2019 that from 2021 on it is forbidden to sell disposable plastic products for which there are alternatives for in the market, such as "*dishes, cutlery, swabs, straws, beverage stirrers, balloon sticks, oxo-degradable plastics products and containers for food and beverages of expanded polystyrene*" (Agência Lusa, 2019). Moreover, this EU directive also stands that every member-state should reduce the consumption of single-use plastic, such as food containers and plastic cups. (Agência Lusa, 2019).

Due to the great amount of initiatives and availability of reusable cups; the news about the consequences of using disposable plastic for the planet, so popular on media; and finally, due to the legislations EU and the municipality of Lisbon announced to implement within the next months, there is a lot of pressure on drink sale businesses to adopt a system of reusable plastic cups. Therefore, this study will focus directly on them.

4.2. Design Approach

This exploratory study addresses the research questions by providing an overview of the selected employees and owners of establishments selling takeaway drinks in Lisbon perceptions, as regards the reusable cup system. Thus, it was applied a semi-structured questionnaire focused on the issues clients and employees face when using reusable cups, the consequences of its usage (social, environmental and economic) and how the system can be

improved. Quantitative data are leveraged in this analytical exploratory study, although the study's paradigm is interpretative. This approach allows to capture a lot of details and to gain an in-depth understanding of the reasons, motivations and difficulties of using reusable cups, which is very useful in an exploratory research. Moreover, studies in the social sciences field show that a qualitative research methodology has both practical and investigatory value (Krippendorff, 2004). Furthermore, the research follows a grounded approach, process illustrated in table 5.

4.3. Sample and Data Collection

According to the Business Dictionary, in statistics, a sample is a limited number of observations, selected from the target population, and from which, conclusions regarding the whole population can be taken. In this study, the target population, that is, the group from which the sample will be drawn, comprehends all the establishments in Lisbon which use plastic reusable cups for more than a week to serve takeaway drinks to their clients. This minimum time of usage was selected considering that, in one week, establishment owners and employees will be able to serve and receive reusable cups for more than once.

In this study was used a non-casual sampling method, drawn by convenience and proliferation (snowball) because it was not possible to obtain lists of the establishments using reusable cups from the respective providers (only from *Lisboa Limpa*). The main restriction of this method is that the resulting sample is non-representative and therefore it is not possible to extrapolate the research outcomes and conclusions. Nevertheless, according to Hill and Hill (2008), this sort of sample is suitable for academic studies and it is preferable to use it to obtain a good research, albeit in a restricted scope, then to undertake a weak, large-scale inquiry because of restricted time and resources.

Therefore, 50 questionnaires were collected. This number was determined based on the maximum number of cases possible to collect considering that participants must work in an establishment where plastic reusable cups are being used for more than a week. The data collection process is illustrated in table 5.

Before starting phase one, it was conducted a pretest to understand if any question was not clear. It also allowed to add some answers to the answer set available for each question, making the fulfilling of the questionnaire easier and faster for the respondents.

Table 5: Data collection process

1st phase	I tried to obtain a list of places with reusable cups from *Super Bock*, *Sagres* and *Lisboa Limpa*'s websites.
2nd phase	As *Sagres* and *Super Bock* did not have that information available, I messaged them on Facebook.
3rd phase	As I did not receive any answer from *Super Bock* and *Sagres*, so I started by visiting the places using *Lisboa Limpa* cups.
4th phase	After collecting information from all the places using *Lisboa Limpa* cups, I visited the places where people usually drink outside and so it was likely that some of those establishments would be already using reusable cups (eg: Bairro Alto, Cais do Sodré, Santos).
5th phase	When visiting neighbourhoods known for the consumption of the drinks outside, I asked to the owners and employees if they knew about other places where reusable cups were already being used, which lead me to other establishments I did not know about.
6th phase	Finally, I asked friends and relatives about establishments with reusable cups they knew about.

4.4. Questionnaire structure

The data collection method applied for this study was a questionnaire with several types of questions, such as multiple-choice, five-point response scale and, yes or no questions. Most of the questions and options of the multiple-choice were made considering the two-month experience provided by an internship with the association *Lisboa Limpa* where the author had the chance to contact with bar owners and employees where reusable cups of the association were being used. Despite this, to make sure that all the issues were being addressed, most of the questions had the option "other" where respondents were encouraged to give their opinion regardless of the options of answers provided. As the questionnaires were made personally, some observations were also added to the answers to make of the collected material as complete and detailed as possible.

The survey starts with an introduction where respondents are informed that the questionnaire is part of an academic study with the purpose of obtaining a master's degree in International

Management at ISCTE Business School. Secondly, the objectives of the study are briefly described and finally, confidentiality and anonymity are ensured to all participants.

The survey was divided in four sections: Socio-demographic characterization of the respondent and the establishment; social impact; environmental impact and economic impact.

The first section intended to collect data on the respondent with 5 questions including: age, gender, academic qualifications, work function and the amount of time the respondent has been working in the establishment. The first section also intended to collect data on the establishment with several questions including: the number of employees, the type of establishment, the brand of the reusable cups used and, the amount of time using the cups.

The second section was regarding the social impact of using reusable cups in Lisbon and intended to measure the acceptance of reusable cups by consumers during this early stage of utilization. Several questions were made to address the acceptance of cups by employees and clients and what were their difficulties.

The third section concerned the environmental impact and intended to study if there were benefits resulting from using reusable cups, namely in terms of reduction of usage of disposable plastic, cleanliness of areas affected by disposable plastic pollution and increase of environmental awareness.

The fourth section intended to measure if the use of reusable cups impacted on the costs and sales of businesses, and if so, how significant is that impact.

Finally, the last question of the questionnaire intended to find out how reusable cups systems in Lisbon can be improved. The full questionnaire is available in the annexes.

4.5. Data analysis methods

After grouping the qualitative and quantitative data collected, the information will be studied. The results obtained in each question will be presented through bar graphs, pie charts, tables and crosstabulations. To perform the crosstabulations, the program Statistical Package for the Social Science software (SPSS) version 24 will be used. Then, conclusions will be drawn.

Chapter 5 – Results and Discussion

The questionnaire made for this study starts with a sample sociodemographic characterization, followed by three sections: social, environmental and economic impact. It ends with a question asking respondents to reflect on how the reusable cups systems in Lisbon can be improved.

The structure of chapter five follows the same order. After the presentation of the data regarding the social, environmental and economic impact, the hypotheses will be analysed, and conclusions will be drawn.

5.1. Sample's characterization

This study was limited to individuals older than 16 currently working for establishments selling takeaway drinks in reusable cups in Lisbon. Establishments should be working with the reusable cups for more than a week to be part of the study. In this section, the respondents and the establishments where they work will be described.

5.1.1. Respondents' characteristics

The data collected about the respondents includes age, gender, level of education, work function and the amount of time the respondent has been working in the establishment. The following graphs illustrate that data.

From the 50 respondents, no one was under 18; 24 people had ages comprehended between 18 and 30 (48% of the sample); 16 had ages comprehended between 31 and 40 (32% of the sample); 9 had ages comprehended between 41 and 60 (18% of the sample) and finally, one respondent was over 60 (2% of the sample). Reporting to gender, 36 respondents are men (72%) and 14 respondents are women (28%). These results are represented in figure 3 and 4.

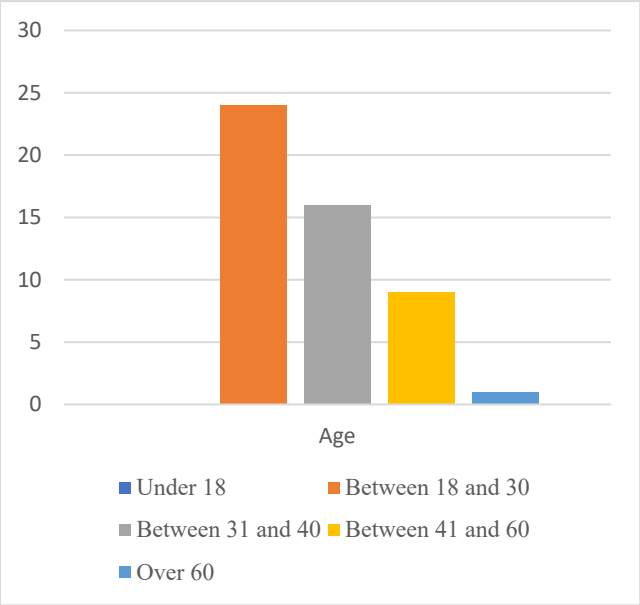

Figure 3 – Age of respondents

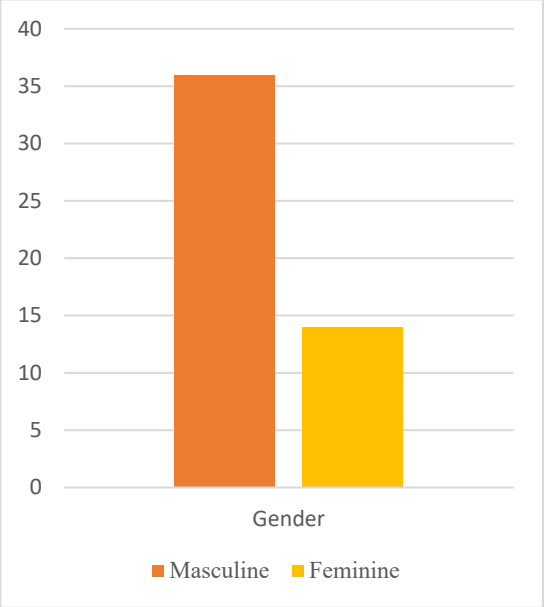

Figure 4 – Gender of respondents

To access the education level of the respondents, it was asked about their highest completed level of education. As shown in figure 5, most of the respondents did not study further than high school: three respondents only attended basic school (6% of the sample), whereas 31 finished high school (62% of the sample). Eleven respondents finished their bachelor (22% of the sample) and only five people continued their studies: three finished a post-graduation and 2 finished their masters. No one inquired had a doctorate degree.

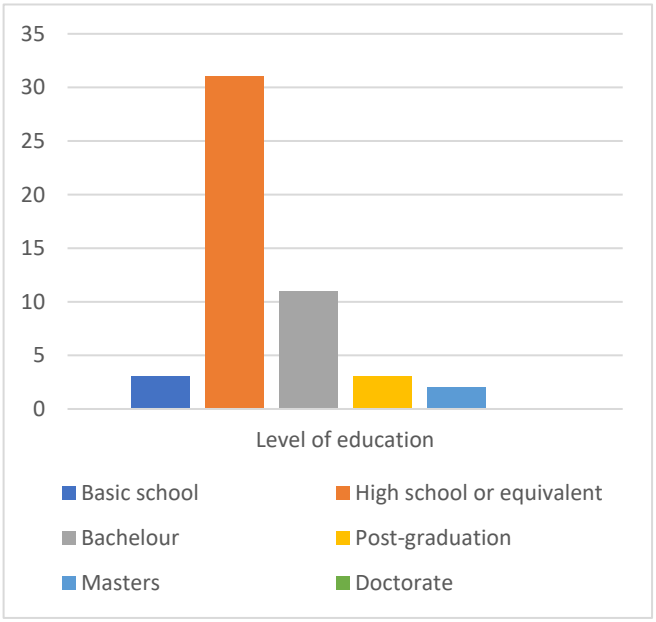

Figure 5 – Academic qualifications of the respondents

When it comes to working experience and job function, figure 6 shows that half of the respondents have been working in the establishment where they were inquired between one and five years. Regarding the other half, 16 respondents have been working there for less than one year (32% of the sample) and 9 have been working there for more than five years (18% of the sample).

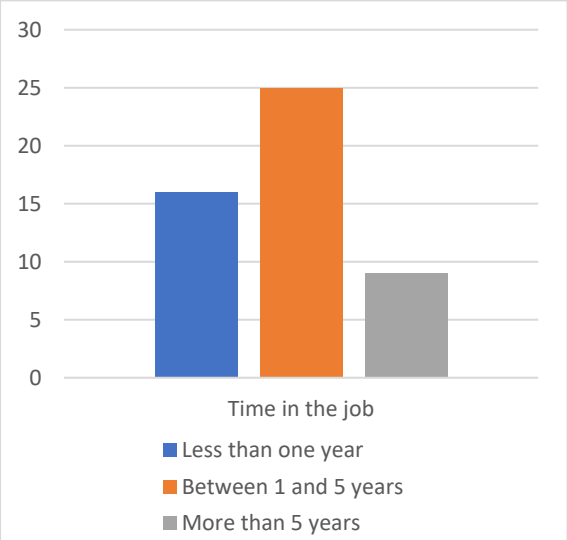

Figure 6 – Time in the job

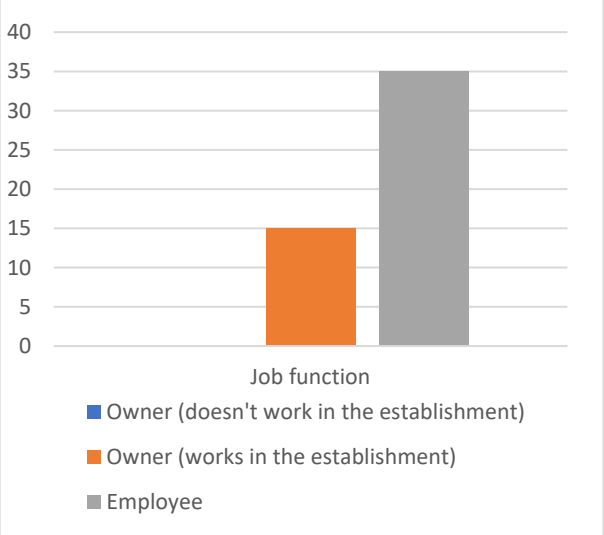

Figure 7 – Job function

Figure 7 shows the functions of the inquired people: 15 were establishments owners working in the establishment (30% of the sample) and 35 people were employees of establishments (70% of the sample). No one inquired was an establishment owner not working in the establishment.

5.1.2. Establishments' characteristics

The data collected about the establishments includes information about the number of employees, type of establishment, brand of the reusable cups used and amount of time the establishment is using reusable cups. This information is illustrated in the following graphs.

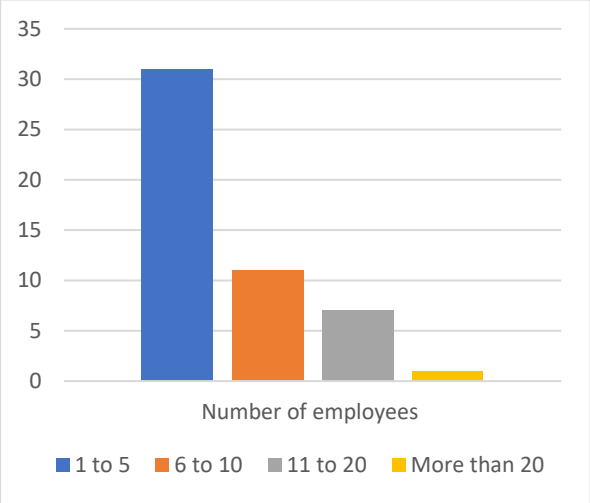

Figure 8 – Number of employees

Figure 8 shows that most of the inquired individuals (31 respondents) work in small establishments (1 to 5 employees), which corresponds to 62% of the sample. The remain 38% is distributed between the category "6 to 10 employees" (11 respondents), which corresponds to 22% of the sample; the category "11 to 20 employees" (7 respondents), which corresponds to 14% of the sample. Finally, only one establishment inquired has more than 20 employees.

It is also important to characterize the type of establishment that uses reusable cups in Lisbon. Figure 9 address this quest. In the question "In what kind of establishment do you work?", respondents could select more than one option, in case the establishment could be considered the combination of several kinds of places. To attribute only one category per establishment, two new categories were created: "Bar & Restaurant" and "Bar & Coffee shop".

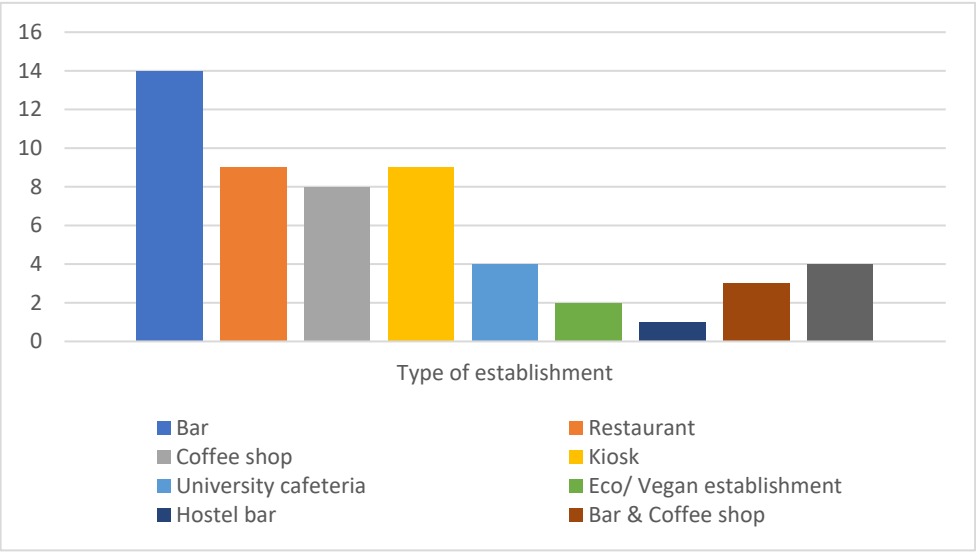

Figure 9 – Type of establishment

Most of those places (14 establishments) are bars, which corresponds to 28% of the sample. Followed by kiosks and restaurants (9 establishments each) and which corresponds to 18% of the sample each. Closely followed by coffee shops (8 establishments) and which corresponds to 16% of the sample. Three places are both bars and coffee shops, which corresponds to 6% of the sample, and four places are both bars and restaurants, which corresponds to 8% of the sample. University cafeterias are already using reusable cups as well (4 places), which corresponds to 8% of the sample. Finally, two places were classified as a special type of restaurant/ coffee shop: "eco/ vegan place", which corresponds to 4% of the sample and one place was classified as a special type of bar, as it belongs to a hostel and so, called in this study "hostel bar".

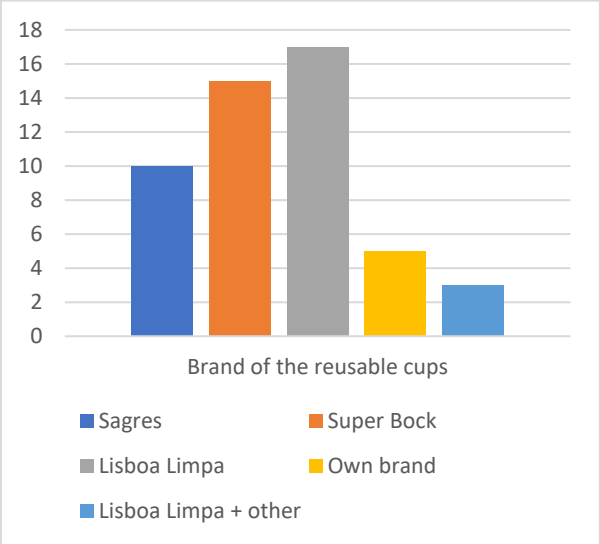

Figure 10 –Brand of the reusable cups

Figure 10 shows the brand of reusable cups used in the establishment of the respondents. Because some places work with more than one brand, an extra category was added after analysing the data: "*Lisboa Limpa* + other". Not surprisingly, the establishments working with *Lisboa Limpa* are the majority (17 places exclusively and 20 when counting with the places that work with *Lisboa Limpa* plus another brand), which corresponds to 34% and 40% of the sample respectively.

This result was expected, as *Lisboa Limpa* is the only one of the three-cup providers' that discloses a list of places which use their reusable cups. As previously mentioned, that list had a considerable influence in the data collection process. Right after *Lisboa Limpa*, *Super Bock*

works with 15 establishments of the sample, which corresponds to 30%. *Sagres* works with 10 places, which corresponds to 20% of the sample.

Finally, five establishments work with their own brand. This is curious considering that, at least during this initial phase, establishments did not have to pay for the cups. When asked to the respondents why they preferred to order and pay for their own reusable cups instead of just working with one of the three brands for free, the answers were very similar: because they do not want clients to return cups that were not acquired in their establishment. Moreover, they are afraid that if they accept all cups, that will make them lose money.

To measure the level of experience of the establishments, the question "How long have you been using the cups" was made to employees and establishment owners. Were given the options "Less than three months" and "Three months or more", these options were selected based on what Lisboa Limpa considers "the test phase", an adaptation period of three months during which establishments do not need to financially contribute to the project.

According to the results shown in figure 11, 11 places (22% of the sample) started using reusable cups less than 3 months ago, therefore, very recently.

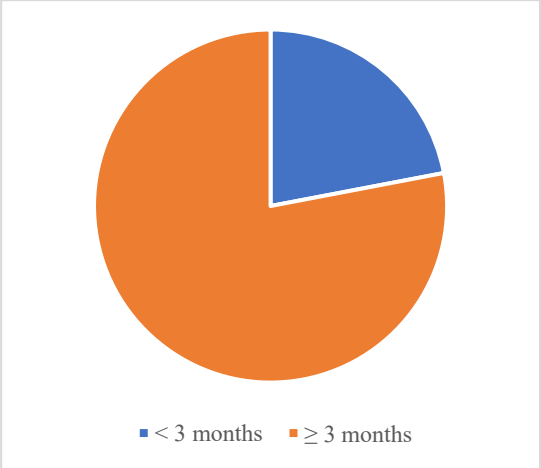

Figure 11 – Reusable cups' time of utilization

In another hand, most of the establishments (39 places) are using the reusable cups for more than three months. The fact that 78% of the sample is using the cups for quite a few months, should positively influence the opinion and facility on using reusable cups by respondents, as people become more accepting of an environmental policy change when they start to experiment its benefits. (Poortinga, *et al*., 2013).

Nevertheless, based on the feedback collected from some respondents, this period seems to be too short. For example, *Restaurante 4 Estações* consider themselves to still be in "test phase" although they are using reusable cups for more than three months. Also, university cafeterias, such as one from ISCTE-IUL University and another from IADE claim that students still do not want to use reusable cups although they are trying to implement them for more than three months. *Gelataria Davvero* in Cais do Sodré, where reusable cups are being used for more than three months, explained that clients complain about the use of disposable recipients for ice cream but at the same time do not want to use reusable cups.

5.2. Social Impact

In this section will be presented and analysed the data related to the social impact of using reusable cups through pie charts and bar graphs. Then the social related hypotheses will be tested.

Usage of disposable cups

For the question: "*Do you simultaneously use reusable and disposable cups*?" Most respondents (35 people) answered positively (70% of the sample) while 15 people (30% of the sample) answered that they only use reusable cups (see figure 12).

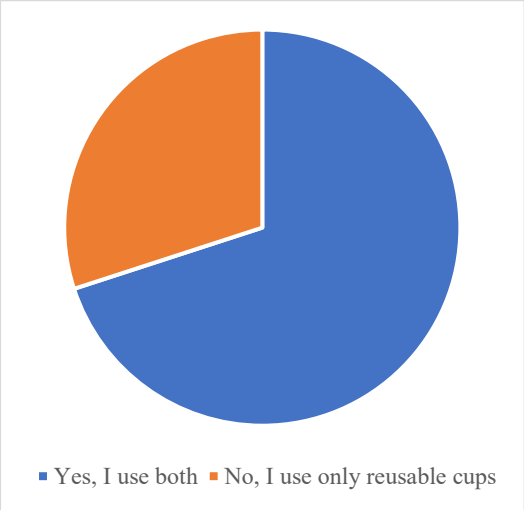

Figure 12 – Usage level of reusable cups

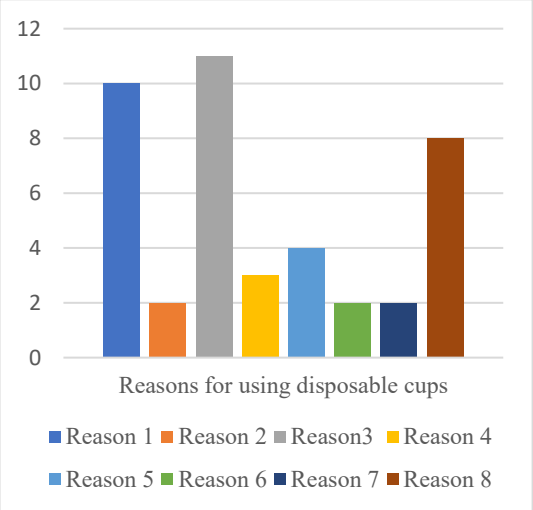

Figure 13 – Reasons for using disposable cups

When asked why employees and establishment owners still use disposable cups, several options were given to the respondents:

1 - *During rush hours it is not possible to explain and charge for the use of reusable cups;*

2 – *During rush hours it is not possible to receive the cups back and give back the extra money charged for the cups;*

3 – *Some clients refuse to use reusable cups;*

4 – *I still have disposable cups in stock to use;*

5 – *To serve hot drinks such as coffee;*

6 – *Disposable cups are useful to serve the last drink and send people away;*

7 – *To serve specific drinks, which because of the size or the brand, can't be served on a reusable cup;*

8 – Other reason. Which one?

Respondents could select more than one option and also write down another answer that was not considered in the answer alternative set using the section "other reason".

According to figure 13, the most relevant reasons identified by respondents were options 1 (10 respondents selected it) and option 3 (11 respondents selected it) and also the option "other reason", selected by 8 respondents. The reasons added in the section "other reasons" were:

"*While the system is not universal, it is not possible to stop using reusable cups for financial reasons*"

"*For serving juice, since there are not cups of that size*"

"*It is not a practical system and we are not used to the system and nor the clients are*"

"*The majority of our clients are tourists and therefore don't know the system*"

"*For special events*"

"*When I'm missing reusable cups*".

Difficulties of implementing reusable cups – establishment level

After the socio-demographic questions, it was asked to the respondents to classify the difficulty level on implementing reusable cups in their establishments and what were the main difficulties of this process. The results are shown in figures 14 and 15.

Figure 14 shows that most of the respondents do not find the process of implementing reusable cups easy or difficult (17 people), result closely followed by 14 respondents, who consider the process very easy and 11 who consider it easy. A small minority finds the process difficult (4 people) and very difficult (2 people).

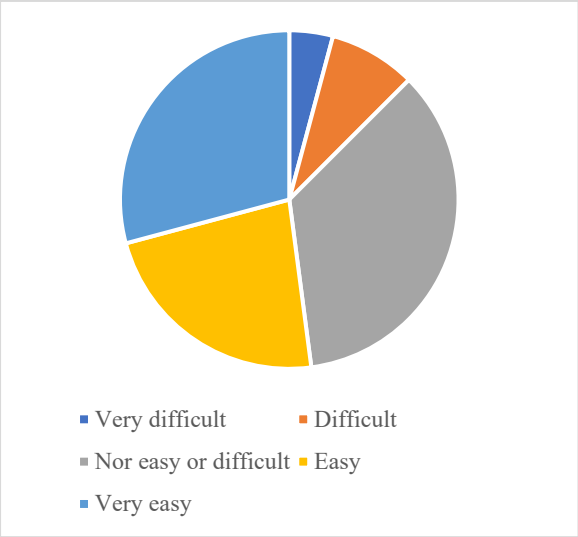

Figure 14 – Difficulty level of implementing reusable cups

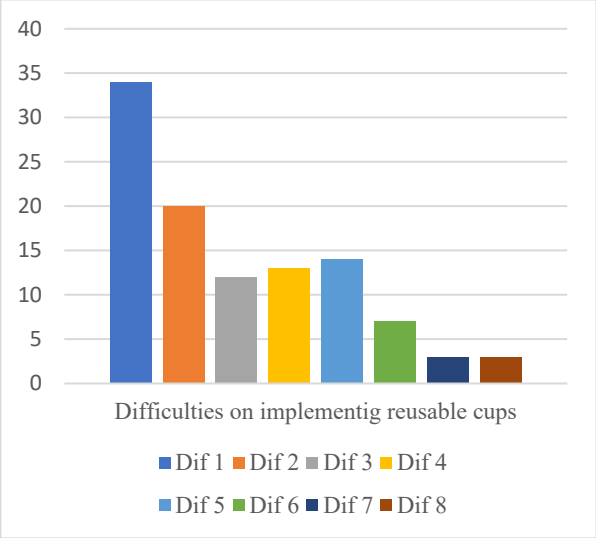

Fig.15 – Difficulties of implementing reusable cups

Although these results show that the process cannot be considered difficult, it still matters to find out what are the main difficulties identified by respondents. Therefore, the results of the question "*What are the main difficulties you found when implementing reusable cups*?" are shown in the graph of figure 15. There were a set of 7 answers available to the respondents, four of those directly related with the customers and four of them related to the establishment itself, those were:

1 - "*Clients don't want to use reusable cups because of the extra cost*"

2 - "*Clients don't want to use reusable cups because they don't consider practical to have to give back the cups when they finish drinking or alternatively carry them home*"

3 - "*Clients do not want to use reusable cups because they don't have enough money to pay for the cup*"

4 - "*Clients are not informed about the reusable cup system and it's not convenient to explain the system to every new client*"

5 - "*As the money paid for the cup is a deposit, it is not possible to register that money in the cash register, which makes it difficult to control the money*"

6 - "*The cleaning management of the cups that are given back*"

7 - "*The costs associated with cleaning the cups*"

8 – *"Other difficulty. Which one?"*

Respondents could select more than one option and write down another answer that was not considered in the answer alternative set, using the section "other difficulty". The difficulties added in this section were:

"*The fact that there are still available disposable cups, makes harder the adaptation to the reusable ones*"

"*Beer loses gas when served in reusable cups*"

"*Lack of small money*"

The results are represented in the graph of figure 15.

The biggest difficulty for respondents when implementing a reusable cup system is clearly the fact that clients do not want to pay extra for using reusable cups, an option selected by 34 respondents. Having to give back the cups to get the deposit back or carry it home is something clients clearly do not like, and the second answer respondents selected the most (20 people). Three answers had similar a number of votes: the number five was selected by 14 respondents; the number 4 was selected by 13 respondents and the number 3 was selected by 12 respondents. Finally, the two options related to cleaning management were the least selected (answer 6 was selected by 7 people and answer 7 was selected by 3 people).

Since the most selected difficulties of the respondents when implementing reusable cups were directly related to clients, it is relevant to focus now on the acceptance of reusable cups by clients and what are their main difficulties.

Still to analyse the difficulties of implementing reusable cups, it was asked to respondents to classify a set of sentences from 1 to 5, from totally disagree to totally agree.

The sentences presented for the respondents to classify were:

1 – *Some clients specifically ask to use reusable cups.*

2 – *Over time, serving my clients using reusable cups becomes easier.*

3 – *The acceptance of reusable cups by the clients tends to increase due to the growing number of establishments using a reusable cup system and information available.*

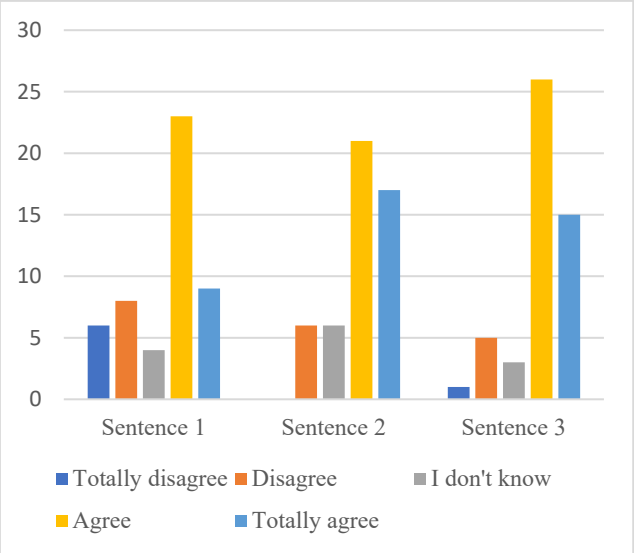

Figure 16 – Social impact related sentences

Looking at figure 16, it can be concluded that for both three sentences the answer "agree" stands up: in sentence one selected by 23 respondents; in sentence two selected by 21 respondents and in sentence 3 selected by 26 respondents.

Difficulties of implementing reusable cups – client level

After analysing the difficulty level of implementing reusable cups at an establishment level, it was asked to respondents to classify the acceptance of reusable cups by their clients in a scale of 1 to 5. Being 1 very difficult and 5 very easy. Then, respondents had to identify the biggest

difficulties for their clients on the adaption to the reusable cups system. Results are shown in the graphs of figures 17 and 18.

The graph of figure 17 shows that the acceptance of reusable cups by clients varies a lot in each establishment. The majority (16 respondents) say that the adaptation was easy, however, closely followed by 12 respondents, saying that it was difficult, and other 12 saying it was not easy nor difficult. Although these results do not allow to take any conclusion it so does the results of the next question (see figure 18).

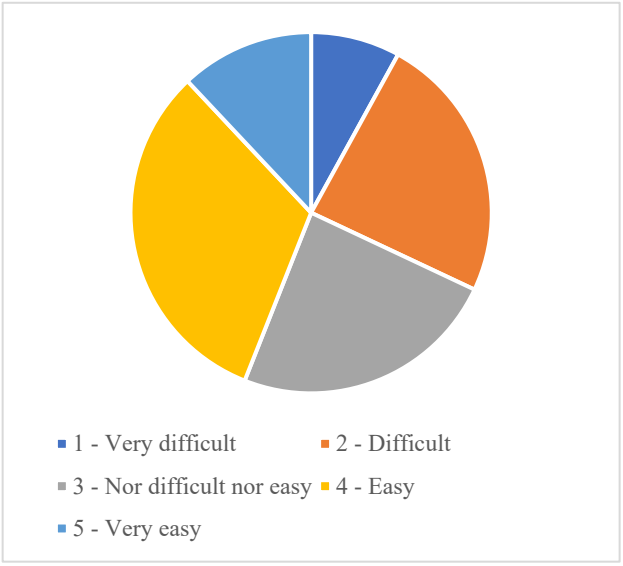

Figure 17 – Difficulty level of using reusable cups for clients

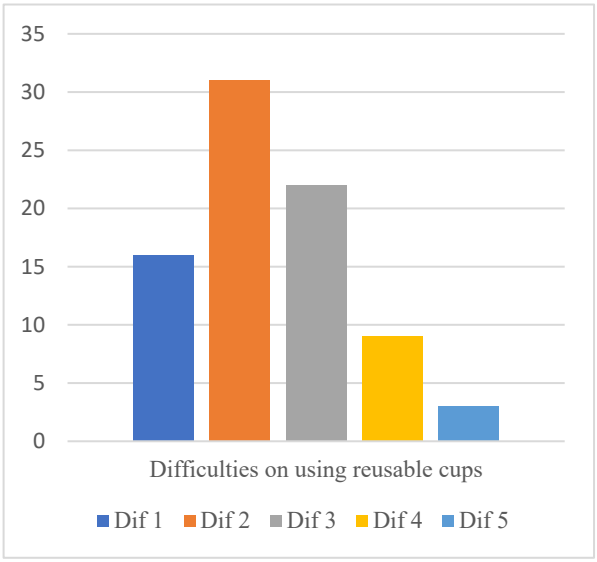

Figure 18 – Difficulties on using reusable cups for clients

When asked what the main difficulties were on using reusable cups for their clients, the set of options available were:

1 – "*The lack of information*"

2 – "*The extra cost of the drink*"

3 – "*The extra effort of giving back the cup*"

4 – "*Clients don't consider reusable cups hygienic*"

5 – "Other difficulty. Which one?"

The option "other" was also available for this question. Which originated the following extra answers:

"*Clients don't believe this project will actually help the environment*"

"*Clients see that the establishment still uses disposable cups and ask to be served in one*"

"*Beer is out of gas*"

By analysing the graph of figure 18 it can be concluded that cost is what bothers the most clients when using reusable cups (option selected by 31 respondents), followed by "the extra effort of giving back the cup" (option selected by 22 respondents); lack of information comes in third, selected by 16 respondents and finally, the lack of hygiene perception comes at last with 9 responses.

5.2.1. Testing social impact hypotheses

Considering the analysis made in the previous section, it is now possible to conclude if the social hypotheses are valid or not.

5.2.1.1. Testing H1 – The biggest barrier to the acceptance of reusable cups by the clients it is the extra cost of the cups.

The graph on figure 18, presented above, shows that the extra cost of the cup is the option that respondents most identified as the biggest difficulty in the acceptance of reusable cups for clients. This option was selected by 31 respondents (62% of the sample), result quite distant from the second most selected answer "the extra effort of giving back the cup", option selected by 22 respondents (44% of the sample). Thus, this hypothesis is valid.

5.2.1.2. Testing H2 – The acceptance of reusable cups by clients is influenced by the number of establishments using the reusable cup system and information available.

It was asked to respondents to classify the sentence "The acceptance of reusable cups by the clients tends to increase due to the growing number of establishments using a reusable cup

system and information available" from 1 to 5, being 1 totally disagree and 5 totally agree. The results were previously shown in the graph of figure 16.

Analysing the graph of figure 16, it is possible to observe the predominance of the answer "agree", with 26 respondents selecting it, which corresponds to 52% of the sample. If the results "agree" and "totally agree" are summed, then 41 respondents (82% of the sample) agrees or totally agrees that "the acceptance of reusable cups by the clients tends to increase due to the growing number of establishments using a reusable cup system", therefore H2 is valid.

5.2.1.3. Testing H3 -The clients' acceptance of reusable cups becomes easier over the time

It was asked to respondents to classify the sentence "Over time, serving my clients using reusable cups becomes easier" from 1 to 5, being 1 totally disagree and 5 totally agree. The results were shown in the graph of the aforementioned figure 16.

Analysing the graph of figure 16, it is possible to observe that two answers stand up. "Agree" was selected by 21 respondents (42% of the sample) and "Totally agree" was selected by 15 people (30% of the sample). Summing these results, then 36 respondents (72% of the sample) "agree" and "totally agree" that over time, serving clients using reusable cups becomes easier. Therefore, H3 is valid.

5.3. Environmental Impact

In this section will be presented and analysed the data related to the environmental impact of using reusable cups through pie charts, bar graphs, and frequency tables. Then the environmental-related hypotheses will be tested.

Disposable cups spared

It is difficult to access the total number of disposable cups that have not being used due to the introduction of reusable cups, however, as an attempt to have a close idea, it was asked to respondents how many disposable cups they estimate to have been spared in their

establishments due to the use of reusable cups. To make the question easier for respondents, the set of answers provided were numerical intervals:

1 – "*Between 0 and 10*"

2 – "*Between 11 and 100*"

3 – "*Between 101 and 500*"

4 – "*Between 501 and 1000*"

5 – "*Between 1001 and 5000*"

6 – "*Between 5.001 and 10.000*"

7 – "*More than 10.000*"

The results of this question are illustrated in table 6.

Table 6 - Frequencies table for spared cups

Spared cups number	**Mean of classes**	**N**	**Mean x N**
[0,10]	5	5	25
[11,100]	55,5	7	388,5
[101,500]	300,5	9	2704,5
[501,1000]	750,5	7	5253,5
[1001,5.000]	300,5	12	3606
[5.001,10.000]	7500,5	6	45003
>10.000	-	4	4000
Total	-	50	60.980,5

To estimate the number of disposable cups spared until the time of this data collection, first, the mean of each class was registered in the column "Mean of class", then the number of occurrences for each class was registered in the column "N". Finally, in the last column, the means were multiplied by the occurrences. Totals are shown in the last line of the table. As it

could not be calculated the mean for the variable "More than 10.000", it was assumed the number 10.000, although the real number is superior. Therefore, as the final result has a margin of error by defect, it is safe to round the number 60.980,5 to 61.000.

Abandoned reusable cups

Sparing 61.000 disposable cups and replacing them by reusable ones, is only a beneficial action for the environment if reusable cups are indeed reused. Dispose of them or abandon them after one usage is even worse than using disposable cups. Therefore, it is also important to analyse the perception of respondents towards the litter generated by the reusable cups and what do they do about that.

As can be observed in the graph of figure 19, most of the respondents (30 people) do not find abandoned reusable cups, which can be interpreted as sign of less litter in the streets derived from consuming takeaway drinks. In figure 20, it was asked to the respondents who find reusable cups (20 people) what do they do when that happens. Fortunately, 11 out 20 people collect, wash and reuse them. Eight respondents do not do anything because they do not consider it hygienic.

Figure 19 – Perception of respondents towards abandoned reusable cups

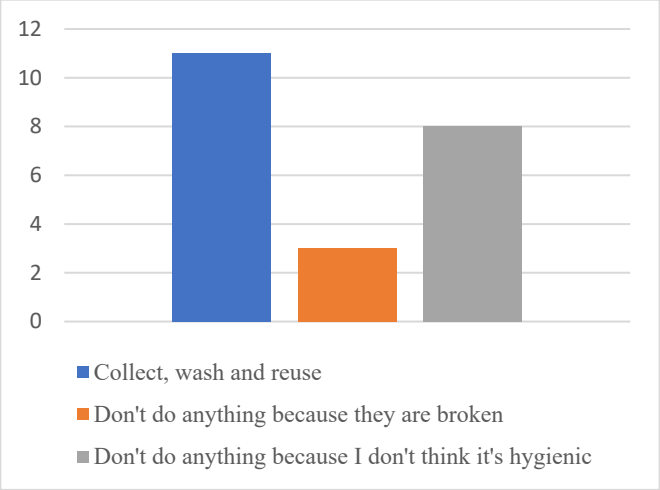

Figure 20 – Behaviour of respondents towards abandoned reusable cups

The main health risk related to reusable cups concerns the lack of proper sanitation, which ideally should be done right after using. According to Medical Xpress (2018) cups left unwashed until just before the next use represent a substantial source of contamination, as the residues remaining in the cups are a good source of nutrients for bacteria that can quickly increase during storage. However, reusable cups can be washed in a dishwasher. According to Ebner, Eitel, Scherrer and Daschner (2000) household dishwashers are capable of cleaning and disinfecting, when able to achieve 71 degrees Celsius – which most modern household dishwashers can, therefore, it is safe to collect abandoned reusable cups if properly cleaned in a washing machine with high temperatures before reusing.

Finally, a small minority, three respondents, do not collect abandoned reusable cups because they are broken.

The durability of reusable cups

If reusable cups only have a smaller environmental impact than disposables if reused, it is also important to understand about the durability of its material and in which conditions are they being returned.

To access that information, it was asked to respondents if they ever received damaged reusable cups. To the ones who answered yes, it was asked how often. Results are shown in the graphs of figures 21 and 22.

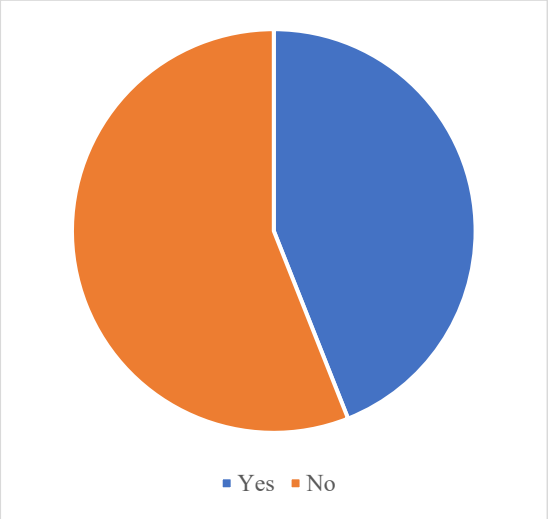

Figure 21 – Reusable cups damaged

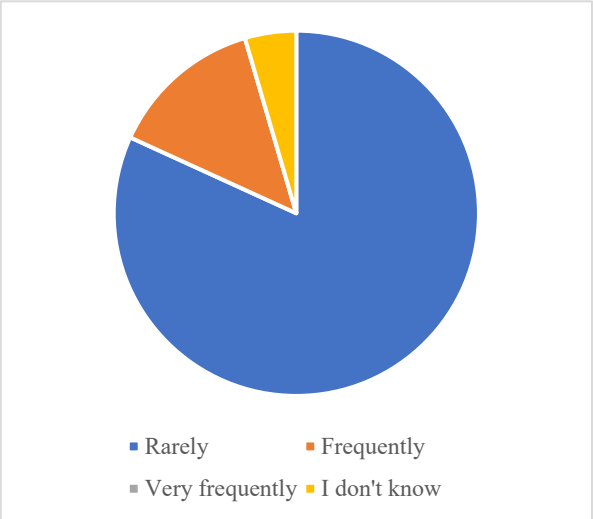

Figure 22 – Regularity of damaged reusable cups returned

Looking into figure 21, it is possible to conclude that the "No" had more answers (28 respondents) then the "Yes" (22 respondents). As the difference between the two results is very small, figure 22 shows the frequency of this occurrence. Most of the respondents answered "Rarely" (18 respondents), followed by the answer "Frequently" choose by only 3 people and finally, only one person said to not know the regularity of this occurrence. Also matters to add that no one answered: "Very Frequently".

Environmental consciousness

It was asked to respondents to classify six sentences from one to five, being one "totally disagree" and five "totally agree" to access their level of agreement. The sentences presented for the respondents to classify were:

1 – *Some clients show environmental concerns that go beyond the use of reusable cups.*

2 – *The implementation of reusable cups increases the environmental consciousness of consumers and so the interest in other ways of consuming more ecologically.*

3 – *I'm opened to adopt other pro-environmental measures in my establishment.*

The results are shown in the next figure.

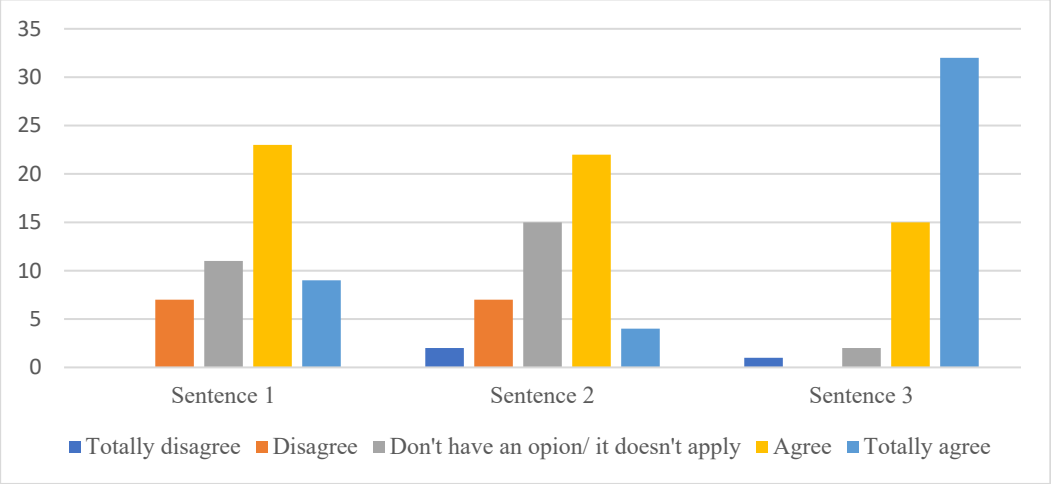

Figure 23 – Classification of environmental sentences

Figure 23 shows a predominance on the answers towards the yellow bar, in the first two sentences, which corresponds to the option "agree". Regarding the third sentence, most respondents (32) answered: "totally agree".

Environmental practices

Considering that so many respondents totally agreed (32) and agree (15) with the sentence "*I'm opened to adopt other pro environmental measures in my establishment*", it makes sense to explore how many of these pro environmental measures are being applied – or if this is still just an idea with no practical applications yet.

In the questionnaire it was asked to respondents to tick what they do on their establishment from a set of options:

-Recycling

-Composting

-Use of LED lights

-Use of reusable recipients for take away

-Use of wood spoons for takeaway coffee

-Use of paper bags

-Use of straws of non-plastic material

The option "other" was also available for this question. Which originated the following answers:

- Use of glass recipients

- Compress trash in order to use less plastic bags

- Vegan food options

- Use of biodegradable cups and bags

The results of this question are presented in the graph of figure 24.

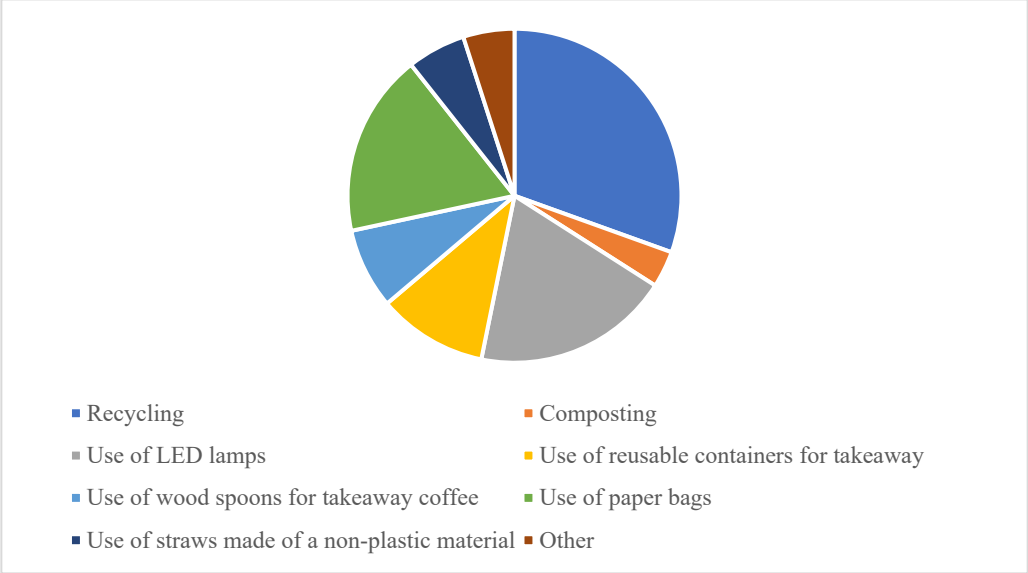

Figure 24 – Environmental practices applied by the establishments

From observing figure 24, it can be concluded that recycling is a pro-environmental action practiced in most of the establishments (43), followed by the usage of LED lamps (27 respondents) and the usage of paper bags (25 respondents). Eleven respondents say they replaced plastic spoons by wood ones for takeaway coffee; eight said they replaced plastic straws by straws made of other material such as paper, bamboo or pasta. The municipality of Lisbon is trying to increase domestic composting by proving a special composting container and giving support and training to the interested people since May 2019 (Câmara Municipal de Lisboa, 2019), however, still a lot of respondents did not know what composting is, and so, only five replied they do it.

From the 50 inquired people composing the sample, only two respondents said they do not apply any pro-environmental action in their establishments.

5.3.1. Testing environmental impact hypotheses

Considering the analysis made in the previous section, it is now possible to draw conclusions regarding the environmental hypotheses proposed.

5.3.1.1. Testing H4 – The implementation of a reusable cup system positively influences consumers to adopt other pro-environmental practices.

It was asked to respondents to classify the sentence "The implementation of reusable cups increases the environmental consciousness of consumers and so the interest about other ways of consuming in a more ecological way" from 1 to 5, being 1 totally disagree and 5 totally agree. The results were shown in the graph of figure 23.

Analysing the graph of figure 23, it is possible to observe that the answer "agree" stands up from the others, with 22 respondents (44% of the sample) selecting it. Summing this result with the result of the answer "totally agree" and it can be concluded that 26 respondents (52% of the sample) agree or totally agree that the implementation of reusable cups increases the environmental consciousness of consumers and so the interest about other ways of consuming in a more ecologically. Because 52% is not a very high percentage, then the "totally disagree" and "disagree" were also added, totalizing 9 respondents, which corresponds to 18% of the

sample. Comparing now 18% of the sample who "disagree" or "totally disagree" with the 52% that "agrees" or "totally agree" is much easier to conclude that H4 is valid.

5.3.1.2. Testing H5 – Establishments where reusable cups are used, tend to adopt other pro-environmental practices.

It was asked to respondents what other pro-environmental actions they were applying in their establishments besides using reusable cups. From the 50 respondents, only two did not apply any other action, therefore 96% of the sample applies, at least, another pro-environmental measure. Thus, H5 is valid.

5.3.1.3. Testing H6 - Using a reusable cups system reduces the amount of garbage on the streets resulting from the consumption of drinks.

In order to understand if using reusable cups system helps reduce the amount of garbage abandoned on the streets it was asked to establishment owners and employees if they find abandoned reusable cups, as not finding could be interpreted as a sign of less garbage polluting the streets (considering that establishments are replacing disposable cups by reusable ones and so, if confirmed, there would not be any type of cups polluting the streets).

The graph of figure 19 compares respondents who answered "no" with all the other answers ("yes, collect, wash and reuse"; "yes, but don't do anything because they are broken"; "yes, but don't do anything because I don't consider it hygienic"). Most of the respondents (30 people, which corresponds to 60% of the sample) do not find abandoned reusable cups. Moreover, the graph of figure 20 shows that, considering that small part of the sample (20 people out of 50) who said they find abandoned reusable cups, what do they do when they find them: eleven respondents said they collect, wash and reuse them and nine say they do not do anything.

Finally, it is possible to conclude that 41 respondents (82% of the sample) either do not find reusable cups or find them and collect them. Therefore, it is safe to conclude that garbage is the streets is reduced by using reusable cups, so H6 is valid.

5.4. Economic Impact

In this section will be presented and analysed the data related to the economic impact of using reusable cups through pie charts, bar graphs, frequency tables and crosstabulation. Then the economic-related hypotheses will be tested.

Impact of using reusable cups on the establishment's bills

To analyse the impact of using reusable cups on the electricity costs of establishments – derived from those being washed on a dishwasher – it was asked to respondents to classify its impact through a scale of 1 to 5. It was also asked respondents a similar question but regarding the water extra costs – considering the establishments that handwash their reusable cups.

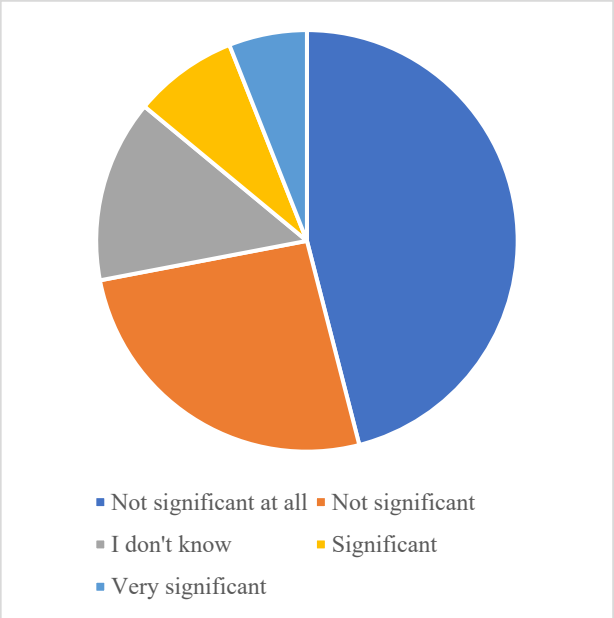

Figure 25 – Impact of using reusable cups on the establishments' electricity bill

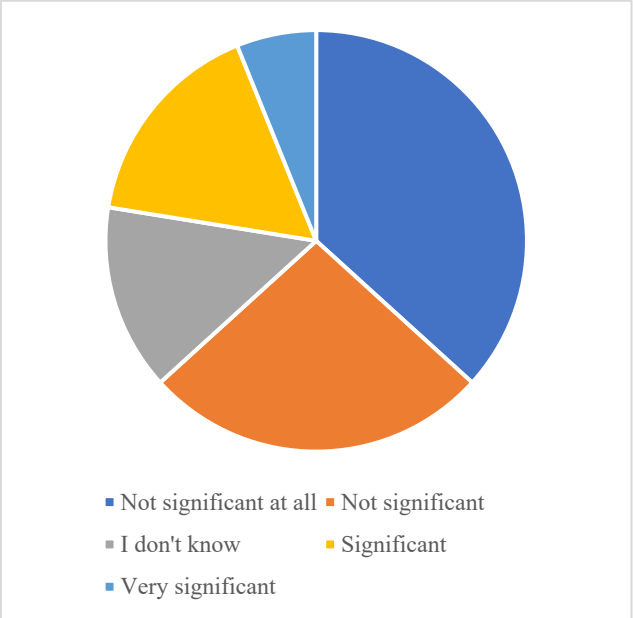

Figure 26 – Impact of using reusable cups on the establishments' water bill

Looking into figure 25, it is possible to conclude that most of the respondents (23) do not consider significant at all the extra costs of electricity resulting from using reusable cups; followed by 13 respondents who find it "not significant"; followed by seven people who do not know or do not have a concrete perception yet; followed by four who people consider the impact significant and finally, three respondents consider it very significant. Adding the

respondents who answered: "Not significant at all" and "not significant", it is verifiable that 36 people – almost three-quarters of the sample (72%) do not think that this extra cost is relevant.

Looking into figure 26 now, similar results were found. Most respondents (18) answered "Not significant at all", followed by 13 people answering "Not significant"; seven people do not know or do not have a concrete perception yet; eight people consider this cost significant and three people find it very significant. Similarly, when adding the answers "not significant at all" and "not significant", it can be concluded that 31 people – more than half of the sample (62%) do not think that this extra cost is relevant.

Comparing the two results now, the electricity cost seems a little less relevant that the water cost but by a very little margin.

Sales analysis

To understand if sales are affected (positively or negatively) by the use of reusable cups, it was asked to the respondents to classify two sentences from 1 to 5. The results are shown in the graph of figure 27.

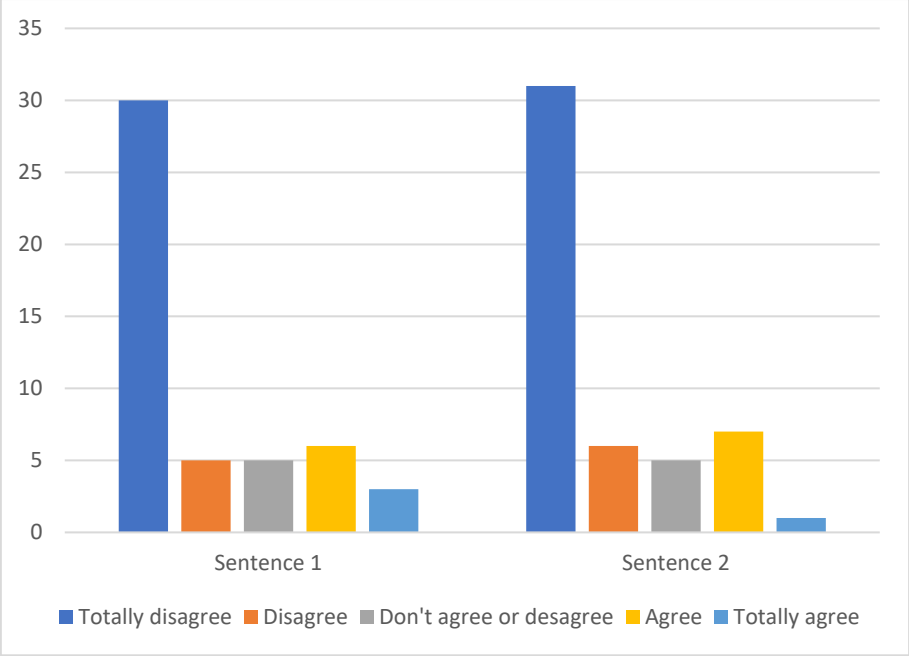

Figure 27 – Classification of sales related sentences

The sentences presented for the respondents to classify were:

1 – "*The introduction of reusable cups made me lose clients*"

2 – "*The introduction of reusable cups had a negative impact on the sales of my establishment*".

The results clearly show that respondents "totally disagree" that reusable cups make establishments lose clients and that reusable cups have a negative impact on sales. As 30 respondents (60% of the sample) choose "strongly disagree" for the first sentence and 31 respondents (62% of the sample) also choose "strongly disagree" for the third.

5.4.1. Testing economic impact hypotheses

Considering the analysis made in the previous section, it is now possible to test the hypotheses related to the economic impact.

5.4.1.1. Testing H7: The extra costs resulting from using reusable cups is less significant for environmental sensitive employees/ establishment owners.

To understand if the environmental values have a positive influence on the costs' perception of the respondents, in other words, if establishment owners and employees are aware of the costs but find it a small price to pay compared with the overall benefits, H7 was divided into two semi hypotheses:

H7a: The extra costs of electricity resulting from using reusable cups are less significant for environmental sensitive employees/ establishment owners.

H7b: The extra costs of water resulting from using reusable cups are less significant for environmental sensitive employees/ establishment owners.

5.4.1.1.1. Testing H7a: The extra costs of electricity resulting from using reusable cups are less significant for environmental sensitive employees/ establishment owners.

To test this semi hypothesis, the sentence "I am opened to adopt other pro-environmental actions", and the question "Classify the impact of using reusable cups in the electricity bill of my establishment" will be compared using a cross-tabulation, also known as a contingency table. This type of table is used to describe the relationship between two categorical variables. The results are shown in Table 7.

Table 7 - Crosstabulation between "I am opened to adopt other pro environmental actions" and "Classify the impact of using reusable cups in the electricity bill of my establishment", adapted from SPSS.

		"Classify the impact of using reusable cups in the electricity bill of my establishment"					
		Not significant at all	Not significant	I don't know	Significant	Very significant	Total
"I am opened to adopt other pro-environmental actions"	Totally disagree	0	1	0	0	0	1
	I don't know	0	1	1	0	0	2
	Agree	6	1	3	2	3	15
	Totally agree	17	10	3	2	0	32
Total		23	13	7	4	3	50

Table 7 allows to conclude that most of the respondents (17) totally agree with the sentence "I am opened to adopt other pro-environmental actions" also find the impact of using reusable cups in the electricity bill of my establishment as not significant at all. The second highest result shows that 10 respondents totally agree with the already mentioned sentence and, find the impact on the electricity not significative. If summing the results of the answers "Agree" and "Totally agree" regarding the sentence "I am opened to adopt other pro-environmental actions" with the results of "Not significant at all" and "Not significant" regarding the sentence "Classify the impact of using reusable cups in the electricity bill of my establishment", then 34 respondents (68% of the sample) agree and totally agree with the idea of adopting other environmental actions and, at the same time, find the impact of using reusable cups in the electricity bill not significant or not significant at all, thus H7a is supported.

5.4.1.1.2. Testing H7b: The extra costs of water resulting from using reusable cups is less significant for environmental sensitive managers

To test the second semi hypothesis, the sentence "I am opened to adopt other pro-environmental actions", and the question "Classify the impact of using reusable cups in water bill of my establishment" will be compared using a cross-tabulation as well. Results are shown in Table 8.

Table 8 - Crosstabulation between "I am opened to adopt other pro environmental actions" and "Classify the impact of using reusable cups in the water bill of my establishment", adapted from SPSS

		"Classify the impact of using reusable cups in the water bill of my establishment"					
		Not significant at all	Not significant	I don't know	Significant	Very significant	Total
"I am opened to adopt other pro-environmental actions"	Totally disagree	0	1	0	0	0	1
	I don't know	1	0	0	1	0	2
	Agree	2	4	2	5	2	15
	Totally agree	16	8	5	2	1	32
Total		19	13	7	8	3	50

Similarly with the crosstabulation with the electricity impact, also the highest result here (16 respondents) concerns the options "Not significant at all", regarding the impact of using reusable cups on the water bill, and the answer "Totally agree", regarding the sentence "I am opened to adopt other pro-environmental actions". The second highest result is between the answer "Totally agree", and "Not significative", with 8 respondents selecting it. If summed the results of the answers "Agree" and "Totally agree" regarding the sentence "I am opened to adopt other pro-environmental actions" with the results of the answers "Not significative at all" and "Not significative" obtained from the sentence "Classify the impact of using reusable cups in the water bill of my establishment" , then the number of respondents increases to 30, which corresponds to 60% of the sample. Thus, H7b is supported.

As both H7a and H7b are supported by the results, H7 is valid.

5.4.1.2. Testing H8 – The system of reusable cups can be improved through a better manager's perception of the economic impact

In order to take conclusions about this hypothesis, H8 was divided in two sub hypotheses:

H8 a - The extra costs resulting for using reusable cups are not relevant for establishment owners and employees.

H8 b – Using reusable cups does not affect sales.

5.4.1.2.1. Testing H8a - The extra costs resulting for using reusable cups are not relevant for establishment owners and employees

In order to test this sub hypothesis, two extra costs were considered: the water, used to handwash the reusable cups; and the electricity, used to wash the cups in a dishwasher.

To access the extra money spent on water, it was asked to respondents to classify the impact of using reusable cups on the water bill of the establishment. The results are shown in figure 26.

Analysing figure 26, 18 of the respondents answered "Not very significant", followed by 13 people answering "Not significant"; seven people do not know or do not have a concrete perception yet; eight people consider this cost significant and three people find it very significant. Similarly, when adding the answers "Not very significant" and "Not significant", it can be concluded that 31 people – more than half of the sample (62%) do not think that this extra cost is relevant. Against 11 respondents (22% of the sample) who find it significant or very significant.

To access the extra money spent on electricity, it was asked to respondents to classify the impact of using reusable cups on the electricity bill of the establishment. The results are shown in figure 25.

Similarly with the costs' perception of the water, also here the majority of the respondents answered "Not very significant" (23 respondents) followed by 13 respondents find it "not significant", which summed gives 36, which is 72% of the sample. Opposing to 7 respondents (14% of the sample) who finds it "Significant" or "Very significant"

With 62% of the sample classifying the extra water costs as not very significant or not significant and 72% of the sample classifying the extra electricity costs as not very significant or not significant, it possible to conclude that is H8a is valid.

5.4.1.2.2. Testing H8b - Using reusable cups does not affect sales

To analyse if reusable cups could affect sales, it was asked to respondents to classify the following sentences from 1 to 5, being 1 totally disagree and 5 totally agree:

1 – "*The introduction of reusable cups made me lose clients*"

2 – "*The introduction of reusable cups had a negative impact on the sales of my establishment*".

In both cases, the answer "totally disagree" stood up. Regarding the first one, 30 people (60% of the sample) answered "totally disagree", if added with the answer "disagree", then 35 respondents (70% of the sample) "totally disagree" or "disagree" against 9 respondents (18% of the sample) who answered "agree" or "totally agree" (see figure 27).

Regarding the second sentence, similar results were found, as 31 people answered "totally disagree" and 6 people answered "disagree", which summed gives 37 respondents, which corresponds to 74% of the sample. In the other hand, only 8 respondents selected the answered "totally agree" or "agree", which corresponds to 16% of the sample (see figure 27).

With 70% of the respondents disagreeing or totally disagreeing that using reusable cups made them lose clients and 74% of the respondents disagreeing or totally disagreeing that using reusable cups had a negative impact on the sales of their establishments, it is save to say that the use of reusable cups does not affect sales, therefore, H8b is considered valid.

Finally, considering that reusable cups do not affect sales and the extra costs of using it are not relevant, it can be concluded that using reusable cups does not have a negative economic impact on the businesses' side. Therefore, by improving this perception, the system can also be improved as managers increase their Perceived Behavioural Control (PBC) towards the use of reusable cups and so, using reusable cups becomes easier. Therefore, H8 "*The system of reusable cups can be improved through a better manager's perception of the economic impact*" is considered valid.

5.5. Improving reusable cups systems

Finally, it was asked to respondents how they think reusable cups systems currently applied in Lisbon could be improved. To assess that, five sentences were presented to respondents for them to classify from 1 to 5. The option "other" was also available for this question, so respondents could add their own ideas of improvement.

The results are shown in the graph of figure 28:

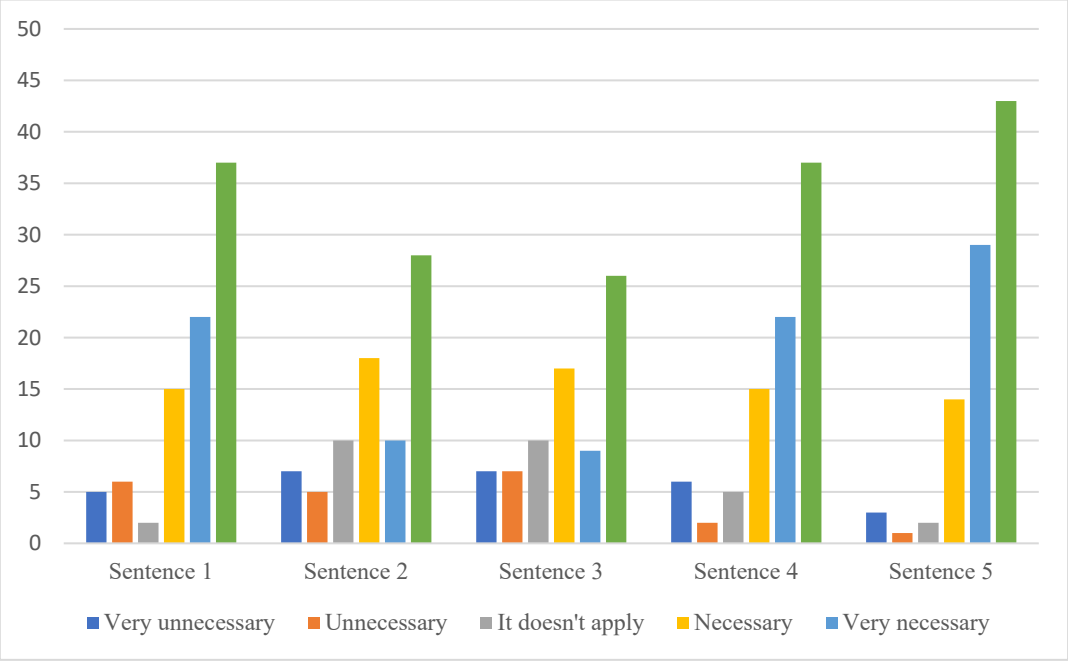

Figure 28 – Classification of sentences to improve reusable cups' systems in Lisbon

The sentences presented to the respondents were:

1 – "*Should be available more information*"

2 – "*Should be available smaller cups, for takeaway coffee*"

3 – "*Should be available cups of 35 centilitres for refrigerants*"

4 – "*Containers where people could deposit their used reusable cups should be available in case people couldn't give it back to the establishments. Later a company could collect and wash it.*"

5 – "*Should be provided more support from governmental entities (government, city council or parish council)*

Looking to the graph it is possible to conclude that most of the respondents answered "necessary" and "very necessary" for all of the sentences, which lead to the conclusion that all of them are relevant. However, to conclude which ones are more important for the respondents, the results of the answers "necessary" and "very necessary" were summed, as shown in the table 9.

Table 9 - Classification of sentences to improve reusable cups' systems in Lisbon

	"Necessary"	**"Very necessary"**	**"Necessary" + "Very necessary"**	**Total %**
Sentence 1	15	22	37	**74%**
Sentence 2	18	10	28	56%
Sentence 3	17	9	26	52%
Sentence 4	15	22	37	**74%**
Sentence 5	14	29	43	**86%**

Table 9 shows that three sentences are more important for respondents out of the five proposed: 86% of the samples finds "necessary" or "very necessary" more support from the governmental entities; 74% of the samples considers that it is necessary or very necessary to provide more information about reusable cups systems and, finally, 74% of the respondents considers necessary or very necessary to provide alternatives where people can leave their cups in case they cannot return them to the establishments.

Other points made by the establishments were:

"*Reusable cups shouldn't have a brand, instead they should be a general measure applied and available throughout the whole country*"

"*Disposable cups must be banned for reusable cups to work*"

"*During special events, reusable cups information points should be available, separate from reusable cups selling points*"

"*Universities should provide more information to students about reusable cups*"

Chapter 6 – Conclusions, limitations and recommendations

6.1. Conclusions

The purpose of this master dissertation is to analyse the social, environmental and economic impact of the introduction of reusable cups systems in Lisbon addressing the following research questions: 1) What are the main issues clients and employees are facing due to the use of reusable cups? 2) What are the environmental benefits resulting from the use of reusable cups? 3) How can the system of reusable cups be improved?

Considering the first research question, it was asked to the respondents what their main difficulties were when they introduced reusable cups in their establishments. The set of answers included difficulties related to the clients and technical difficulties, such as the storage or cleaning management of the reusable cups. As most of the answers showed that the main difficulties were related to the clients, so it was asked then what do establishment owners and employees considered being the main difficulties specifically for clients. The results validated the hypothesis H1, showing that most of the respondents believes that "*The biggest barrier to the acceptance of reusable cups by the clients it's the extra cost of the cups*". However, this extra cost is very important and cannot be removed, according to Poortinga and Whitaker (2018) when using reusable cups, people are more sensitive to losses (extra charge for the use of a reusable cup) than to gains (providing a discount for customers bringing their own cup).

As nothing can be done regarding this obstacle, it is important to understand if the acceptance of the cups by clients will become easier over time (H3) which was also validated, as 72% of the sample agrees or totally agreed with the sentence "*Over time, serving my clients using reusable cups becomes easier*". This is in line with the literature review: people tend to become more acceptant of an environmental policy change after its implementation, when they start to experiment its benefits (Poortinga *et al*., 2013).

Finally, the extra costs of using reusable cups was also analysed from the establishment owners and employees' point of view. First, analysing the answers of the respondents regarding the impact on the establishment bills concerning the extra costs of water (due to hand wash reusable cups) and on the extra costs of electricity (due to washing reusable cups on a washing machine). The answers validated H8, showing that these extra costs are negligible. Then, it was

investigated if there were a relation between these results and the environmental values of employees and establishment owners. To do this, two crosstabulation were made: one between the sentence "I am opened to adopt other pro-environmental actions" and the question "Classify the impact of using reusable cups in the electricity bill of my establishment" (H7a). The other between the sentence "I am opened to adopt other pro-environmental actions" and the question "Classify the impact of using reusable cups in the water bill of my establishment" (H7b). Both H7a and H7b were valeted by the results, allowing to conclude that there is a relation between having environmental values and the importance given to the extra costs resulting from using reusable cups, therefore, H7 was considered valid.

As the data collection process used for this study was a semi-structured, most of the issues identified by the respondents were already pre-selected, in a set of options available for each question. Nevertheless, as respondents were encouraged to add additional information according to their personal experience working with the reusable cups, it generated some particular conclusions. These findings, although they have not been properly investigated in this dissertation (because they represent a minority and only emerged during the data collection process) can work as a starting point for future studies. One specific issue of Bairro Alto was brought by Grogs Bar, a bar located on this neighbourhood, which is the fact that bars in Bairro Alto close earlier then bars in Cais do Sodré. Therefore, a lot of clients start their evening by having a few drinks in Bairro Alto and then move to Cais do Sodré, so reusable cups can either be given back still in Bairro Alto, before clients continue to Cais do Sodré or, clients can simply drink on the way down to the second neighbourhood. This habit creates a problem: clients buy the cup in Bairro Alto and return it in Cais do Sodré. Which, unless, properly monotonized, will lead to bars to Bairro Alto to profit and bars in Cais do Sodré do lose money. Someone or a company to collect the cups in Cais do Sodré and give them back in Bairro Alto could be a solution – however, this is not happening yet. In reality, bars in Bairro Alto simply ask for more cups to their reusable cup providers and bars in Cais do Sodré stop accepting reusable cups back if they already received too much.

Another issue that was not addressed in the questionnaire but came up when interviewing Quiosque Lisboa (Praça das Flores) was that even if there is a lot of information about reusable cups to the inhabitants of Portugal (through traditional and social media) and reusable cups are available in summer festivals for several years, the same does not happen with tourists. A tourist coming to Portugal, not familiarized with the system from their home country, has no way to know how to use a reusable cup. Quiosque Lisboa (Praça das Flores) referred exactly

this problem: as most of their clients are tourists and tourists do not know about our reusable cups systems, it becomes extremely hard having to explain the system to every new customer. The solution to this problem could be simply to place an outdoor in the airport of Lisbon showing people using the reusable cups and explaining the process. That would save establishments there are mostly touristic to have to explain the system individually to every new customer.

The second research question of this study concerns the environmental benefits that can be taken from the use of reusable cups. To address it, three hypotheses were formulated. Two of them were related to the adoption of other pro-environmental practices: H4 regarding clients ("*The implementation of a reusable cup system positively influences consumers to adopt other pro-environmental practices*") and H5 regarding establishment owners and employees ("*Establishments where reusable cups are used, tend to adopt other pro-environmental practices*"). Both hypotheses were proven to be valid. These results are in line with the literature review, according to Whitmarsh & O'Neill (2010) adopting an environmental-friendly behaviour may lead to a change of values which in turn can lead to the adoption of other environmental-friendly behaviours.

The third hypothesis (H6) was related to the amount of garbage in the streets resulting from the consumption of takeaway drinks and how can the use of reusable cups can help reduce it. Results also validated H6. According Cafetaria Italiana, Arco do Cego, a garden that used to be very affected by pollution resulting from the consumption of takeaway drinks, is now much cleaner.

From these findings, it can be concluded that there, at least, four types of environmental benefits resulting from using reusable cups: (i) it reduces the amount of disposable plastic consumed; (ii) it positively influences consumers to look for and apply other pro-environmental behaviours; (iii) it positively influences employees and establishment owners to look for and apply other pro-environmental behaviours and, finally, (iv) it reduces the amount of garbage generated by the consumption of takeaway drinks.

Finally, the last research question focused on how the system could be improved. Two hypotheses were tested: "*The acceptance of reusable cups by clients is influenced by the information available and number of establishments using the reusable cup system*" (H2) and "*The system of reusable cups can be improved through a better manager's perception of the economic impact*" (H8), the latter was divided into two semi hypotheses: "*The extra costs*

resulting for using reusable cups are not relevant for establishment owners and employees" (H8a) and "*Using reusable cups does not affect sales*" (H8b). H2 was validated by the results, which are in line with the literature review, according to Babader et al., (2016) and his Reuse Behaviour Model, knowledge about reuse behaviour leads to the application of reuse behaviour. Moreover, personal norms are influenced by family, friends and other close people, therefore, the higher the number of establishments adopting reusable cups, the higher the influence to use reusable cups. H8 was also considered valid, as the results validated both H8a and H8b. The fact that using reusable cups does not affect sales does not come as a surprise, as Poortinga and Whitaker had already concluded in their study of 2018 that any of the marketing measures used to promote reusable cups (including extra charging for the use of a reusable cup) had had a negative impact on the number of drinks sold.

In the final question of the questionnaire, it was directly asked to the respondents how they think the current systems of reusable cups could be improved. Three options of the set of five available stood up: 86% of the samples finds "necessary" or "very necessary" more support from the governmental entities; 74% of the sample considers that it is necessary or very necessary to provide more information about reusable cups systems and, finally, 74% of the respondents considers necessary or very necessary to provide alternatives where people can leave their cups in case they cannot return them to the establishments. These results are in line with the Reuse Behaviour Model of Babader et al., (2016). One of the variables of the model is the influence generated knowledge, applicable here as the need to provide more information to people regarding reusable cups; another variable is the influence generated by convenience, applicable here as the need to provide deposit points for people to leave their used reusable cups in case they cannot return them to the establishments.

An interesting alternative to return the reusable cups after using them was suggested by the owner of Palheta, in Cais do Sodré, who suggested that Lisbon could adopt a system currently working in Berlin and that used to work in Portugal as well. In this system, people can return bottles after using them in the supermarket and receive part of what they previously paid back. This system could also work for reusable cups very easily. By returning the reusable cups in the supermarket, clients would get a discount on a beer of the cup's brand. In case clients are not buying beer at the moment they are returning the cups, then they could get a receipt with the value of the discount to be used later.

Another valid concern was raised by The Corner, IADE's university cafeteria similarly to the other university bars interviewed: students do not have access to enough information and so, in general, do not care about using reusable cups. In the case of the university cafeterias, it should be the university's responsibility to inform and create strategies to encourage students to increase their usage of reusable cups. For example, the university could encourage and even finance the acquisition of reusable and/ or a dishwasher for the students' association so they could start using reusable cups on their parties and events. Moreover, the new students could receive on their welcome kit a reusable cup and a flyer explaining how to use and return a reusable cup.

Several bars emphasized the need to ban the use of disposable cups in order to force people to adopt the system – as it happened with the supermarket plastic bags that started to be paid without a previous adaptation period – while others mention that a general reusable cup system would be easier to clients if there were no brands, but instead, a general national reusable cup which could be bought and returned everywhere in the country.

Finally, as a general conclusion, it can be settled that the implementation of reusable cups in Lisbon is happening and improving every day. While a lot of establishments still have to implement a reusable cup system or to learn how to adapt the system to make it work in their establishments, in another hand, 50 establishments were already using reusable cups by May 2019. Several establishments in Bairro Alto were excluded from this study because they were implementing the reusable cups for less than a week, a few others in Campo Grande were also identified as not using reusable cups yet but manifesting they would like to start using within the next months. Also by May 2019, an average of 61.000 disposable cups were spared because of the use of reusable cups, areas affected by pollution caused by disposable cups are cleaner and, in general, it seems that people are more aware of the current environmental problems and start to care and act upon it. All of those are good indicators that the city of Lisbon is slowly but effectively adapting to this change of paradigm.

6.2. Limitations

Due to the data collection and analysis methods chosen, this study had some priori limitations, which were assumed in the methodology.

Those limitations were:

- As an exploratory research, the population under study was limited, which originated an even more limited sample.
- Because it was not possible to obtain lists of the establishments already using reusable cups from Super Bock and Sagres, and so the selected sample is not random, this thesis allowed to identify and investigate several issues, but the results cannot be generalized.
- The questionnaires were applied to employees and establishment owners because they could provide information regarding both their own perspectives and their clients' perspectives, nevertheless, the clients' perspective was only indirectly collected.

6.3. Practical recommendations

Besides evaluating the introduction of reusable cups in Lisbon, this study also intends to have a practical component, as its findings can be applied to improve reusable cups systems through their multiple stakeholders involved.

Government and public entities

When asked how the system of reusable cups could be improved, from a set of five sentences, "Should be provided more support from governmental entities (government, city council or parish council)" was the sentence selected the most, with 86% of the samples finding it "necessary" or "very necessary". More than financial support (as the results also showed that the costs of using reusable cups are negligible) this support should be present more on an organizational level, by helping create a circular system in which establishments which tend to sell cups receive more cups and establishments which tend to receive back those cups can get rid of the extra stock without money loses for any of those parts. Streamlining the system should help avoid situations when establishments refuse to receive reusable cups as they have so many cups already and they feel like they are losing money.

This support should also be on control level, so establishments do not hinder the environmental logical behind the use of the reusable cups, such as it is presently happening in summer festivals where consumers must buy a reusable cup but do not have the chance to return it. Therefore, summer festivals are simply making more money out of consumers, with the pretext of helping the environment, which in practice will not happen as consumers cannot return the cup. Finally, government and public entities should also inform and teach the population. This can be done through training seasons in schools and universities; through marketing campaigns on traditional and social media, through public exhibitions and talks and finally, by supporting the work of environmental associations. Let's not forget about tourists, as it is such a big industry in Portugal, particularly in the capital: tourists need to be informed and educated as well. This should happen as soon as they arrive, right in the airport with a big outdoor informing and explaining about reusable cups. Informative flyers available in hotels, hostels and other tourist accommodation could also work.

Schools and universities

Three university cafeterias were part of this study and, although it is not a representative number, it became obvious the need of a more active role from the universities. All of the four cafeterias involved in this study (two from ISCTE, one from IADE and one from ETIC) manifested that students had little interest on using reusable cups although in the university context using a reusable cup is even easier than in a regular situation, eg: students can buy a coffee, take in to class in a reusable cup and return it during the break.

IADE's Cafeteria owners – "The Corner" - suggested that the university should motivate students to use reusable cups. This could be done, first by creating conditions to use them, perhaps by creating deposit points, throughout the university campus, to deposit used cups, so students do not need to go back to the cafeteria: they could simply leave the cup in one of those deposit points and save the receipt in order to receive the deposit back later. Then, it is also important to educate students, this could be done through posters, flyers, social media, e-mails and talks.

Moreover, students' associations should be motivated to use reusable cups on their events too. To achieve that, universities could financially help students' associations to acquire their own reusable cups or/and acquire a dishwasher to facilitate their sanitation. A partnership between

university cafeterias and students' association, to borrow the cups and wash them, could also be a solution, at least for small events.

Finally, students could receive their own reusable cup on their first day at the university and be encouraged to carry and reuse it while studying and attending classes.

Establishments selling take away drinks

To successfully implement a reusable cup system in their establishments, establishment owners and employees should find strategies to overcome their difficulties.

When it comes to effectively managing stocks and sanitization of the cups, Quiosque de Lisboa mentioned a very efficient strategy, which is to collect all the reusable cups from their establishments (currently four of their kiosks are using reusable cups) and wash them together in a storage equipped with industrial washing machines. This strategy is possible not only because the fours establishments belong to the same owner but also because they are geographically close together (all of them are located between Principe Real and Cais do Sodré). Nevertheless, this strategy could also be applied by individual establishments which are not part of an establishment chain, by partnering up with other establishments of the neighbourhood. Perhaps the establishments of Bairro Alto for example, which bars are located nearby, could assemble all their dirty cups together and ask the parish council of Misericordia to help with the transport and the sanitation of the reusable cups in appropriate facilities with industrial washing machines. As this parish council is already promoting the use of reusable cups, it should be easy to negotiate with them.

Regarding the difficulties with clients, in owners and employees' viewpoint, this study showed that, when using reusable cups, what bothers clients the most is the extra cost of the cup. Some establishments developed strategies to deal with this, such as Quiosque Avenida da Liberdade, where usual clients are not charged by the cup because employees and establishment owners trust these clients to return the cup regardless of paying for it or not. This small privilege facilitates the work of employees and establishment owners, as they do not have to process this transaction (receiving the deposit and giving back the deposit) and, at the same time, makes clients feel special.

The second biggest difficulty for clients is the extra task of giving back the cup or having to carry it home. Maybe clients dislike doing it because they must be on a queue, perhaps on the

same queue where other clients are ordering drinks. Creating a separate section for clients who would like to return the cup and allocating an employee for this task during busy hours will facilitate the process.

The third most selected difficulty was "*As the money paid for the cup is a deposit, it is not possible to register that money in the cash register, which makes it difficult to control the money*" in order to control the money spent on returning cups, some establishments allocate a monthly budget that should be physically separated from the money in cashier machine. When selling reusable cups, that money should go there and when returning the deposit, the money should come from there.

Finally, another difficulty highlighted by the respondents was "*Clients are not informed about the reusable cup system and it's not convenient to explain the system to every new client*". An easy solution for this issue has been applied by several establishments: both Sagres and Super Bock have produced posters explaining how the reusable cup system works. Hanging a poster on the establishment door can help clients understand the system; for the ones with an online presence, establishments can also post about it on social media.

Consumers

Finally, consumers also have a role in the improvement of the reusable cups systems. Although it might seem that consumers' individual actions may not have a direct impact on the whole system, many individual actions will have. Actively asking to use reusable cups, refuse to use plastic straws or plastic spoons are simple behaviours that will influence establishment owners and employees to change their practices.

6.4. Recommendations on further studies

This research represents a first exploratory study regarding the introduction of reusable cups in Lisbon.

As a clue for future studies, researchers interested in this topic could develop the following:

- A similar study but with a bigger and probabilistic sample and a quantitative analysis so the conclusions could be used when implementing reusable cups in other cities of Portugal.
- A study focused on the consumers' point of view in which the target population for the study would be the clients instead of the establishment owners and employees.
- A study focused on universities in Lisbon and how can those help students adopt reusable cups, as in universities there is the potential to teach and influence students. Moreover, students represent an important part of the consumers of takeaway drinks

References

Ajzen, I. 2002. Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior. ***Journal of Applied Social Psychology***, 32(4): 665-683.

Babader, A., Ren, J., Jones, K. and Wang, J. 2016. A system dynamics approach for enhancing social behaviours regarding the reuse of packaging. ***Expert Systems with Applications***, 24(6): 417-425.

Bansal, P. and Roth, K. 2000. Why Companies Go Green: A Model of Ecological Responsiveness. ***Academy of Management Journal***, 43(4): 717-736.

Boiral, O., Talbot, D. and Paillé, P. 2013. Leading by Example: A Model of Organizational Citizenship Behavior for the Environment. ***Business Strategy and the Environment***, 24(6): 532-550.

Business Dictionary. Statistical Sample – Definition, http://www.businessdictionary.com/definition/statistical-sample.html , accessed on 04/05/2019

Business Wire. Red, White and Green: KFC's New Reusable Side Container Honored with 2010 Greener Package Award https://www.businesswire.com/news/home/20100929006436/en/Red-White-Green-KFC%E2%80%99s-New-Reusable-Side , 2011, accessed on 01/02/2019

Câmara Municipal de Lisboa. Temos um compostor para si, http://www.cm-lisboa.pt/no_cache/viver/ambiente/noticias/detalhe-da-noticia/article/temos-um-compostor-para-si ,2018, accessed on 08/02/2019

Cho, R. The Truth About Bioplastics, https://blogs.ei.columbia.edu/2017/12/13/the-truth-about-bioplastics/ , 2017 , accessed on 22/02/2019

Cocozza, P. Excess baggage: will the 5p charge finally kill the plastic bag?, https://www.theguardian.com/environment/2015/sep/30/excess-baggage-will-5p-charge-finally-kill-the-plastic-bag , 2015 , accessed on 01/03/2019

Copeland, M., Ormsby, A. & Willingham, M. 2013. Assessment and Comparative Analysis of a Reusable Versus Disposable To-Go System***. Sustainability: The Journal of Record,*** 6(6): 353–358

Cordano, M. and Frieze, I. 2000. Pollution Reduction Preferences of U.S. Environmental Managers: Applying Ajzen'S Theory of Planned Behavior. ***Academy of Management Journal***, 43(4): 627-641.

Deng, Y., Zhang, Y., Lemos, B. and Ren, H. 2017. Tissue accumulation of microplastics in mice and biomarker responses suggest widespread health risks of exposure. ***Scientific Reports***, 7(1).

Ebner, W., Eitel, A., Scherrer, M. and Daschner, F. 2000. Can household dishwashers be used to disinfect medical equipment?. ***Journal of Hospital Infection***, 45(2): 155-159.

Ertz, M., Huang, R., Jo, M., Karakas, F. and Sarigöllü, E. 2017. From single-use to multi-use: Study of consumers' behavior toward consumption of reusable containers. ***Journal of Environmental Management***, 193: 334-344.

European Commission. Assessing environmental impacts of Research and Innovation Policy, https://ec.europa.eu/research/evaluations/pdf/archive/other_reports_studies_and_documents/envti 0413167enn_002.pdf ,2013, accessed on 20.02.2019

European Environment Agency. EEA environmental statement 2007, https://www.eea.europa.eu/publications/corporate_document_2007_2 , 2007 , accessed on 24.02.2019

Franklin Associates. (2009). ***Life Cycle Assessment of Drinking Water Systems: Bottle Water, Tap Water, and Home/Office Delivery Water***, Report, Oregon Department of Environmental Quality, Overland Park

Gabbatiss, J. Disposable coffee cups: How big a problem are they for the environment? , https://www.independent.co.uk/environment/disposable-coffee-cups-how-big-problem-environment-landfill-recycling-incinerate-export-rubbish-a8142381.html 2018 , accessed on 13/02/2019

Gall, S. and Thompson, R. 2015. The impact of debris on marine life. ***Marine Pollution Bulletin***, 92(1-2): 170-179.

Gupta, S., Jarupan, L. and Kamarthi, S. 2003**.** ***Simulation based approach for return packaging systems***. Northeastern University. Boston

Hill, M., & Hill, A. 2000. Investigação por questionário, Lisboa: Edições Sílabo, Lda.

Instituto Nacional de Estatística. 2014. ***Inquérito Nacional de Saúde 2014***, Lisbon.

Jambeck, J., Geyer, R., Wilcox, C., Siegler, T., Perryman, M., Andrady, A., Narayan, R. and Law, K. 2015. Plastic waste inputs from land into the ocean. ***Science***, 347(6223): 768-771.

Keep America Beautiful, Inc. 2009 National Visible Litter Survey and Litter Cost Study, https://www.kab.org/sites/default/files/EndLittering_ForAffiliates-Teachers-Businesses_2009_NationalVisibleLitterSurveyandCostStudy_Final.pdf , 2009 , accessed on 10.02.2019

Krippendorff, K. 2004. ***Content Analysis: An Introduction to Its Methodology*** (2nd ed.) Thousand Oaks, CA: Sage Publications.

Lambert, Scott & Sinclair, Chris & Boxall, Alistair. 2014. Occurrence, Degradation, and Effect of Polymer-Based Materials in the Environment. ***Reviews of environmental contamination and toxicology***. 227: 1-53

Lenaghan, M. 2017. ***Disposable Coffee Cups: Why Are They a Problem, and What Can Be Done?*** Presentation produced for Zero Waste Scotland.

Ma, Y. 2018. Problems and resolutions in dealing with waste disposable paper cups. ***Science Progress***, 101(1):1-7.

Make the Planet Great Again. Recup, https://make-the-planet-great-again.com/recup , accessed on 01/02/2019

Marketeer. Parceria da Sagres com a EGEAC válida por três anos, https://marketeer.pt/parceria-da-sagres-com-a-egeac-valida-por-tres-anos/ , 2018, accessed on 05/02/2019

Martinko, K. City of Freiburg has a brilliant alternative to disposable coffee cups, https://www.treehugger.com/environmental-policy/city-freiburg-has-brilliant-alternative-disposable-coffee-cups.html , 2017, accessed on 02/02/2019

Medical Xpress. Study suggests infection risk from reusable cups, https://medicalxpress.com/news/2018-02-infection-reusable-cups.html , 2018, accessed on 11/06/2019

Nemeroff, C., & Rozin, P.1994. The contagion concept in adult thinking in the United States: Transmission of germs and of interpersonal influence**.** ***Ethos***, 22(2): 158-186

Numata, D., & Managi, S. 2012. Demand for refilled reusable products. ***Environmental Economics and Policy Studies***, 14(4): 421-436

O'Connor, M. Breaking Down Bioplastics, http://www.earthisland.org/journal/index.php/magazine/entry/breaking_down_bioplastics/ , 2011, accessed on 22/02/2019

Panti, C., Baini, M., Lusher, A., Hernandez-Milan, G., Bravo Rebolledo, E., Unger, B., Syberg, K., Simmonds, M. and Fossi, M. 2019. Marine litter: One of the major threats for marine mammals. Outcomes from the European Cetacean Society workshop. ***Environmental Pollution***, 247: 72-79.

Pincha, J. Copos de plástico descartáveis proibidos em Lisboa a partir de 2020, https://www.publico.pt/2019/01/10/local/noticia/copos-plastico-descartaveis-proibidos-lisboa-partir-2020-1857336 , 2019, accessed on 07.02.2019

Poortinga, W., Whitmarsh, L. and Suffolk, C. 2013. The introduction of a single-use carrier bag charge in Wales: Attitude change and behavioural spillover effects. ***Journal of Environmental Psychology***, 36: 240-247.

Poortinga, W. Sautkina, E. Thomas, G.O, and Wolstenholme, E. 2016. ***The English plastic bag charge: Changes in attitudes and behaviour***. Cardiff : Welsh School of Architecture/School of Psychology, Cardiff University.

Poortinga, W. and Whitaker, L. 2018. Promoting the Use of Reusable Coffee Cups through Environmental Messaging, the Provision of Alternatives and Financial Incentives. ***Sustainability***, 10(3): 2071-1050

Royte, E. We Know Plastic Is Harming Marine Life. What About Us? , https://www.nationalgeographic.com/magazine/2018/06/plastic-planet-health-pollution-waste-microplastics/ , 2018, accessed on 03/02/2019

Savoca, M., Tyson, C., McGill, M. and Slager, C. 2017. Odours from marine plastic debris induce food search behaviours in a forage fish. ***Proceedings of the Royal Society B: Biological Sciences***, 284(1860).

Schultz, P., Bator, R., Large, L., Bruni, C. and Tabanico, J. 2013. Littering in Context Personal and Environmental Predictors of Littering Behavior. ***Environment and Behavior***, 45: 35-59

Schuyler, Q., Hardesty, B., Wilcox, C. and Townsendt, K. 2013. Global Analysis of Anthropogenic Debris Ingestion by Sea Turtles. ***Conservation Biology***, 28: 129-139.

Schuyler, Q., Wilcox, C., Townsend, K., Wedemeyer-Strombel, K., Balazs, G., van Sebille, E. and Hardesty, B. 2015. Risk analysis reveals global hotspots for marine debris ingestion by sea turtles. ***Global Change Biology***, 22(2): 567-576.

Seaman, Greg, Plastics by the Numbers, https://learn.eartheasy.com/articles/plastics-by-the-numbers/ , 2012, accessed on 20/02/2019

Sheehan, B. 2017. ***Greenhouse Gas Impacts of Disposable vs Reusable Foodservice Products.*** Washington, DC: Clean Water Fund.

Siddiqui, A., Richards, D. and Powrie, W. 2012. Investigations into the landfill behaviour of pretreated wastes. ***Waste Management***, 32(7): 1420-1426.

Siegel, R. Will one of these 12 visions replace today's throwaway coffee cup? , https://www.greenbiz.com/article/will-one-these-12-visions-replace-todays-throwaway-coffee-cup , 2019, accessed on 12/02/2019

Smyth, J. KeepCup founder on revolutionising coffee culture, https://www.ft.com/content/3df1d006-de86-11e8-9f04-38d397e6661c , 2018 , accessed on 01/02/2019

Soares, T. Sagrada cerveja, https://expresso.pt/sociedade/2019-06-16-Sagrada-cerveja, 2019 , accessed on 20/06/2019

Spotswood, F. and Whitaker, B. 2017. Changing littering practices at Glastonbury Festival. ***Social Business***, 7(3): 263-278.

Starbucks. Starbucks global responsibility report: Goals and progress, http://www.starbucks.com/responsibility/global-report , 2018, accessed on 02/02/2019

Steg, L. and Vlek, C. 2009. Encouraging pro-environmental behaviour: An integrative review and research agenda. Journal of Environmental Psychology, 29(3): 309-317.

Stern, P. C., Dietz, T., & Guagnano, G. A. 1995. The New Ecological Paradigm in Social-Psychological Context. ***Environment and Behavior***, 27(6): 723–743.

Super Bock. Copos reutilizáveis nos pontos de venda, https://autentico.superbockgroup.com/copos-reutilizaveis-nos-pontos-de-venda , 2019 , accessed on 23/05/2019

Tabone, M., Cregg, J., Beckman, E. and Landis, A. 2010. Sustainability Metrics: Life Cycle Assessment and Green Design in Polymers. ***Environmental Science & Technology***, 44(21): 8264-8269.

The Brewers of Europe. Beer Statistics, https://brewersofeurope.org/uploads/mycms-files/documents/publications/2018/EU-beer-statistics-2018-web.pdf , 2018 , accessed on 05/05/2019

Thøgersen, J. 1999. Spillover processes in the development of a sustainable consumption pattern. ***Journal of Economic Psychology***, 20 (1): 53-81

Thomas, G., Sautkina, E., Poortinga, W., Wolstenholme, E. and Whitmarsh, L. 2019. The English Plastic Bag Charge Changed Behavior and Increased Support for Other Charges to Reduce Plastic Waste. ***Frontiers in Psychology***.

To, K., & Chan, W. 2006. ***A life-cycle and economic analysis: paper versus ceramic plates in the Barn Restaurant***. Report, University of British Columbia, Vancouver

United Nations Environment Report. Our planet is drowning in plastic pollution, https://www.unenvironment.org/interactive/beat-plastic-pollution/, 2018, accessed on 20/02/2019

Vercalsteren, A., Spirinckx, C., and Geerken, T. 2010. Life cycle assessment and eco-efficiency analysis of drinking cups used at public events. ***The International Journal of Life Cycle Assessment***, 15(2): 221–23

Whitmarsh, L. and O'Neill, S. 2010. Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. ***Journal of Environmental Psychology***, 30(3): 305-314.

Wilcox, C., Van Sebille, E. and Hardesty, B. 2015. Threat of plastic pollution to seabirds is global, pervasive, and increasing. ***Proceedings of the National Academy of Sciences***, 112(38): 11899-11904

Williams, S. and Schaefer, A. 2012. Small and Medium-Sized Enterprises and Sustainability: Managers' Values and Engagement with Environmental and Climate Change Issues. ***Business Strategy and the Environment***, 22(3): 173-186.

Woods, L., and Bakshi, R. 2014. Reusable vs. disposable cups revisited: guidance in life cycle comparisons addressing scenario, model, and parameter uncertainties for the US consumer. ***The International Journal of Life Cycle Assessment***, 19(4): 931-940.

Appendix

Questinnair aplied to employees and establishment owners where reusable cups are used:

Este inquérito realiza-se no âmbito de um estudo académico, integrado no Mestrado em Gestão Internacional do Instituto Universitário de Lisboa (ISCTE-IUL) a fim de obter o grau de mestre.

O questionário pretende avaliar o impacto ambiental, económico e social do uso de copos reutilizáveis (em alternativa a copos descartáveis) nos estabelecimentos de consumo de bebidas (bares, cafés e restaurantes) em Lisboa.

Todos os dados recolhidos são anónimos e serão apenas utilizados para o trabalho de investigação académica, assegurando-se a sua confidencialidade.

Obrigada pela sua colaboração,

Ana Lúcia Henriques

Dados sociodemográficos e laborais

1 – Idade

Menos de 18 anos	
Entre os 18 e os 30	
Entre os 31 e os 40	
Entre os 41 e os 60	
Mais de 60 anos	

2 – Género

Feminino	
Masculino	

3 – Habilitações

Ensino Básico		**Pós-Graduação**	
Ensino Secundário ou equivalente		**Mestrado**	
Licenciatura		**Doutoramento**	

3 – Há quanto tempo está no seu emprego atual?

Menos de 1 ano	
Entre 1 e 5 anos	
Mais de 5 anos	

4 – Qual a sua função no estabelecimento em que trabalha?

Dono (mas não trabalho diariamente no estabelecimento, tenho funcionários)	
Dono (trabalho diretamente no estabelecimento)	
Funcionário	

5 – Quantos empregados tem o estabelecimento em que trabalha?

1 - 5	
6 - 10	
11 - 20	
+ de 20	

6 – Qual o tipo de estabelecimento em que trabalha?

Bar		
Restaurante		
Café		
Quiosque		
Outro. Qual?		

7 – Que marca de copos reutilizáveis utiliza?

Sagres		
Super Bock		
Lisboa Limpa		
Marca Própria		
Outra marca. Qual?		

Impacto social

Esta secção pretende especificamente medir a aceitação dos consumidores quanto ao uso de copos reutilizáveis e o impacto social resultante

8 - Há quanto tempo utiliza copos reutilizáveis no seu estabelecimento?

Há menos de 3 meses	
Há 3 meses ou mais	

9 - Neste momento utiliza simultaneamente copos reutilizáveis e copos descartáveis?

Sim, uso ambos	
Não, utilizo somente copos reutilizáveis	

9.1 - Caso tenha respondido "Sim" na resposta anterior, porque razão mantém o uso dos copos descartáveis? Pode selecionar mais do que uma opção.

Nas horas de maior volume de clientes não é possível explicar e cobrar pelo uso de copos reutilizáveis.	
Nas horas de maior volume de clientes não é possível receber de volta os copos reutilizáveis e devolver o euro.	
Alguns clientes recusam-se a usar os copos reutilizáveis.	
Porque ainda tenho copos descartáveis para utilizar.	
Para servir a última bebida antes de fechar.	
Para servir café e outras bebidas quentes.	
Outra razão. Qual?	

10 – Classifique, de 1 a 5, o grau de dificuldade na implementação de copos reutilizáveis no seu estabelecimento (1 muito difícil e 5 muito fácil).

	1	2	3	4	5	
Muito difícil						Muito fácil

11 - Quais as principais dificuldades com que se deparou? (Pode selecionar mais do que uma opção).

Os clientes não querem usar copos reutilizáveis por estes terem um custo acrescido	
Os clientes não querem usar copos reutilizáveis porque não consideram prático ter que os devolver no final ou carregar o copo até casa	
Os clientes não querem usar os copos reutilizáveis porque não têm dinheiro suficiente para pagar o preço acrescido do copo	
Os clientes não sabem da existência dos copos e não é prático explicar o sistema a cada novo cliente	
Como o preço extra que o cliente paga pelo copo é devolvível no final, não é possível registar esse valor na caixa registadora o que dificulta o controlo do dinheiro	
Gestão da limpeza dos copos reutilizáveis que são devolvidos	
Custos associados à limpeza dos copos reutilizáveis	
Outra dificuldade. Qual?	

12 – Classifique, de 1 a 5, a aceitação da introdução de copos reutilizáveis no seu estabelecimento pelos seus clientes (1 muito difícil e 5 muito fácil).

	1	2	3	4	5	
Muito difícil						Muito fácil

12.1 - Quais considera serem as maiores dificuldades na dos copos reutilizáveis pelos seus clientes? assinalar mais do que uma opção).

A falta de informação	

12.2 - Os clientes queixam-se por terem que devolver o copo no final?

Sim	
Não	

O custo extra da bebida	
O encargo extra de ter que devolver o copo no final	
Não consideram higiénico	
Outra dificuldade. Qual?	

12.2.1 - Caso tenha respondido que sim na pergunta anterior, qual/quais as razões que os clientes invocam? (Pode selecionar mais do que uma opção)

Vão abandonar o bar, ainda não terminaram de beber e a seguir não vão a mais nenhum sítio de modo que não vão ter onde devolver o copo	
O estabelecimento a que vão a seguir não utiliza copos reutilizáveis	
Devolver os copos no final é difícil devido ao grande número de pessoas que também quer devolver os seus copos	
Outra razão. Qual?	

13 – Costuma encontrar copos reutilizáveis abandonados? Se sim, o que faz nessas ocasiões?

Não encontro	
Recolho, lavo e reuso	
Encontro mas não recolho porque estão estragados	
Encontro mas não recolho porque não considero higiénico	
Outra dificuldade. Qual?	

Impacto ambiental

Esta secção pretende medir o impacto ambiental do uso de copos reutilizáveis

14 – Classifique, de 1 a 5, as seguintes afirmações.

1 - Discorda totalmente
2 - Discorda
3 - Não sabe/ Não tem uma opinião formada
4 - Concorda
5 - Concorda totalmente

"Alguns clientes que fazem questão de usar copos reutilizáveis"	
"Com o passar do tempo, servir os clientes usando copos reutilizáveis torna-se cada vez mais fácil"	
"A aceitação dos copos reutilizáveis pelos clientes tende a crescer devido ao cada vez maior número de estabelecimentos aderentes e informação disponível"	
"Alguns clientes manifestam preocupações ambientais que vão para além do uso dos copos reutilizáveis"	
"A implementação de copos reutilizáveis desperta nas pessoas o interesse em saber mais sobre outras formas de poderem consumir de forma mais ecológica"	
"No futuro pretendo que o meu estabelecimento adote outras medidas amigas do ambiente (exemplo: reciclagem).	

15 - Para além dos copos reutilizáveis, que outros comportamentos "amigos do ambiente" implementou ou pretende implementar no seu estabelecimento? Pode assinalar mais do que uma opção.

Reciclagem	
Compostagem	
Uso de lâmpadas LED	
Uso de recipientes reutilizáveis para *take away*	
Uso de colheres de café para *take away* de madeira	
Uso de sacos de papel	
Uso de palhinhas de material alternativo ao plástico	
Outra medida. Qual?	

16 – Considerando o período entre o momento em começou a trabalhar com os copos reutilizáveis presente, quantos copos descartáveis estima poupados no seu estabelecimento?

Entre 0 e 10	
Entre 11 e 100	
Entre 101 e 500	
Entre 501 e 1000	
Entre 1001 e 5.000	
Mais de 5.000	

17 - Relativamente à durabilidade dos copos reutilizáveis, já lhe foram devolvidos copos danificados ou danificou algum no decorrer da sua actividade?

Sim	
Não	

17.1 - Caso tenha respondido que sim na resposta anterior, com que frequência é que isso ocorre?

Raramente	
Frequentemente	
Muito frequentemente	
Não sei	

17.1.1 - Caso tenha respondido na pergunta anterior "frequentemente" ou "muito frequentemente", em medida os copos foram danificados?

A tinta saiu	
Estão amolgados	
Estão rotos	
Estão queimados	
Outro. Qual?	

Impacto económico

Esta secção pretende especificamente medir o impacto económico do uso de copos reutilizáveis em estabelecimentos de venda de bebidas

18 – Classifique, de 1 a 5, o impacto do uso de copos reutilizáveis nos gastos mensais de eletricidade do estabelecimento (1 pouco significativo e 5 muito significativo).

	1	2	3	4	5	
Pouco significativo						Muito significativo

19 – Classifique, de 1 a 5, o impacto do uso de copos reutilizáveis nos gastos mensais de água do estabelecimento (1 pouco significativo e 5 muito significativo).

	1	2	3	4	5	
Pouco significativo						Muito significativo

20 - Classifique as seguintes afirmações, de 1 a 5, conforme o grau de concordância com as mesmas.

1- **discordo totalmente**
2- **discordo em parte**
3- **não concordo nem discordo**
4- **concordo em parte**
5- **concordo totalmente**

"A introdução de copos reutilizáveis fez com que perdesse clientes"	
"A introdução dos copos reutilizáveis no meu estabelecimento trouxe outro tipo de clientes ao meu estabelecimento" Ex: clientes preocupados com o meio ambiente.	
"A introdução dos copos reutilizáveis no meu estabelecimento teve um impacto negativo nas vendas"	

21 - Para terminar, gostaria de obter o seu *feedback* relativamente ao modo como o sistema de copos reutilizáveis poderia ser melhorado.

Para isso, classifique de 1 a 5 as seguintes afirmações, conforme a necessidade.

1- **muito desnecessário**
2- **desnecessário**
3- **não se adequa ao meu estabelecimento**
4- **necessário**
5- **muito necessário**

"Deveria ser disponibilizada mais informação"	
"Deveriam ser disponibilizados copos mais pequenos, para levar café"	
"Deveriam ser disponibilizados copos de 35 CL para refrigerantes"	
"Deveriam ser disponibilizados contentores onde as pessoas pudessem deixar os copos caso não tivessem oportunidade de devolvê-los aos estabelecimentos e posteriormente uma empresa ocupar-se da recolha e lavagem".	
"Deveria haver mais apoio por parte das entidades governamentais (junta de freguesia ou câmara municipal)	
Outra. Qual?	

Terminou o preenchimento deste inquérito.
Muito obrigada pela sua colaboração!