



UNIVERSIDADE CATÓLICA PORTUGUESA

Circular Economy in the Hospitality Industry: Awareness and implementation in Europe

Carina Soares Martins

Catholic University of Portugal, School of Economics and Management
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Carina Soares Martins

Under the supervision of
Prof. Dr. Jorge Manuel Soares Julião
Prof. Dr. Marcelo Rudolfo Calvete Gaspar

Catholic University of Portugal, School of Economics and Management
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Abstract

This thesis conceptualises and examines the Circular Economy in the Hospitality Industry. Sustainability has been a subject that has risen researches attention, as today's environmental situation is aggravating on account of humans' actions. The Hospitality Industry is considered to be in the spotlight of this issue as it is an important contributor to large waste generations. CE measures in the industry would minimise waste creation, yet this field lacks studies. For this purpose, an investigation on CE in the Hospitality Industry was made.

For this research, a multiple case method was used to gather data. Interviews were made with different hotel operators from seven European countries to understand to what extent they are familiar with CE and if they integrate these measures in their operations.

In general, the cases interviewed do not apply CE practices to a wider extent. The main practices carried out by the investigated hoteliers are related to basic recycling and reducing matters. Yet, one particular case stands out from the remaining cases, as it applies several CE practices intending to protect the environment.

Given the complexity of this investigation and the difficulty to assemble a greater number of interviews, the responses gathered were limited and cannot be generalised due to different implications. For future research, it would be of high value to interview a greater number of participants to provide a more comprehensive and generalised study. Also, a survey would reach a higher number of participants.

Keywords – Circular Economy, Sustainability, Waste Management, Hospitality Industry, Tourism.

Resumo

Esta tese tem como objetivo de investigar e avaliar a Economia Circular na Indústria Hoteleira. A sustentabilidade tem sido um tema que tem suscitado a atenção da investigação, uma vez que a situação ambiental atual se agrava devido à ação do homem. O turismo é considerado como estando no centro das atenções desta questão por ser um importante contribuinte para as grandes gerações de resíduos. As medidas da Economia Circular na indústria hoteleira minimizariam a criação de resíduos, no entanto este tema ainda é escasso na literatura. Para este efeito, foi feita uma investigação sobre a Economia Circular na Indústria Hoteleira.

Para a investigação e recolha de dados, este estudo recorreu à análise de casos múltiplos. Foram feitas entrevistas com diferentes hoteleiros de sete países da união europeia para perceber até que ponto estão familiarizados com a Economia Circular e se incluem medidas nas suas operações.

Esta análise permitiu identificar a ausência de aplicação de práticas da Economia Circular dos casos entrevistados. As principais práticas levadas a cabo pelos hoteleiros investigados estão relacionadas com a reciclagem básica e a redução de resíduos. Contudo, um caso em particular destaca-se, uma vez que aplica várias práticas da Economia Circular que pretendem proteger o ambiente.

Dada a complexidade desta investigação e a dificuldade de reunir um maior número de entrevistas, as respostas recolhidas foram limitadas e não podem ser generalizadas. Para investigações futuras, seria importante entrevistar um maior número de participantes para proporcionar um estudo mais abrangente e generalizado através de um inquérito.

Palavras-chave - Economia Circular, Sustentabilidade, Gestão de Resíduos, Indústria Hoteleira, Turismo.

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List of Abbreviations

AC	Air conditioning
CE	Circular Economy
HACCP	Hazard analysis and critical control points
IPCC	Intergovernmental Panel on Climate Change

1. Introduction

1.1. Problem Situation

The Hospitality Industry is one of the biggest industries worldwide. Tourism is in fact a big contributor to the world's economy as one in every ten enterprises is related to the tourism industry. The latter employs around 12.3 million people worldwide (Eurostat, 2021). Due to the increased accessibility of the internet, people are more willing to travel, which enforces the procurement of employees in the sector. In fact, the UNWTO (2020) states that in 2019 there were 1.5 Billion international tourist arrivals. Nevertheless, this number decreased by 74% in 2020 following the COVID-19 pandemic. Accordingly, Europe received in 2019 746 million tourists as in 2020 the number decreased to 221 million (-70%) (UNWTO, 2021).

The tourism intensification brought an equal augmentation in the waste generation in several levels (Alonso & Ogle, 2010; Rodríguez et al., 2020). The wastages go from water and energy consumption to wastages created by people. Carbon footprint emissions are also an important matter created by hotels and tourists worldwide (Chan, 2012). Businesses and people are getting more environmentally conscious and thus, try to implement "greener practices" in their day-to-day actions. The pandemic has relieved nature's damage by reducing tourism because of the travel restrictions imposed by the governments. However, the situation contributed to new wastages and some relaxations in sustainable measures in all sectors, including the hotel sector (Jones & Comfort, 2020).

1.2. Research Definition

Regarding the negative impacts the Hospitality Industry has on the environment, the active companies in the sector must act through a new sustainable and ecological approach as the past ones were not adequate. From this point on, Circular Economy will be mentioned more often and thus, it is underlined as an abbreviation, explicitly CE. A CE approach appears to be an opportunity for hospitality operators to minimise waste generation in the industry, as well as pollution (Mhatre et al., 2021) and carbon emissions. The approach mainly described as the 3R Strategy - Reuse, Recycle, Reduce - (Ghisellini et al., 2016) aims to expand a product's life cycle (Hernandez et al., 2020) to minimise waste generation from creating new ones. This topic has gotten little attention, mainly in the Hospitality Industry. However, it is an important concern as the planet is already reacting negatively (Letcher, 2021) because of people's bad behaviours towards the environment. Therefore, it is important to study the means of how to reduce that negative impact through the application of new practices. Through the existent gap of investigation in the circular economy in the hospitality industry, we propose exploring the topic in more depth. This research will comprise theoretical knowledge about the topic as well as empirical research with invited hotels. The focus of this thesis is to gain insight into the knowledge hospitality operators have on CE as well as to understand if and to which extent they include CE measures in their operations. Therefore, the research question can be identified as: **Is the Hospitality Industry aware of CE practices and are they being applied?**

1.3. Methodology

The study aims to get an extended knowledge about CE practices in the Hospitality Industry, including to what extent hospitality operators are aware of the concept and implement it in their operations. Therefore, we presented first a comprehensive overview of the topic, including different definitions and views about the CE principle as well as a comparison to the traditional Linear Economy. Further will be mentioned the impact of the Hospitality Industry on the environment and possible practices that can be applied. There will be a more in-depth sight into Rodríguez-Antón & Alonso-Almeida (2019) article. The literature review will also refer to the customer's perception of sustainable actions in the Hospitality Industry as well as the impact of the COVID-19 pandemic on these measures and the environment.

Further, the thesis will present the empirical study that aims to respond to the research question mentioned before. The method used in this research is a case study approach as it was identified as being the most appropriate to investigate the issue of this thesis. The case studies were executed through interviews with chosen professionals in the Hospitality Industry. These interviews were made to have a broad knowledge about the different experiences of each professional with regards to the Circular Economy in the industry they work in.

1.4. Thesis Outline

This research is structured in seven main chapters, being the first one the introduction to the main subject of this research, followed by an extensive literature review on the Circular Economy and everything that involves this

issue. The third chapter describes the methodology used to conduct the research as well as some theoretical knowledge about the method used. Chapter four includes the results gathered during the interviews conducted with professionals of the area, followed by the discussion of these results in chapter five. The sixth chapter presents the conclusions of the investigation. Last but not least, in chapter seven are the limitations identified during the research process, as well as suggestions for future research.

2. Literature Review

2.1. Circular Economy – The Concept

The planet is being faced with several environmental challenges these past few years, that go from climate change to pollution of the oceans or even scarcity of biodiversity, to mention a few. Released landfill leachates generated by industries, mostly industrial are negatively impacting the environment, where landfill discharging policies need to be re-evaluated (Shi et al., 2021). The overexploitation of natural resources by industries is contributing to the destructive effect on today's world. As reports the IPCC (2019) reports, the world will raise its temperature by 1.5°C by 2040 which will lead to extreme natural events. The planet is already reacting through “extreme weather events such as flooding, droughts and water crises, high winds, runaway fires, wash-aways and mudflows from land denuded of its natural rain soaking properties, and high seas in coastal areas, together with rising sea level” (Letcher, 2021, p.7).

Today's economic activity is still primarily characterised as being a linear model of production (Rodríguez et al., 2020), meaning that raw materials are transformed into products, which are bought and used by consumers until they are discarded as non-recyclable waste. This activity is defined as a “take-make-waste pattern” by the same author. Moreover, this production model is not concerned with the use of raw materials or manufacturing products, that can be later recycled or recovered (Florido et al., 2019). Through the latter, the world has been faced with not just massive amounts of wastages in every form, but also a scarcity of natural resources. Because of the scarcity of natural resources and a non-renewable type (Aryal, 2020), the circular economy appears to be a valuable

option to prevent the unnecessary creation of waste, as well as pollution (Mhatre et al., 2021) and carbon emissions.

CE departs from the traditional economy of production (linear production model) because CE attempts to use most of its resources and raw materials with the purpose of constantly reusing them to minimize environmental damage.

Table 1 presents a comparison between both economies taking into consideration information collected in the literature review.

Table 1 Comparative analysis between Linear and Circular Economy. Source: Own Elaboration.

	Linear	Circular
Scope	“Take-Make-Waste” (Rodríguez et al., 2020)	Closed-loop system (Ellen MacArthur Foundation, 2013a)
Objective	To generate profit with the idea of having unlimited natural resources as well as the planet having the unlimited capability of absorbing waste (Cooper, 1999)	To reduce the extraction and usage of natural resources, as well as the generation of waste by increasing the effectiveness of the product and service (Ellen MacArthur Foundation, 2013b)
Product life cycle	Short-term, ownership of the product passes on the consumer which after consuming the product throws it away (Ajwani-Ramchandani et al., 2021)	Long-term, because of the 3R principle – Reuse, Recycle, Reduce (Ghisellini et al., 2016)
Value creation	“unidirectional” supply chain (Florido et al., 2019) - downcycling	“Continuous cascades” of supply chain activities (Florido et al., 2019) – upcycling
Business Model	Focuses mainly on product and economic growth (Millar et al., 2019)	Focuses on innovation and efficient product design (Boons & Lüdeke-Freund, 2013; Korhonen et al., 2018)

The concept of Circular Economy is a principle that uses materials that can be subsequently utilized by nature for its functions (Korhonen et al., 2018) but also includes other areas, such as economic, ecological, technological and social (Julião et al., 2019; Xu & Gursoy, 2015). According to Ghisellini et al. (2016) research on CE, the authors consider that CE is identified through the 3R principles: Reuse, Recycle, Reduction. However, Ritzén & Sandström (2017) suggest a 4R-strategy, that include the function “recondition” to the 3Rs mentioned above. Recondition would mean that companies would sell a “product-service system”, where they would take the products after usage by the consumers back (Ritzén & Sandström, 2017). Both approaches underline, that products need to be adjusted to expand the product lifespan (Hernandez et al., 2020). CE differs from simple sustainable actions since it aims to minimize the negative impact in the world through a closed-loop system, where products should be designed based on “biological and technical components” to reduce and eliminate waste after the product usage (Ellen MacArthur Foundation, 2013a).

In research done by Kirchherr et al. (2017) regarding 114 definitions on CE, the authors advance that the most prominent definition is the one by the Ellen MacArthur Foundation (2013b, p. 7):

“A circular economy is an industrial system that is restorative or regenerative by intention and design. It replaces the ‘end-of-life’ concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models.”

As it has been said, a CE approach could be considered a valid substitute model (Rodríguez et al., 2020) and thus, implemented in companies could avoid severe damages and pollution in the world that come from natural resource exploitation (Mhatre et al., 2021). After understanding the concept of CE and its differences from the traditional linear model, we'll focus on the CE in the Hospitality Industry in the next section. Even though every industry impacts the planet negatively in some way, some industries have a larger impact, like the Hospitality Industry. Indeed, hotel managers are aware of the negative impact their activity has on the environment (Bohdanowicz, 2006).

2.2. Circular Economy in the Hospitality Industry

2.2.1. Environmental impacts and challenges due to the Hospitality Industry

The need to address environmental issues in the Tourism Industry has become an important point of interest for most researchers and investigators. However, the concept of circular economy applied in hotels has yet to be more considered, as accommodation contributes to “2% of the 5% global CO₂ emitted by the tourism sector” (World Tourism Organization. & United Nations Environment Programme., 2008). Even though these environmental issues are known by many, literature on this topic is still limited and needs to get more attention from researchers and scholars.

The tourism industry is an impactful contributor to the consequences happening on the environment (Jones et al., 2014; Julião et al., 2019; Rodríguez et al., 2020; Rodríguez-Antón & Alonso-Almeida, 2019; Rosenblum et al., 2000).

Through tourism massification, including hotels, restaurants, and other travel-related activities, in the past few years, the “tourism supply” has been responsible for “the destruction of natural resources” (Rodríguez-Antón et al., 2012). In fact, as Migale et al. (2019) mention in their article, the tourism industry is the third-largest industry producing at least five per cent of the world’s CO₂ emissions. Restaurants and, in particular hotels, create enormous wastages, among which are food waste, energy, water consumption (Alonso & Ogle, 2010; Rodríguez et al., 2020), including wastewater as well as hazardous products and chemicals (Styles et al., 2013). Some major hotels already address these issues and tempt to align their strategies to deal with the impact they cause on the environment (Jones et al., 2014).

Limiting the over-consumption of water and energy in hotel facilities would contribute positively to a more sustainable development in the industry. First, it would be of high importance for hotels to introduce a water management program in their strategic business plan. Indeed, Kasim et al. (2014, p. 1100) proposed in their article a water management framework for all kinds of hotels, taking mainly into consideration two scopes: the degree of knowledge and technology available in the company. The framework outlines the requirement of innovation-related with the 3R approach (reduce, recycle, reuse) additionally with a fourth R, named reaching. These variables are nominated as IR1 (“innovative reducing”), IR2 (“innovative reusing”), IR3 (“innovative reaching”) and IR4 (“innovative recycling”). That is, if a hotel has a higher budget to invest in knowledge and technology, it is possible for them to reach the IR4 level, where they are able to recycle their used water and transform it into “clean drinkable water” (Kasim et al., 2014, p.1099).

Second, it would be equally important to manage energy efficiency in all hotel facilities and promote renewable energy. In fact, 63% of the world's electricity is produced from fossil fuels (Ritchie & Roser, 2020). Fossil fuels could be replaced by renewable energy, like "wind, solar, hydropower, biomass, tide and geothermal" energy. Yet, it would take several years to make that transition efficiently (Letcher, 2021, p.5).

"Waste generation is (...) the most visible effect the sector has on the environment"(Bohdanowicz, 2006, p.666). Whenever waste is discussed in the hospitality industry, it is unconsciously associated with food waste, as it is considered the largest waste category in the industry (Filimonau & de Coteau, 2019). The same authors identified a gap in scientific research regarding food waste produced in the hotel sector. In a study made by Pirani & Arafat (2016), the authors conducted a "material flow analysis" (MFA) in hotels in the UAE to understand the amounts of food waste which were produced in the individual stations of the food production process. As a result, they concluded that the greatest amount of waste was produced in the food preparation process and from serving dishes. These wastages could be minimized by an implementation of a lean strategy in the food production process (Pirani & Arafat, 2016).

"Environmental assessments" must be done to understand how tourism impacts the environment negatively through the consumption of its visitors (Obersteiner et al., 2021). As emphasized before, the Hospitality Industry is an important contributor to the negative influence on the planet. Nonetheless, the application of the circular economy and green practices (GP) would be a progressive step into a more sustainable world. Research has tended to focus more on water, energy consumption and food waste in the industry rather than

investigating in more depth other practices or actions related to CE. In the next section, we will present the CE practices suggested in the literature review.

2.2.2. Circular Economy Practices and Barriers

As sustainability begins to be an increasingly prominent matter, hotels feel the need to look for new approaches to innovate their operations. In their investigation into sustainable business models, Boons & Lüdeke-Freund (2013) show that shifting towards a circular economy strategy requires the execution of an innovative and sustainable business model. In their paper, it has been outlined that applying “sustainable innovation” depends mainly on four principles of the business model: value proposition, supply chain, customer interface, and financial model. “Sustainable innovation” focuses simultaneously on responding accurately to customer’s needs, operating with ecological and innovative suppliers and new financial strategies (Boons & Lüdeke-Freund, 2013; Fuldauer et al., 2019).

Considering the supply chain being the main factor for a step closer towards sustainability (Gold et al., 2010), it should consist of networks and activities that include innovative and eco-friendly engagements throughout the whole production process, including the audit of waste management through adequate systems and technologies (Florido et al., 2019; Jones & Wynn, 2019; Xu & Gursoy, 2015). Fuldauer et al. (2019) and Florido et al. (2019) confirm that the company’s environment and business strategy must be included in the transition process, which allows hotels to implement efficiently CE measures. In their investigation into Green Supply Chain Management in the UAE, Al-Aomar & Hussain (2017) show that most hotels include the recycling and reuse concept in their supply

chains and identified the importance of integrating “suppliers, logistics partners, and customers of the hotel” in their sustainable transition.

It has also been suggested that Social Innovation (SI) should be encouraged by managers from the tourism sector because of the inefficiency of some sustainable practices in that industry (Batle et al., 2018). Incentivising all parties of a service; supplier, client, locals, etc., in the education of ecological and environmentally friendly practices, is as important as practising them. A recent review of the literature on this matter found that it was important to spread “social awareness” through advertising practices to raise consciousness to all parties (governments, tourism firms, and individuals) about the need for a transition to CE (Rodríguez et al., 2020). The customer’s standpoint will be addressed further in the next section.

Prior research was done by Gil et al. (2001) state in their investigation that the application of sustainable practices depends on five variables: 1. Effects of facility age; 2. Size; 3. Chain Affiliation; 4. Environmental Pressures from Stakeholders; and 5. Operations Management. In addition, recent research features the idea of the governments’ responsibility as well as the tourism sector and the locals (Florido et al., 2019; Jones & Comfort, 2020). Florido et al. (2019) presented the approach including the three engaging parties through a “Three-Axis Model” which permits the promotion of a circular destination. From this, we can assume that purely having the motivation on changing the non-environmentally friendly policies is not enough as the move towards CE depends on different parties too (Florido et al., 2019).

Not many authors have given their views about the practices and the changes that should be made to attain the purpose of moving towards a sustainable and

no-waste generation in the hospitality industry. In a multi-case study analysis about the application of CE in four international hotel chains made by Rodríguez-Antón & Alonso-Almeida (2019), the authors indicate several CE and sustainable actions that these chains apply as well as goals they aim to achieve in the near future. **Table 2** represents an overview of some measures, mentioned in the same article, that are being implemented in each of the four hotel chains: InterContinental Hotels Group, Accor, Meliá Hotels International and NH Hotel Group.

Table 2 CE practices applied in the Hospitality Industry. Source: Own Elaboration, adapted from Rodríguez-Antón & Alonso-Almeida (2019)

Hotel Chain	Sustainable and CE practices
InterContinental Hotels Group	<p>Digital sustainability platform – IHG Green Engage (manage and control energy consumption, CO₂ emissions, water use and waste generation); Green solutions (new product design, operations and technologies to reduce energy, water and waste, reduce carbon emissions, improve guests’ health and comfort and reduce operating and maintenance costs); Winnow system (detector of what and how food is wasted); room appliances (carpets, bedding, etc.) constituted of 100% recycled plastics and fishnets or natural materials.</p> <p>As a future target, the group aims to reduce greenhouse gas emissions by using climate science as well as eliminating the use of single-use plastics.</p>
Accor	<p>Accor Planet 21 programme (reduce water usage, increase usages of renewable energy, promote eco-design and sustainable building); incentive clients being more conscious by proposing planting trees for every reuse of their towels; Eco-design furniture (made from Forest Stewardship Certified (FSC) wood); bedcovers and pillows made from recycled bottles; eco-certified amenities</p>

	<p>and cleaning products; offering local products (food grown in their garden); promoting sustainable fishing; energy-efficient LED lighting; taps with water-saving features; certified carpets (designed by the GUT (Gemeinschaft umweltfreundlicher Teppichboden)); energy-efficient televisions; Environmental certifications (ISO 141001); treatment of 100% of hazardous waste; do their utmost to reduce littering associated to food, packaging and paper; “smart” construction technologies (improve data collection to reduce more efficient energy consumption)</p> <p>Accor intentions to transform their constructions into carbon-neutral buildings.</p>
<p>Meliá Hotels International</p>	<p>Global sustainability policy with UNICEF; “Eco-Touch by Meliá” brand; Reutilisation and recycling of products; using innovation to limit energy consumption and waste generation; usage of renewable, biodegradable, and compostable materials; Eco-design of the hotel; promote glass bottles; Environmental Certifications (ISO 14001, ISO 50001, EarthCheck, Travelife Seals); Biosphere, Green Leaders, Green Globe, SAPLING); rigid supplier selection (based on their ethics and a sustainable supply chain)</p>
<p>NH Hotel Group</p>	<p>Reduce energy consumption and CO₂ emissions; using sustainable energy sources; rigid supplier selection (based on environmental concerns, carbon footprint reporting, Sustainable Development Goals (SDG)); economic sustainability award by AVAENSEN (Asociación Valenciana del Sector de la Energía), InnDEA Foundation and FITUR; adhered to sustainable projects (Green Savings Project and Green Hotel Project); Environmental certifications (ISO 14001, ISO 50001, BREEAM, LEED, Green Key, Green+Hotels).</p>

As said before, with regards to the effective transition to a CE strategy, few authors suggest other measures that can help a hotel to introduce efficiently a CE approach as well as practices that are already being applied in some hotels. In a report from Larsen & Broegaard (2019, p. 96), where the transition of the tourism and hospitality sector towards a CE approach is discussed, the authors suggest “a corporate environmental management system (EMS)” which can help hospitality companies to control their activities, improve their environmental performances and set new goals. This management system might enable managers to reduce their negative impact on the planet and track their improvements. One improvement related to water consumption can be made through a hotel’s environmental-friendly laundry management choices (Jones & Wynn, 2019), like incentivising guests to reuse their bath towels (Florido et al., 2019). Moreover, the same author encourages hotels to reuse damaged or defective textiles and transform them into different items. The main idea described in Florido et al. (2019) article is to reuse the maximum of products and give them a new life. Given these examples of practices in the Hospitality Industry, the still existing gap concerning practical examples of measures to be taken to move towards a CE must be accentuated and encourage other researchers to investigate this subject.

Following all that has been mentioned in **Table 2**, we can support the idea that “hotel chains deploy more extensive environmental management practices than their non-affiliated counterparts” (Gil et al., 2001, p.460), as being part of a group facilitates access to sustainable know-how and be more competitive in the industry (Chen, 2019). Several studies, for instance, Chen (2019), Gil et al. (2001), Jones et al. (2014) and Rodríguez-Antón & Alonso-Almeida (2019), have indeed advanced that the big hotel chains are more devoted to developing sustainable programmes than smaller and independent hotels. However as mentioned

before, introducing CE practices can rely on several variables (Gil et al., 2001), which can influence the willingness and possibilities of hotel chains to incorporate CE programmes in their strategies. Indeed, on the one hand, many hotel chains still do not apply many CE measures (Rodríguez-Antón & Alonso-Almeida, 2019) as they are still to be evaluated in terms of costs by stakeholders. However, on the other hand, stakeholders feel pressured to introduce sustainable measures because of their competitors (Kularatne et al., 2019).

Transitioning from a traditional linear economy towards a CE might discourage some hotel managers and stakeholders because of the involved costs related to the implementation of new technologies and habits. However, some authors have accordingly referred that these practices might not only benefit the environment but could also improve their costs reduction and their competitive advantage in the long-term. As Al-Aomar & Hussain (2017) indicate in their study results, hotels that generate less waste can count on a decrease of their “recycling and waste disposal costs”. To emphasize this argument, other authors have mentioned in their papers that indeed cost reduction is attainable by lowering their water and energy consumption and introducing effective management systems to control them (Malheiro et al., 2020). Other authors prove that there is a truly reduction cost in implementing “environmental initiatives”, like light sensors or even water and energy management system (Font et al., 2008). Also mentioned by Malheiro et al. (2020), the competitive advantage the hotel might get is by offering an eco-friendly product and service with higher quality.

Overall, this section helped to comprehend where and, in some way, how hotels should act and introduce CE measures into their business strategies and activities. Transitioning towards CE will not be an easy process because it

involves costs and time to be fully introduced in the company. Research has tended to focus more on Manufacturing Industries, rather than service industries like the Hospitality Industry. Having discussed the role of CE in the Hospitality Industry and how managers can implement these practices in their strategies, it is now possible to briefly explore the customers' perception of these measures.

2.2.3. Customer Point of View

Addressing now the consumers' perception of the hotels' implementation of good practices, the circular economy is getting more attention from a consumer point of view as they are the ones that purchase the service or product (Julião et al., 2019) and are getting more environmentally conscious. Guests in the Hospitality Industry are considered by Binkhorst & Dekker (2009) as co-creators of tourist activity and experience which play an integrated role in the tourism industry. In a similar vein, Moliner et al. (2019) and Sørensen & Bærenholdt (2020) refer that it is necessary to involve consumers to carry out the good practices imposed by the hotel, like recycling their waste, respect nature and biodiversity, limiting their water and energy consumption, to mention a few. Therefore, hotels should be given the responsibility to spread awareness to guests and inviting those who are not as conscious about the environment during their stay (Bohdanowicz, 2006; Florido et al., 2019). Customers are getting more critical with their destination and accommodation decisions since they firmly believe that firms should offer sustainable attributes. On a more negative note, some guests might perceive the leaflets, which call them out to be more environmentally conscious by saving energy or water, as an invasion into the comfort of their stay which they paid (Bohdanowicz, 2006).

As more and more consumers are concerned about having more sustainable living (Osti & Goffi, 2021), hotels feel the need to adapt themselves to this new market segment. Consequently, Hospitality firms get equally concerned about their brand image (Xu & Gursoy, 2015) since it is how the potential customers perceive their company. Through the arose consciousness of singular customers in sustainable practices, they are more and more often willing to pay a premium price for hospitality companies involved in environmental causes (Batle et al., 2018; Xu & Gursoy, 2015). In fact, Kularatne et al. (2019) refer in their article a study made by the International Hotels Environment Initiative that 90% of guests tend to give priority to hotels that practice green initiatives than hotels that are not concerned about sustainable development (Berezan et al., 2014). Thus, critical decision-making leads customers to become more loyal (Stylos & Vassiliadis, 2015) which might help hotels to build a strong relationship with them while assuring at the same time the performance of their good practices towards the environment.

In a study and future workshop made by (Sørensen & Bærenholdt, 2020, p.7), the authors suggest the proposition by tourism companies of “circular economy tourist practice-arrangement bundles” to tourists. These bundles are composed of activities that incentive green and sustainable development actions, such as “cycling, hiking, (...) sharing of accommodation, (...) using public transport, (...) while using sustainable products and recycling waste.” It is noticeable that the authors recommend alternative activities or customs for tourists with the intention to incentivise guests as well as hoteliers or tourism operators to adhere to the progress of transitioning towards a CE in the tourism industry.

2.2.4. Impact of COVID-19 on the application of Circular Economy practices

COVID-19 is an infectious disease caused by the most recently discovered coronavirus, which is a large family of viruses causing illness in humans and animals (World Health Organization, 2021). The virus outbreaked in Wuhan, China, in December 2019 and was declared as a pandemic in March 2020 affecting many countries globally (Jones & Comfort, 2020). Due to the COVID-19 epidemic, many countries announced country-wide social distancing measures which led to many countries closing their borders (Sigala, 2020) and several businesses completely shut down their operations. As of today, many industries, including the Hospitality Industry, had to adapt their businesses and activities to the new measures to assure high sanitary protection. The Hospitality Industry was, and probably still is, one of the most affected industries by the pandemic. Through closed borders and lockdown, people were banned from travelling or even leaving their homes and thus, stopped tourism as a whole (Lopes de Sousa Jabbour et al., 2020). Hotels and restaurants depend on instant and perishable products and services.

Besides the disease the virus developed in people, it also broke out on the environment through a surplus of waste generation. Perhaps more positively, through the worldwide lockdowns which forced people to stay at home, society started to acknowledge an improvement in the environment (Jones & Comfort, 2020; Patrício Silva et al., 2021). However, considering those secondary effects of the pandemic, in an analysis review of waste management in the hospitality sector post-pandemic, Filimonau (2021) points out that the main areas of waste generation are food and plastic waste. Consequently, the plastic products used are treated by people as hazardous waste, which leads to overwhelming waste

management (Klemeš et al., 2020) and leaves most of those plastics untreated and not recycled. In fact, Patrício Silva et al. (2021) states that most of the plastic provided from the COVID-19 pandemic was deposited in landfills.

To overcome the challenges and wastages created by the pandemic, it could be beneficial to instead of thinking of tourism as the “economic success growth” (Sigala, 2020), to envision it as a new opportunity to create new standards that move towards a CE and thus, more sustainable development. Indeed, people must give priority to bioplastics as well as “implement strong and effective plastic policies towards a circular bio-economy and environmental sustainability” and improve its waste collection and treatment (Patrício Silva et al., 2021). This approach must be encouraged and invested by governments that are acquainted and mindful with the severe issue of climate change. A recent article (Filimonau, 2021) highlights the importance of institutional support to fight against the disruption of wastages originating from the COVID-19 epidemic. As this situation is so unique and needs a new way of thinking, it is not sufficient for hotels to innovate based on past experiences and knowledge with the purpose of “maximizing protection” for their customers (Sharma et al., 2021). In a study made by Pillai et al. (2021), the authors investigated how the integration of a Hospitality 5.0 (derived from the industry 5.0) in the Hospitality Industry would help gain customers’ trust in their services.

Having briefly pointed out how, in some way, the Hospitality Industry could control the impact of the COVID-19 crisis, we are now identifying some challenges for the industry. Hospitality operators are faced with new financial costs to assure sanitizing their facilities and assure a secure experience for their guests. Besides the costs, the sector is faced several wastages that derive from plastics, chemicals, etc. Even though the post-COVID-19 era might be considered

as being an incentive to fight for sustainable development in the world (Jones & Comfort, 2020), a lack is perceived in research on how to mitigate the negative environmental impacts post COVID-19. As Florido et al. (2019) state that the governments' response to climate change in the Hospitality Industry is important. However, the role of governments on this subject is still very vague. As Prideaux et al. (2020, p.675) underline in their article, "climate change poses a far greater threat to humanity, but because the danger is not immediate action continues to be deferred."

3. Methodology

3.1. Research & Data Collection

As this thesis aims to investigate the application of CE in the Hospitality Industry, qualitative research was the most appropriate method identified to answer the research question. Qualitative research is a unique way to gather data of social reality or real-life setting and give comprehensive and in-depth insight into the undergoing study (Eisenhardt & Graebner, 2007; Leavy, 2014). Qualitative research may be done through different approaches, namely, (1) Experiment; (2) Survey; (3) Archival and Documentary Research; (5) Case Study; (6) Ethnography; (7) Action Research; (8) Grounded Theory; and (9) Narrative Inquiry (Saunders et al., 2016). In this specific study, a case study approach was employed.

A case study consists of an in-depth investigation of a case to give insight into an issue analysed by the researcher (Zainal, 2007). This empirical research

method embraces the complexity of a real-life context and the engagement with experienced individuals in the area of the matter (Leavy, 2014; Saunders et al., 2016). This empirical study can be distinguished based on its intent, meaning it can be done through (1) a single instrument case study, (2) a multiple-case study, and (3) an intrinsic case study (Saunders et al., 2016). **Table 3** represents the advantages and disadvantages of using case studies as a methodological method to investigate an issue.

Table 3 Advantages and Disadvantages of Case Study. Source: Adapted from (Baxter & Jack, 2015; Zainal, 2007).

Advantages	Disadvantages
Context oriented	Possibility of bias
Bifunctional (qualitative and quantitative)	Limitation of generalisation of the cases' results
The authentic real-life context in its whole	Difficulty in effectively managing the data of larger cases
Robust and Reliable	Time-consuming

In the case of this thesis, the research aims to understand if CE is known by hotel managers and if it is applied in their operations. Therefore, the present research consists of a multiple-case study, where several professionals were interviewed to give valuable insight into the issue in question. Indeed, multiple cases provide a more trustful and convincing notion about the concern (Eisenhardt & Graebner, 2007). Thus, this enables the researcher to have a comparative foundation of an issue to understand the differences and similarities between each case studied (Baxter & Jack, 2015). Subsequently, this research study is considered to have combined studies, specifically exploratory combined with evaluative research. First, evaluative studies aim to evaluate the scope of a program or an initiative executed in a company. Second, Exploratory studies

investigate a relatively unknown issue by reviewing literature and interviewing professionals in the area (Saunders et al., 2016). Moreover, multiple-case studies enhance the trustworthiness of the cases' results as they are based on several cases and thus, emphasizes the robustness of the method (Zainal, 2007).

As Creswell et al. (2007) report in their article, a case study may be executed through interviews, observations, documents and/ or artefacts. As for the present thesis, conducting interviews was identified as being the best method to collect the necessary data to respond efficaciously to the research question. This technique is characterised by the interest of a profound understanding of a topic through the narrative of an experienced person or expert in the area (Seidman, 2006). Interviews can be distinguished based on their structure: structured interviews, semi-structured interviews, and unstructured interviews (Saunders et al., 2016). Structured interviews are usually characterised by questionnaires that have a high degree of structure, as the questions are rigorously pre-defined and the answers too. Semi-structured interviews generally have some themes that must be mentioned as well as some questions to be discussed. Lastly, unstructured interviews are distinguished by their unstructured nature, meaning that there is a high degree of informality in the interview. However, there must be a broad idea of what themes or ideas must be expressed in the interview.

Overall, the principal objective of this thesis by using multiple case studies is to have different perspectives and ideas of hotel managers concerning the CE approach in the Hospitality Industry. Therefore, interviews will be made with each of the selected participants. The main purpose of using interviews as a research method is to have an in-depth understanding of the awareness of CE practices of hotel managers and to what extent they apply these measures in their operations. Given the flexibility of the semi-structured interview type, it was

determined as the best type to conduct the interviews. In that manner, not only is it possible to cover all the intended topics for the research, but also apply changes in the questions according to the answers/ views of the participants. The participant will be able to address freely the topics and thus, the interaction between the participant and the researcher will permit an in-depth comprehension of the issue discussed.

Given the extended amount of data a case study can provide, it is important for a researcher to procedure through a Computer-Aided Qualitative Data Analysis Software (CAQDAS) to efficiently manage and organise the information received (Baxter & Jack, 2015). As for this matter, it was decided to use NVivo as a novice researcher wanting to cope with the complex organisation of the data collected through the interviews. In fact, using NVivo supports the researcher in organising the information gathered during the interviews efficiently, so that he can have a more global yet detailed view of the data (Woolf & Silver, 2018).

3.2. Interview Guide

Having the objective of conducting semi-structured interviews as a data collection method, requires a guide that helps to create a coherent structure throughout the interviews. In fact, Bird (2016) states that an interview guide supports the researcher conducting the interviews and assuring a good organisation of the interview. So, if the participant answers a question of the questionnaire without the interviewer asking the question, the latter can use the guide as a tool to audit the evolvement of the questionnaire.

The literature review enabled a comprehensive knowledge about the chosen issue for this thesis. Thus, throughout the reading process, we were able to perceive some research gaps of the subject that needed more insight. The knowledge acquired through the reading process and the reflection on the gaps supported the conception of the questions for the interview. Accordingly, the questions were divided by themes of the focus question to ensure a coherent asking process during the interview. Each interview guide contained a form to be filled with background information about the hotels and the participant interviewed, as well as the date of the interview and how the interview would run or where it would take place. To avoid any kind of influence related to the questions or the answers received, the interviews were approached with an open mind and were open to change if necessary. Moreover, not only were the questions reformulated in some cases to adapt to the conditions presented by the companies, but we also asked questions that are not present in the interview guide although they will be discussed in the Discussion Section. The complete interview guide is accessible in Appendix I.

3.3. The Interview

3.3.1. The questions definition

The definition of this research's questions is partly justified by the literature review made. At first, it was important to understand if the participants were familiarized with CE and of their awareness regarding the negative impact the Hospitality industry has on the environment. Therefore, the following questions were considered:

Q1. Are you familiar with the term "Circular Economy"? Are you aware of the negative impact the Hospitality Industry has on the environment?

From this point, it was important to have a general perception of the wastages that each hotel creates. Like this, we could understand what the biggest challenges are that the hotel has to fight with. Thus, we defined the following question:

Q2. What is your biggest waste generation in the hotel?

In order to efficiently reduce wastages, it would be important for a hotel to have a waste management strategy (Obersteiner et al., 2021). Therefore, to understand if the hotels are concerned with their wastages, we proposed the subsequent question:

Q3. Do you have a waste management strategy?

As the main research goal is to understand the application of CE practices that are considered being sustainable measures, as these support the environment, we proposed the first question of this theme being:

Q4. What practices do you apply to minimize the hotel's waste generation?

And, in order to have a direct answer to the research question, we also asked the question: **Do you apply any practices that have a CE approach?**

To have a more defined interpretation of the matter, more questions related to sustainability and CE measures were made.

The CE approach is mainly described as the 3R Strategy - Reuse, Recycle, Reduce - (Ghisellini et al., 2016). Therefore, we perceived it of high importance questioning **Q5. Do you have any recycled or reused products in the hotel?**

As Rodríguez-Antón & Alonso-Almeida (2019) mention in their investigation, the majority of the hotels measured and tried to reduce their carbon footprint. Therefore, we tried to understand with the following question, if the hotels interviewed were equally concerned about this matter: **Q6. Do you have local suppliers? Do you buy local products for the hotel?**

One of the most mentioned issues for the environment was the excessive water consumption made by hotels and their guests. Some authors (Font et al., 2008; Kasim et al., 2014; Malheiro et al., 2020) proved that an effective water management system could benefit the company by saving costs related to consumption in the medium-long term. Thus, we defined the following question:

Q7. Is the hotel equipped with a water-saving system?

With the purpose of having an insight into the intentions of the participants or the company they work in, we also defined the question:

Q8. What is your motivation in practising these sustainable measures?

As Rodríguez-Antón & Alonso-Almeida (2019) multicase study showed that the investigated hotels gave great value to environmental certifications, we desired to understand if the interviewees would have the same interests. Accordingly, we delineated the subsequent question:

Q9. Has the hotel ever received environmental certification from an independent company?

The importance of having support from other parties, like the government is of high prominence. The latter could, in fact, encourage and support the hospitality industry to ensure better and sustainable operations. So, we seek to know the opinions of our research's participants with the question:

Q10. Would you be more motivated in applying sustainable/ CE practices if the government presented incentives or programmes for the companies?

Besides this, because of the current situation of the pandemic, we aimed to identify how the pandemic has influences the sustainable operations in the hotel through the following question:

Q11. Because of the COVID-19 pandemic, the usage of single-use plastic has risen to guarantee sanitary measures, which has influenced good practices of sustainability. How has the pandemic affected your sustainability strategies?

Lastly, hotel guests are equally responsible for the hotels' consumption as they are co-creators of the activities during their stay (Binkhorst & Dekker, 2009). Hence, we aimed to gain insight into this topic through the following question to comprehend what the interviewees' experiences are:

Q12. From your point of view, what is your consumers' perception of sustainability? Do you think they are concerned?

3.3.2. Data collection procedure

In order to gain insight into the research question referred to in the introduction, interviews were made with professionals in the hospitality industry. A total of seven professionals were willing to participate in the research. They were all contacted by e-mail or telephone. Therefore, seven case studies were collected and analysed. **Figure 1** illustrates the complete process from contacting the participants to the analysis stage of the data collected.

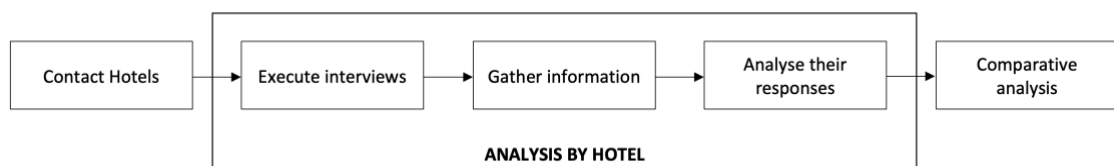


Figure 1 Data Collection Procedure. Source: Own Elaboration.

The selection process of the participants was made randomly without any particular condition. Hotels of every classification were contacted. However, the majority of the case studies are hotels with a classification of four and five stars,

with only one of two stars. To provide an added value to the investigation, and taking into consideration our geographical area, hotels from different countries in Europe were contacted, namely Portugal, Luxembourg, France, and Belgium.

The interviews proceeded through the online platform ZOOM, although one was conducted by telephone, considering the sanitary situation of the pandemic, as well as the distance between each country. The first interview was led on the 9th of July 2021 and the last was on the 29th of July 2021. Each interview took about 20-30 minutes. As for the language spoken during the interviews, they were conducted in the native language of each of the participants, meaning in Portuguese, French, or Luxembourgish. These were further translated into English. The interviews were recorded with a mobile phone with the consent of the participant, which enabled the posterior rigorously analysis of the data. The first interview was considered being a pilot interview as we did not know exactly what to expect and thus, some changes were made to the interview guide afterwards.

3.4. Data Analysis

Qualitative data analysis is a continuing analysis procedure that starts with the research method until the data collection and its analysis (Baxter & Jack, 2015). Thus, qualitative data analysis is one of the most appropriate analytical methods to use while investigating qualitative research. As mentioned before, this research's data was analysed through a qualitative analysis software named NVivo. The latter aids the researcher to gather and organise efficiently the data collected.

Qualitative research requires an efficient content organisation by topics and subtopics. Therefore, the interviews were divided into main topics, namely Familiarity with CE, Waste Generation, CE or Sustainability measures and External factors influencing the application of CE measures. After conducting the interviews in the interviewees' native language, a translated English transcript was made and exported to NVivo. Subsequently, began the reading process concurrently with the coding. Codes were created to have a better global vision about the different topics discussed by the interviewees (Appendix II and Appendix III). Creating codes enables a systematic reduction of the most relevant data. Having the data gathered into different codes, the analysis process continued with an interpretation of the transcribed audios. Since some participants gave more insightful and detailed responses, some interpretations are equally detailed and perceptive.

4. Empirical Study – Results

4.1. Case Presentation

To investigate the research question, semi-structured interviews were conducted with seven different participants that occupy a significant position in the companies they work in. All case studies are part of the Hospitality Industry. Undermentioned will be presented an overview and background of each case, namely each hotel. Each hotel spokesperson consented to name the hotel brand in the present thesis.

Case I – Hotel Flôr de Sal

The first case is a hotel located in the north of Portugal, Viana do Castelo. The hotel is a four-star hotel with sixty bedrooms, a restaurant, and a wellness centre. The interview was conducted with the hotel manager through the online platform ZOOM.

Case II – Hotel Solverde Spa & Wellness Center

The second case is a hotel as well located in the north of Portugal, Vila Nova de Gaia. This hotel was built in 1989 by the Portuguese Group Solverde. The Solverde Group owns several companies including hotels in Portugal. It is a five-star hotel with 174 bedrooms, a restaurant, two swimming pools and a wellness centre. The interview was carried out through mobile phone with the hotel manager.

Case III – PortoBay Liberdade

The PortoBay Liberdade hotel in Lisbon, Portugal is the third case analysed. It is a five-star hotel and is part of a Portuguese hotel chain, PortoBay Hotels & Resorts, which are located in Portugal and Brazil. The PortoBay Liberdade has a total of 98 bedrooms, a swimming pool, a wellness centre, and a restaurant. The data for this case was collected through an interview with the hotel manager through ZOOM.

Case IV Hotel – Moov Porto Centro

The fourth case is a two-star hotel in the historical city-centre of Porto in Portugal, the Moov Hotel Porto Centro. The hotel is part of a Portuguese hotel chain named Moov, which has hotels situated in Portugal and Brazil. The hotel chain is part of the Endutex Group. The hotel's building is from 1839 and was entirely renovated to function as a hotel that opened in 2011. The hotel owns a

garden. The interview was conducted on ZOOM with the Chief Operating Officer (COO).

Case V – Hotel Baumanière

Hotel Baumanière, a luxury five-star hotel, is the fifth case of this research study. The hotel is located in the south of France and is affiliated with the prestigious Association of independent luxury hotels, Relais & Châteaux. This rather small hotel has 58 bedrooms spread in five different houses. The hotel's facility includes a swimming pool, two restaurants, a garden, and a spa. In this case, the interview was carried out with the Operations Manager of the hotel on the platform ZOOM.

Case VI – Casino 2000 Hotel

The sixth hotel is a four-star hotel located in Luxembourg. The hotel is an independent hotel allied to the casino of the country. It has 28 bedrooms and two restaurants. The interview was conducted in person in the hotel facilities with the hotel manager.

Case VII – DoubleTree by Hilton Brussels City

Lastly, the seventh case analysed is a four-star hotel located in Brussels, the DoubleTree by Hilton. As the name mentions, the hotel is affiliated with the global hotel brand Hilton, which own more than 500 hotels worldwide. The DoubleTree by Hilton Brussels City has 354 bedrooms, a restaurant, and a fitness centre. Here, the interview was conducted through a ZOOM meeting with the financial manager of the hotel.

Error! Reference source not found. represents a summary with the most relevant information of the seven case studies described above. Each case (hotel)

has an associated number (Case I, Case II, Case III, etc.) that will be used throughout the investigation.

4.2. Results

In the present section will be documented the findings of the case studies described above. The results presented are the findings gathered from the interviews conducted with the spokespeople of each hotel. For a better lecture and to have a more coherent structure, the data will be presented in tables divided according to the themes presented in the Interview Guide in Appendix I

Table 4 Summary of case study presentation. Source: Own Elaboration.

	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
	Flôr de Sal	Hotel Solverde Spa & Wellness Center	PortoBay Liberdade	Hotel Moov	Hotel Baumanière	Casino 2000	DoubleTree by Hilton
Classification	4*	5*	5*	2*	5*	4*	4*
Country	Portugal	Portugal	Portugal	Portugal	France	Luxembourg	Belgium
Facility Age	2003	1989	2015	2011	1962	1984	
Chain Affiliation	--	Solverde Group	PortoBay Hotels & Resorts	Endutex Group	Relais & Châteaux	--	Hilton
N° of Bedrooms	60	174	98	125	53	28	354

Table 5 presents the familiarity with CE of each of the participants in the interview. Here, the respondents were asked if they know the concept of CE and if they are aware of the negative impact the Hospitality industry has on the environment. Unexpectedly, some cases were well aware of the concept and about the influence, the Hospitality Industry has on the environment.

Table 5 Familiarity with CE in the Hospitality Industry. Source: Own Elaboration

Theme 1 – FAMILIARITY WITH CE								
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII	
Q1. Are you familiar with the term “Circular Economy”?	Yes, it has to do with reusing and recycling products. But it is not something I am very familiar with.	No.	No.	Yes.		Yes.	Yes, it is a closed-loop system.	No.
Are you aware of the negative impact the Hospitality Industry has on the environment?	I don't think this is true. Hospitality has made a great effort in reinventing themselves and is one of the industries that has been able to reuse their resources. However, it might be that this effort is not enough for the circumstances we are living in today.	Yes, due to the high number of tourists and the consumption of beverages, laundry, energy, amenities. I believe it has an indirect, yet significant impact on the environment.	More or less.	I am aware that it has an impact like all industries have. The Hospitality industry has a substantial footprint and is more and more trying to introduce new sustainable changes that can be implemented in a more easy and fast way. We have been getting more conscious about it with time. Ten years ago, when we opened this hotel, the environment was a theme but not as relevant as it is now.	Yes.	Yes.	More or less. I believe it is because of the basic consumptions, like water and energy.	

Table 6 represents the second theme, waste generation in the hotels. This theme is divided into two questions; Q2 and Q3. The present questions analyse the hotels' waste generation and strategies to mitigate these wastes. The cases investigated mentioned principally water and energy as their main expenditures.

Table 6 Waste Generation in the Hospitality Industry. Source: Own Elaboration.

Theme 2 – WASTE GENERATION							
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
Q2. What is your biggest waste generation in the hotel?	Water. Currently, renovating the hotel's bathrooms and changing bathtubs into showers to limit water consumption.	Water, amenities and food.	Paper, plastic, food waste.	Probably water, as we don't have a restaurant. But the water wastages that we have are mainly done by third parties, the clients. However, we also "waste" water while cleaning the room, which has to be done. Because we will not reduce cleaning water consumption and leave the room not professionally cleaned.	Mostly energy.	Energy, due to the casino, but also AC. We aim to reduce this consumption. However, it is difficult due to the large dimensions of some event rooms.	Water and energy.
Q3. Do you have a waste management strategy?	Yes. An efficient control to aim no-waste generation, also because of costs.	We control wastages in the F&B department. We try to control water consumption per number of guests and amenities per n° of guests, but they are very relative.	No.	Yes. We make trimestrial comparisons. However, during the time of the pandemic, those numbers are incomparable because of the lack of guests compared with other years.	Yes.	Yes.	Yes, the consumptions are assessed, but because of cost savings.

Table 7 shows the findings on the main theme, CE or Sustainable measures. Here, the hotels were assessed on what extent they apply CE or sustainable practices. Predominantly, the interviewed cases apply, some to a more and others to a less extent, several sustainable and CE practices in their operations. When asked about specific CE practices, the cases mentioned generally recycling.

Table 7 CE practices in the Hospitality Industry. Source: Own Elaboration.

Theme 3 – CE or SUSTAINABILITY MEASURES							
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
Q4. What practices do you apply to minimise the hotel's waste generation?	Internal policies, alerting guests for responsible water consumption and laundry, garbage bags are biodegradable, detergents are biodegradable. We work with companies that have environmental certifications (like our laundry outsourcing). The hotel's amenities are not out of plastic, not glass, but recyclable cardboard paper. We recycle all drinking bottles. Our bathrooms have dual flushing cisterns and we put bottles of 1.5L in the interior to save 1.5L of water.	We have an efficiency plan that we try to respect. Changed the type of lamps to LED lamps. We have leaflets in guests' rooms to spread awareness of the environmental impact of water consumption and laundry changes. Due to the new European law, there has been already a change regarding plastic consumption in the establishments. However, because of the big dimensions of the hotel and the structure, the hotel still has a long way to go. We recycle the waste created. We filter and recycled oils. Reduced soap size from 30g to 18g.	We try to minimise food waste, as our restaurant works mainly with à la carte service, which is more controllable. We do basic recycling. Try to minimise as much as possible the use of plastic. Sometimes it is difficult to implement some practices as we offer mainly experiences and services and we have to take into consideration that customers pay a high-quality service and we have to be able to respond to these requests in an efficient way. There are leaflets in bedrooms and bathrooms so that guests can inform the housekeeping staff if they want or not to change their laundry and at the same time, we spread awareness of water consumption.	Reduce water and energy consumption. We are very aware of the energy consumptions and changed already some years ago to LED lamps in the hotel. We put motion sensors in common areas for guests but also in administrative areas, so lights are only on when people are there. We have a newly opened hotel that has been differently designed to be sustainable. We aim to only consume the necessary so that the hotel guests still have a comfortable stay. Shower rain and water taps reducer. We use eco-friendly detergents to clean from a certified company. Conscious supplier selection that is sustainable and environmentally friendly.	Reduced drastically plastic usages the last three years by 50% or more. Amenities are limited, they are presented in big fillers. Plastic garbage bags in bedrooms got replaced by paper bags. We use Bamboo straws. There are a lot of changes in terms of plastic. However, we have not found a solution for plastic usage in the kitchen. We do not accept plastics from our suppliers. We work primarily with boxes. When it is very hot, and we prepare a bedroom for a new arrival we have to put the AC. However, we are calculating how much in advance we should put it on without consuming and wasting too much energy. We alert our staff on the measures. The water taps have an air system integrated so there is less consumption.	Internal separation of wastages and reducing plastic usage. LED lamps in the entire hotel. Water savings by including oxygen in tap water to reduce water wastages and saving taps. Aim at reducing the usage of chemical products.	We don't serve plastic bottles and do basic recycling.

Theme 3 – CE or SUSTAINABILITY MEASURES							
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
Do you have any practices that have a CE approach?	Organic waste is not mixed with inorganic waste. The fertilizer is collected by the town council.	No. The only practices that might be related to CE practices are the recycling of wastages. We reuse and transform food, ensured in the HCCP standards. When there are renovations in some infrastructures, we aim to introduce new equipment that offers better energy efficiency and less consumption. We work with the water system and AC system to reuse the energy to heat the exterior swimming pool.	Solar energy. We want to replace the plastic laundry bags with a fabric laundry bag. However, costs are very high to make a change towards a more sustainable approach. We work with a company that has some eco-friendly detergents. Tried already using 100% eco-friendly cleaning products however, the costs are too high to continue using.	Recycling. We do not use plastic in the hotel, due to the new law. In bathrooms, we use cardboard cups that are 100% biodegradable. However, they are much more expensive than the “normal” products that we are used to. During the pandemic, distributed reusable masks to the staff to reduce daily mask wastages. Our food surplus is donated to associations that, at their turn, give it away to families or homeless people in need. Solar panels for water heating.	For organic and vegetal wastages, we have compost sites as well as pigs and chickens. For animal food waste, we are studying several companies that can collect these wastes and transform them into animal bone meals. All our beverage bottles are glass bottles. There are no chemical interventions in the cleaning process of the bedrooms. Our plastics are plant-based. It is however difficult to transform everything, and it has to be done little by little. I personally already tried to introduce solid shampoos however it is not profitable for stakeholders.	Internal separation of all kinds of wastages and responsible companies for each waste collects the waste. We prioritise local and regional products and suppliers to reduce our carbon footprint.	We produce our own energy through photovoltaic cells. New installation of cogeneration to self-produce energy.
Q5. Do you have recycled or reused products in the hotel?	Yes.	Not exclusively. If there are products that are not suitable to put in a guest’s bedroom, like a slightly damaged toilet paper roll, we put it in the staffs’ restrooms, so we kind of reuse it.	Mainly Paper but can’t remember instantly more.	Yes.	Recycled paper, recycled glass.	Recycled paper-mugs. It is complicated to have recycled products/decorations, like rugs etc. because of the security measures.	Don’t know.

Theme 3 – CE or SUSTAINABILITY MEASURES							
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
Q6. Do you have local suppliers?	Yes. We try to maximise our purchases from local suppliers. Drink suppliers are local. However, sometimes it is impossible due to the large size of the hotel that requests large quantities that local suppliers cannot answer.	Yes. Local and regional.	Yes.	More or less, our biggest supplier is Macro.	Yes. We have for example a local pottery that is installed here in the hotel, that produces only for the hotel, so the carbon footprint is really at zero.	Yes, but we don't have local suppliers for every product because of the geographical area of the hotel.	More or less, but we prioritise sustainable fishing.
Do you buy local products for the hotel?	Yes. Fruits and vegetables, bread. We always have seasonal fruits but exotic fruits too, so we have a more complete offer for our guests.	Yes.	Yes.	Yes, we have a local bakery that provides us with fresh bread daily.	Yes, a 100% local. The eggs that the hotel's chicken provide are served for breakfast. Production of organic wine.	Yes, mainly dairy products, fruits and vegetables. There may be clients that request special fish or meat that has to be answered. However, when there is a large demand for any product, that the country's supplier cannot answer, then it is bought from neighbour countries, like France. Beverages are mostly local brands to support the local economy and reduce carbon footprint.	--
Do you give priority to local products?	Yes.	Yes.	--	Yes.	Yes.	Yes, and also sustainable fishing, because it is very important for us. As in Luxembourg, we don't have an ocean, we try to explain to customers that local food or food that is regional is more sustainable.	--

Theme 3 – CE or SUSTAINABILITY MEASURES							
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
Q7. Is the hotel equipped with a water-saving system?	<p>No.</p> <p>But to water our gardens we use the council's water with less water treatment (not great quality) and it is cheaper. However, new constructions should be obliged to have these systems.</p> <p>We could implement here new systems of water savings, water heating systems through energy efficiency. However, if the installation and maintenance are not compatible with the normal amortization period, then we will not consider this. Investments that are not easy to amortise. Therefore, there are no solar panels, too expensive now.</p>	No.	No, due to the need for renovations to implement this.	No.	Yes, we have a water-saving system to water our gardens.	No, too complicated to implement due to the facility age.	--
Q8. What is your motivation in practising sustainable measures?	Mainly Costs, laws by the government that are hard to disregard. The market claims and expects these sustainable changes too.	Personal motivation is big however, the Group's (solverde) decisions have to be taken into consideration which can create some limitations on implementing sustainable measures.	It is a mix of many variables. The government's laws, consumer pressure, personal and the Group's (PortoBay) awareness, cost savings.	Until recently it was basically because of Government laws, but I got more conscious about the environment with time. Market requirements.	Mainly the well-being of the environment and personal motivation. The brand Relais & Chateaux has a rigorous plan that hotels are obliged to follow, as sustainable fishing. There are however some 100% ecological hotels in the world, but it is not very current.	Personal motivation, laws that have to be respected.	Clients.

Table 8 indicates the external factors that could affect the implementation of CE or sustainable measures. Here, several variants were considered, namely environmental certifications, governments' influences, the COVID-19 pandemic and the hotels' guests. Undeniably, all these variants influence the motivation on taking action towards more sustainable business measures.

Table 8 External factors influencing the application of CE measures. Source: Own Elaboration.

Theme 4 – EXTERNAL FACTORS INFLUENCING THE APPLICATION OF CE MEASURES							
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
Q9. Has the hotel ever received an environmental certification from an independent company?	--	No. We have been mentioned for good practices, but no certifications.	No, we are relatively newly installed.	At the moment, we are looking for certifications that help us to reduce our footprint. We aim to work towards more sustainable practices to get a certification from GreenKey. However, due to the situation of the pandemic, it has been complicated for certification companies to provide a gradual follow-up about sustainable actions. GreenKey is a certification that would enable the hotel to engage with them in the short term. We have a construction certificate for one hotel in Brazil that is for eco-friendly construction. The environmental certifications are great because they can help to understand where we can reduce our consumption and costs.	Yes, ECOCERT is a certification for organic production without chemicals. We have twenty hectares of garden, four vegetable gardens, a wheat field and there is no chemical intervention.	Certified by a local company, Super Drecks Këscht .	Yes, Green Key.
Q10. Would you be more motivated in applying sustainable or CE practices if the government presented incentives or programmes for the companies?	Yes.	Of course, it would be an added value for us. However, there is a limitation because of the facility's dimension.	I think so, as always there is a new law that will be implemented, there is automatically an increase in costs for us, so it would be great to have incentives. It would be easier to implement these. It would be necessary and important.	Yes, of course. Sustainable products are much more expensive than other products, so it would be beneficial for everybody if the government would financially support hotels to implement these. With the new EU law, they banned single-use plastics in restaurants and hotels and want them to start using alternative products. However, these products are far more expensive. Moreover, after the pandemic, where our industry was one of the most affected, they gave us more costs to consider than we already had due to the losses because of the COVID-19 restrictions. ISO21401 is a document that will help in the long-term the hospitality industry to face 21 st -century problems, like the environment.	It would be great, but the government here does not help.	Yes.	Of course, every incentive would be helpful.

Theme 4 – EXTERNAL FACTORS INFLUENCING THE APPLICATION OF CE MEASURES							
	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII
Q11. How has the pandemic affected your sustainability strategies?	The pandemic influenced in some way. There is a higher utilization rate of disposable gloves, masks, individual plastic sanitisers, etc. Regarding sanitising gel, always has been used in the hotel.	Here in the hotel, we aim to constantly reduce unnecessary wastages. Assisted buffet with acrylic barriers and an employee serving, so there is a reduction on individual tools, gloves, etc. Reutilization of sanitising gel refills. The pandemic has had a considerable impact at the beginning. However, now it has been stabilised.	More or less. Due to the pandemic, we reduced the paper consumption, as we started to use QR codes for menus. The demand for some foods has been limited and so they end up as waste. Masks, gloves, plastics.	People got less conscious because of the pandemic. Detergents used to clean during the pandemic were more aggressive in terms of chemicals because they have to sanitise rooms efficiently. Started using gloves, masks which increased waste and costs. We clean more often the common areas, so there is a higher usage of water and electricity because of the vacuum cleaner. However, there are fewer wastages because there are fewer guests.	The pandemic increased the usage of plastics in the hotel. The effort that was made in the last three years to reduce plastic usage has been for almost nothing as individual plastics got introduced again. Masks contributed also to more waste generation.	There was and is a huge impact. Closed one restaurant due to the buffet system because of the queues people created. At the beginning of the pandemic, breakfast was only served with room service. Afterwards, we introduced an efficient reservation system for hotel guests to attend with security in the restaurant. Changed the table setting of a restaurant. Put sanitising dispensers everywhere. Increased usage of plastics but changed the strategy to reduce this wastage.	It has not influenced in any way because we primary already aim at reducing plastics and unnecessary wastages.
Q12. From your point of view, what is your consumers' perception of sustainability ?	Our guests recycle their wastages in the hotel. However, some clients request plastic water bottles. Large water consumption by guests in baths.	Yes, but depends on the sensibility towards the environment of the guests. It is difficult to assess these consumptions. In some business events, some clients ask specifically for plastic water bottles instead of glass.	Depends sometimes a lot on the nationalities of the guests. As they come to relax and to travel, they are not really concerned about their consumption of energy or water.	Yes, it depends on the guests' generations. Young adults are more aware and more concerned about the environment than older ones. People in Europe tend to be more conscious. It is important to spread awareness to every generation so everybody can unanimously practice sustainability.	Yes, they are very aware. They compliment a lot the hotel for the sustainable measures implemented.	Yes, especially young adults.	Yes, very.

5. Discussion

In this section, we will discuss and analyse the results presented in the previous chapter. The results will be analysed by theme and question asked as well as compared between each interviewee.

Theme 1 – Familiarity with CE

Q1. Are you familiar with the term “Circular Economy”?

In the first question, three of the seven participants – Cases IV, V and VI - were confidently familiar with the CE concept. Case I was not certain but was able to give a little explanation of the approach. Three of the interviewees – Cases II, III and VII - were unaware of the CE approach. Case VI was certain about the concept of CE and described it as being a closed-loop system. After giving a proper definition of CE, all interviewees linked the approach to recycling and sustainability.

Are you aware of the negative impact the Hospitality Industry has on the environment?

When asked about the awareness of the negative impact the Hospitality Industry has on the environment, the results are distinct. Three of the cases – Cases II, V and VI - responded that they were in fact conscious about the damaging impact. One of these three cases – Case II - underlined that the negative impact would certainly come from the increasing number of tourists in the world and of their excessive consumption during their stay in the hotel. Two of the participants – Cases III and VII - were doubtful about the harm the industry they

work in could have on the environment. Case I did not agree with the statement. In fact, the hotel manager highlighted that the Hospitality industry has been doing a great effort in adapting their operations to being more sustainable to decrease that negative impact. However, it could be that these practices are not enough to prevent the negative impact, the high consumptions hotels and their guests have.

After analysing the first two questions asked in the interviews, we can determine that in a general matter the CE approach is still unfamiliar to Hospitality operators and thus, might underline the idea of why this matter still presents a lack of research. However, these answers can be perceived as relative if relating them directly to the Hospitality Industry as the responses depend on the general knowledge, interests and professional or private experiences related to the research topic of the respondents. So, if we consider the statement made by Bohdanowicz (2006) that hotel managers are aware of the negative impact their activity has on the environment, we can determine that this statement is not well-founded.

Theme 2 – Waste Generation

Q2. What is your biggest waste generation in the hotel?

As expected, regarding the biggest waste generation in hotels, the most given response was water and energy, which aligns with what was said by Alonso & Ogle (2010) and Rodríguez et al. (2020). Four of the seven participants – cases I, II, IV and VII - answered with water and three, one among them answered water as well, - cases V, VI and VII - responded with energy consumption. Among these examples, there were others given, namely food waste, amenities, paper, and plastic.

It has been stated by Filimonau & de Coteau (2019) that food waste is considered being the largest waste type. However, this seems not very reliable with what was affirmed by the cases which mentioned water and energy as being their largest waste generation.

Two of the four cases – cases I and IV - linked their water consumption to the guests of the hotel, as they are also responsible for the consumption. In concordance with Binkhorst & Dekker (2009), guests are considered by hotel operators as a significant part of the activities in a hotel and their consumptions. In addition, Case IV mentioned that the cleaning process of the bedrooms and main areas require a great amount of water to get cleaned. This surplus of water consumption can hardly be decreased unless the rooms would not get so deep cleaned, which is not an option for them. As Case I, Case II, Case IV and Case VII, the water consumption might also be linked to the hotel's facilities and size. A hotel with swimming pools and a spa might spare more water than one that does not offer those services.

Case VI links their excessive energy consumption to the AC and the casino. In point of fact, AC might be a high contributor to a hotel's energy consumption that can as well be influenced by guests' uses. However, it was not mentioned by other participants.

Q3. Do you have a waste management strategy?

This question found more consensus on the cases' responses. As outlined in the literature review, some hotels align their strategies to minimise their negative effect on the environment (Jones et al., 2014). Indeed, six of the seven cases apply efficient waste management control in their facilities. Cost savings are for Case I and VII the main reason for their waste control. Case II noted that their biggest control goes to food waste. However, they try to assess some numbers related to their consumption, for example, water consumption per number of guests and

amenities per number of guests. In a similar vein, Case IV mentioned an effective trimestral control that is always compared with previous trimesters.

Theme 3 – CE or Sustainability Measures

Q4. What practices do you apply to minimise the hotel's waste generation? Do you apply any practices that have a CE approach? If yes, which ones?

The core of this research consists of understanding what kind of sustainable practices the hotels include in their operations. Therefore, the present question is crucial for the research purpose. Some interviewees were more specific about their environmentally friendly practices than others.

The importance for the Hospitality Industry on implementing sustainable measures is big, as they are partially responsible for the deterioration of the environment. As expected, the interviewees apply some measures, comprising for all cases the basic recycling rules which are also imposed by governments, including the separation of organic from non-organic waste. Al-Aomar & Hussain (2017) assumptions seem to be of true foundation, as they approved in their study that hotels include recycling and reusing ideas in their operations. Moreover, case II recycles the oils used in the facility. Case I recycles with the council's help to collect fertilizer so the latter can decompose it accordingly. Moreover, case I and case VI put at their guests' disposal recyclable paper mugs in their bedroom and bathroom. If taking into consideration the 3R approach as the CE principle by Ghisellini et al. (2016), every participant respect one of the three variables of the approach – **recycling**, comprising the recycling of organic waste, plastics, glass, etc. Next will be analysed if the two other variables are also respected by the interviewed hoteliers.

Reducing is a method very present in the hotels interviewed as an action to help to reduce damages in the environment. Four cases – cases I, III, IV and V – point up the reduction of plastics also because of the new EU law. This reduction is identifiable in cases I, III and V in replacements of plastic bags for garbage or laundry with biodegradable, fabric or paper bags respectively, the introduction of bamboo straws, exclusive usages of glass bottles, or the usage of plant-based plastics. Case V gives a great example of using bioplastics as proposed by Patrício Silva et al. (2021). Several water-saving strategies are practised by three cases – cases I, IV, V and VI -, namely having specific tap water reducers or in one case – case I – putting a 1.5L empty water bottle to fill space of the toilet flushing cistern and thus, reduce water consumption. In terms of energy, every participant hotel contributes to the reduction of this resource in different means. Case VII stands out for its own energy production through photovoltaic cells as well as the installation of cogeneration systems to self-produce electricity and heat to provide in their facilities. In the same vein, other cases – cases III and IV – use equally solar panels. Other strategies to reduce energy consumption are the implementation of LED lights – cases II, IV and VI – or installing motion sensors in common areas to reduce unnecessary usage of energy in these divisions – case IV. Regarding the reduction of food waste, case III presented a valid solution as it only serves à la carte requests. Other reduction propositions made by the interviewees – cases I, III, IV, V and VI – is the reduction of chemical detergents and prioritising biodegradable products which do not harm the environment. Case II reduced their soap size from 30g to 18g to reduce the waste created from amenities. To reduce landfills with organic waste, case V owns a compost site as well as pigs and chickens for organic and vegetal waste. Additionally, the same hotel is studying companies that can take animal food waste and transform it into animal bone meals.

Lastly, only two cases out of the seven interviewed – cases II and IV - presented **reuse** actions. Case II reuses energy used from their water and AC system to heat the outdoor pool. They also try to minimise food waste by reusing food surplus by transforming it into new dishes which are guaranteed in the HACCP. Still concerning the food surplus, case IV donates their excessive foods to associations that help families in need or homeless people. Furthermore, to adapt themselves to the new reality of COVID-19, case IV put at their staffs' disposal reusable facemasks so they could reduce waste from the masks.

Besides the practical examples given by the participants related to the 3R approach (Ghisellini et al., 2016), they mentioned other sustainable measures. Most cases – cases I, II, III and V – mentioned the leaflets in the hotels' bedroom to spread awareness on the environment and inviting guests to be more conscious (Bohdanowicz, 2006; Florido et al., 2019). Nevertheless, they also alert their staff members to be equally conscious of the environment when operating.

A conscious supplier selection has been an important factor considered by five cases – cases I, III, IV, V and VI. These cases give high priority to suppliers that are as environmentally aware as themselves, have environmental certifications or because of their eco-friendly practices like avoiding plastics in their deliveries. The importance of conscious supplier-selections was stated by several authors during the literature review (Al-Aomar & Hussain, 2017; Boons & Lüdeke-Freund, 2013).

In particular, case II stated that when the hotel goes through renovations, that they try to introduce new highly efficient equipment so they can reduce their costs and energy in the medium to long term.

Overall, the interviewed hotels apply some CE related measures. However, these are not practised to a large extent. This issue will be further discussed in the next chapter.

Yet, the participants have equally demonstrated some constraints regarding the introduction of substitute or sustainable products. Large dimension or facility structure, costs, lack of accurate substitutes are some of the limitations the cases mentioned during the interviews. Furthermore, case III admits that they can't put savings on energy or water before the wellbeing and safety of their guests, as they paid for high-quality service and expect to be treated so. On the last note, case V even referred that the implementation depends equally on the willingness of the stakeholders as they involve costs. Gil et al. (2001) mentioned in their article the dependence of hotels on their stakeholder to be able to implement any practices. Yet, Kularatne et al. (2019) state that stakeholders feel in some way compelled to introduce sustainable measures, which is a matter that will be discussed in a further question.

The following questions were asked to understand to what degree the cases apply sustainable actions.

Q5. Do you have any recycled or reused products in the hotel? If yes, what exactly?

In response to this question, the respondents had very different answers. Indeed, six out of the seven interviewees stated that they introduced recycled or reused products in their operations. Case VII, however, was not sure about the matter. Addressing the usage of recycled products, cases III, V and VI identified recycled paper, glass and recycled paper cups in their accommodations. Case II mentioned at their turn that the staff reuses inconvenient products to the guests.

For instance, if a toilet paper roll is slightly damaged and not presentable for guests that paid a 5-star service, housekeeping removes the item and place it in the staffs' restrooms. Thus, they avoid unnecessary wastages and costs.

Following the case studies by Rodríguez-Antón & Alonso-Almeida (2019), it was asked to case VI if they would ever consider introducing recycled decoration items, like rugs that are provided from 100% recycled plastics. The hotel manager, however, rejected immediately this idea to the lack of security these items could present. Accommodation items have to respect strict safety measures related to fires. Therefore, it could be complicated for companies in the industry to introduce these kinds of recycled articles as they are not security conform. However, like in the cases studied, some hotels already have smaller recycled items like paper or cupboard cups. The latter could be related to the new European law banning single-use plastics in the industry.

Q6. Do you have local suppliers?

All the hotels work more or less with local suppliers. Two of the interviewed cases – case IV and VII – are the ones that work with a countrywide distributor, for instance, Macro. The remaining cases collaborate indeed with local and regional suppliers. In two cases – cases I and VI – the participants refer to their facility size or geographical area as a reason for not being able to work solely with local suppliers. As for the first constraint, if the hotel receives a larger order for a special event, a local supplier can't answer that request because of the large quantities. As for case VI, due to its geographical area in Luxembourg, they can't depend only on local suppliers because some products are not originated from that locality.

Case V, a small luxury hotel in the province of France, works with local pottery which produces articles solely for the hotel. This activity enables the hotel to fight against carbon footprint emissions.

Do you buy local products for the hotel? If yes, do you give priority to local products?

The majority of the cases – cases I, II, III, IV, V, VI – give high priority to buy local products. This topic depends on two variables as the respondents refer – seasonality and geographical area. Case I gave the example of seasonal fruits that are prioritised in the service however, to offer a vaster choice of fruits, they have a reduced suggestion of exotic fruits that are not local. Case IV at their turn offers to their guests' breakfast bread and pastry from a local bakery. Due to its geographical area, case VI tries to maximise its local products. Thus, they prioritise dairy products, some fruits, vegetables and beverages to mainly support the local economy and reduce their carbon footprint.

Case V distances itself from the other cases because of its 100% local policy. This specific case proves to be a great example of reducing the carbon footprint to a maximum. For instance, not only are the eggs served at their restaurants from their own raised chicken but also do they offer organic wine from their production.

In general, all the interviewed cases prioritise the purchase of local products, like the Accor hotel chain investigated by Rodríguez-Antón & Alonso-Almeida (2019) in **Table 2**. However, it is unsure to what extent they purchase local products.

In an overall matter, we can note from **Table 2** that the hotel chains investigated implement an extended number of practices. This can be justified because of their global operational scale in the industry and their investment power. As in our investigation, we had the opportunity to interview a hotel belonging to an equally global chain and thus, compare the findings. However,

the spokesperson from case VII did not reveal detailed information about their sustainable performances.

Continuing the comparison between the cases of this thesis and the hotel chains from Rodríguez-Antón & Alonso-Almeida (2019), we can perceive that the cases do not apply such extended CE measures as the hotel chains. This might be supported by the lack of investment possibilities of the smaller hotels investigated, but also the interviewees' willingness to respond.

Q7. Is the hotel equipped with a water-saving system?

The majority of the hotels responded negatively to this question. The participants justified this response very alike with what was said in the literature review. These implementations involve a large investment from their stakeholders as it was mentioned in the interviews and sometimes these investments are not justified as their investment is higher than their benefit in the amortization period. Thus, another reason for not applying a water-saving system is the facility age because of the costs related to the implementation. As referred by Gil et al. (2001) the application of sustainable practices would depend on some variables which include the effects of facility age, among others.

The following idea is supported by Kasim et al. (2014), who proposes to hoteliers a water management framework to decrease wastewater. Therefore, as the importance of taking care of the environment is increasing, hotel operators should consider the integration of water systems in a new building hotel. These can save them costs as well as reducing the negative impact on the environment.

Q8. What is your motivation in practising these sustainable measures?

All the hotels have more or less similar motivations when applying sustainable measures in their facilities. Four out of the seven interviews – cases I, III, IV and VII – feel the urge to implement sustainability because of market requirements.

Meaning that they feel that clients got more and more conscious about the environment and underlie their decisions on these distinctive features. Indeed, people are adhering more and more to a sustainable lifestyle (Osti & Goffi, 2021) and thus, expect the same engagement from industries. Additionally, some hotels seek cost reductions and stakeholders' decisions when practising sustainability, as it is for cases I, II and III. Al-Aomar & Hussain (2017) and Malheiro et al. (2020) have concluded in their research that there is an existence of cost reduction while reducing their wastages and applying a management control system.

Government laws have to be respected by companies when performing their activities. Thus, in cases I, III, IV and VI, it is assumed that their major motivation for sustainable actions is the government regulations. These regulations are probably linked to basic sustainability values, such as recycling.

Having into consideration these facts and after analysing the literature review on this specific matter, we can, in fact, confirm the importance of governments' presence (Filimonau, 2021; Florido et al., 2019) and the lack of regulations that support the environment. To compensate for the government's shortcoming, some hotels have a personal motivation, as the majority of the cases – case II, III, IV, V and VI.

Theme 4 – External factors influencing the application of CE measures

Q9. Has the hotel ever received environmental certification from an independent company?

When asked about the environmental certifications, responses were relatively divided. Three cases – cases II, III and IV - presented no mentioning in certifications. However, one of these cases – case IV – aims to invest their time to

work towards more sustainable operations and thus, obtain a certification from GreenKey, a distinguished international eco-label for hotels. Furthermore, the hotel manager highlights the fact that their hotel in Brazil got rewarded with a construction certificate for their environmentally friendly construction. Yet, Case VII already got certified by the same certification body, GreenKey. The respondent of case V reported that they are certified by Ecocert because of their organic agriculture of vegetables and wheat without any chemical interference. The previously mentioned case proves through their specificity how concerned they are with the environment and the quality of their products. Lastly for this question, the Luxembourgish hotel – Case VI – was mentioned for their good recycling practices by a local recycling company.

As said before, the answers to this question differ. Thus, we can determine that working towards the goal of obtaining a certification depends on the willingness of each hotel to practice sustainable measures. It is important for hotels, as we can see in **Table 2**, to be mentioned by distinguished companies for their good practices as this can differentiate them from their competitors and thus, influence the consumers' power of choice.

Bearing in mind the last responses and the ones of the previous question – Q8, we might perceive a contradicting reality. Some hotel operators and the groups they work for claim they are personally motivated to introduce more sustainable operations. However, they did not contract any environmental certification, which could only benefit them in many parts. Thus, their statement for their personal will of applying green practices is slightly questionable.

Q10. Would you be more motivated in applying sustainable/ CE practices if the government presented incentives or programmes for the companies?

Concerning the answers given to this question, we can perceive a unanimous consensus from every interviewee. All the cases responded with certainty, and in consensus with Florido et al. (2019) stated, that the government intervention would be of great value for better progress on this matter. However, three specific cases present some constraints concerning the governments' regulations that have to be pondered. Case II reflects that new regulations or incentives applied by governments might be worthy however, there are some factors to consider, namely the facilities' dimension which might limit the possibility of some practices. Along the same lines, cases III and IV outlines that some rules directed by the government bring additional costs for the industries' operators. Thus, it would be essential to receive some kind of incentive as support. Indeed, substitute products tend to be more expensive than the normal ones. In particular, mentioning the new regulation regarding the banning of single-use plastics in the EU, restaurants and hotels have been faced with a new challenge in an uncommon period. New costs appeared due to the latest law, but this industry had already been faced with some unprofitable and costly months because of the COVID-19 pandemic. Filimonau (2021) assumptions on the importance of institutional support to fight against the disruption of wastages originating from the COVID-19 epidemic seems to be well-founded. Again, here is highlighted the importance of coherent and effective government intervention.

Q11. Because of the COVID-19 pandemic, the usage of single-use plastic has risen to guarantee sanitary measures, which has influenced good practices of sustainability. How has the pandemic affected your sustainability strategies?

The uncommon period of the pandemic affected many industries, thus the Hospitality Industry got not saved from this one (Lopes de Sousa Jabbour et al., 2020). Indeed, the cases assent with another concerning the negative impact the virus had and still has today on the industry, with exception of one case – case

VII. The latter confirms that the pandemic did not influence their ongoing sustainable practices as they have always worked at reducing their plastic usage or other unnecessary wastes. However, the other interviewed cases enumerated some challenges this period have brought. Many of the cases – cases I, III, IV and V – mentioned the excessive usage of disposable masks, gloves and plastic which presented additional costs of purchasing because these were not used before the pandemic. Indeed, in the literature review, Filimonau (2021) defined plastic waste as one of the main wastages created as a result of the pandemic.

Others – cases II and IV – had to change their restaurant's layout to adapt to the new conditions, namely introducing acrylics in the buffet areas or changing the strategy in these areas. Moreover, Case VI started to serve breakfasts only with room-service and changed this to an in-restaurant service with a reservation system for guests. Another detriment, remarked by case IV, for the environment is the usage of more aggressive cleaning detergents to sanitise the common areas which contain extremely harmful substances. The same participant observed careless behaviours towards the environment by guests because their only interest was assuring sanitising measures.

Nevertheless, case III positively perceived the reduced usage of paper to limit contact between people and the increasing usage of QR codes to replace paper. Case II shares at some point a similar opinion as these wastes have been stabilised with time because of the occurrence of alternative, more environmentally friendly products to adapt to the situation.

Q12. From your point of view, what is your consumers' perception of sustainability? Do you think they are concerned?

In response to this question, the answers were once more alike, yet with some exceptions. Overall, clients are considered to be aware of the damages the overconsumption of some activities can bring to the environment and thus, the

hoteliers consider them as conscious, especially young adults are distinguished by two cases, namely cases IV and VI. This awareness from their guests', underlines Kularatne et al. (2019) idea of stakeholders feeling pressure to implement sustainable business measures. Nonetheless, the same managers call attention to this matter, as not all guests are careful with their consumerism. Some make a distinction based on nationalities, others on age. When on vacation, guests want generally to relax and thus, do not want to be concerned with wastes, neither with possible surplus consumption. Consequently, some guests might feel invaded by hotels when seeing leaflets reminding the conscious consumption of the resources in the hotel's facilities (Bohdanowicz, 2006). Therefore, reflecting on the lack of consciousness of some people referred by some cases enhances the idea of the necessity of educating society on this subject (Rodríguez et al., 2020).

6. Conclusion

Concluding, the research on CE within the hospitality industry has as objective to understand if the matter is being applied in the industry mentioned. Firstly, a wide-ranging literature review was made to gain more insight into the topic as well as to know if hotels already implement some CE practices. Secondly, qualitative research was made by interviewing seven distinct cases. In fact, there was a perception of an existing lack of extensive research of CE in the Hospitality Industry by several authors which might explain the lack of knowledge about this economic system inside hotels. However, there was a particular article by Rodríguez-Antón & Alonso-Almeida (2019) that investigated in more depth the CE in the Hospitality Industry, which is presented in **Table 2**.

As Jones et al. (2014) mention, bigger hotel chains already address these issues and tempt to align their strategies to deal with the impact they cause on the environment. As noted during the interviews, case VII, being part of a global hotel chain, presented environmentally friendly practices like the production of their own energy through photovoltaic cells and the installation of cogeneration to self-produce energy. We can, in fact, perceive a relation between a hotel being part of a global chain affiliation and adhering to sustainable performances which make it easier for them in terms of costs to implement these. On contrary, the hotels that are not part of a global chain affiliation – cases II, III and IV - tend to depend more on stakeholders' investments and decisions to apply such practices. Case V is a particular case, as it has a specific concept which is 100% local and aiming being the most possible environmentally friendly.

The research identifies equally a constraint of the hotels in implementing CE or sustainable measures because of their facility age as well as their structure. Ghisellini et al. (2016) mentioned that limitation in their article which can be, in fact, proved and confirmed in the present research. Some cases referred that the installation of energy-efficient or water-saving systems is not justified as it would involve too many renovations in the hotels.

Being the research of international nature, it was able to present hotels from four different European countries, namely Portugal, France, Belgium and Luxembourg and thus, make a comparative analysis between the cases on that level. Comparing the southern of Europe, Portugal with western Europe, France, Belgium and Luxembourg. Indeed, it was perceived that the hotels of the western countries are more environmentally friendly than those from southern Europe. Yet, the reasons for this occurrence is not studied in this investigation.

Additionally, there are some doubts regarding the involvement of the government in these issues. In fact, this research emphasised the need for the government's contribution to fight against the negative impacts that the industry is creating on the environment. Many cases refer to the lack of financial support provided by the government as they implement new laws like the restrictions of single-use plastics.

Even though the post-COVID-19 era might be considered as being an incentive to fight for sustainable development in the world (Jones & Comfort, 2020), hoteliers did not seem very concerned to adapt their sustainable practices to the new reality but manifested more interest in coming back to their old habits.

Overall, considering CE practices as “biological and technical components” which reduce and eliminate waste after the product usage (Ellen MacArthur Foundation, 2013a), the sustainable measures implemented by the hotels, in general, are basic measures and do not comprise such CE practices, excluding case V. Indeed, the measures identified in the investigation that resembles more closely to CE practices are the ones by case V which stands out from all the other cases as well as case VII with the usage of biodegradable products or the photovoltaic cells, respectively. But there is definitely an existing absence from hoteliers in the implementation of actual CE measures which is justified by the costs involved in the implementation. Looking to the future, there is evidence that the industry has to take action into this matter because of the scarcity of natural resources and the negative impact their operations have on the environment. Governments should start to force the implementation of water-saving systems and photovoltaic cells in new facility buildings that have as a goal to serve the industry, but also in general.

Coming to an end, as Prideaux et al. (2020, p.675) underline in their article, “climate change poses a far greater threat to humanity, but because the danger is not immediate action continues to be deferred.”

7. Limitations and future research

The principal limitation of this research is that it cannot be generalised to all the hotels. The results found from each case were related and only considered to each hotel in question. As already said before, the awareness of the environmental condition from the different hoteliers depends often on their personal experiences and knowledge which might or not influence the good practices in the hotel. Given the complex nature of this issue, future research should focus on investigating a larger sample of hotels to get a better perception of CE measures in the Hospitality Industry.

The current research presents another limitation, being it the difficulty of finding available hoteliers to participate in the interviews. Therefore, it was challenging to find proper cases with similar attributes, so that an accurate comparative analysis could be done. Additionally, the honesty and reliability of each statement made by the cases can equally be questioned. Time played also an important role in the execution of this research. The lack of extended time influenced the number of cases interviewed. It would be valuable to do a more in-depth study across a larger time period. Another limitation involving the cases is the actual willingness of the cases to respond to the interview's questions. Therefore, some cases' results are more detailed and others not.

Future research should definitely focus on a larger sample of cases through a survey. This could enable the confirmation and improvement of the results gathered in this research. Further research needs to be done on finding accurate sustainable substitutes, but also how older facilities can adhere to sustainability without requiring great and costly transformations in their facilities. This

research has raised many questions regarding governments' role concerning CE. It is of high importance to understand to what extent the government is involved to prevent negative impacts on the environment.

Additionally, as many cases referred to guests as being a major contributor to the hotels' waste generations, future research could focus on what degree or percentage the waste creation provides from the hotels' operations and guests.

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Appendices

Appendix I – Interview Guide

CE Practices in the Hospitality Industry - Interview

Place	
Date	
Interview Time	

Presentation of myself and explain my research goal. Ask for permission to record the interview and if I can mention the hotel's name in my research. The Anonymity of the participants will be respected if desired.

A small introduction of the interviewee - form must be filled out

Participant Function	
Country	
Hotel	
Classification	
Chain Affiliation	
Hotel Size (N° of Bedrooms)	

This research is part of a Master's Final Assignment (MFA) at Católica Porto Business School. The objective of this research is to understand if hotel operators of different countries are familiar with Circular Economy (CE) and if they apply practices related to that approach and to what extent. The participant's experience and insight on this issue are valuable for the research.

Thank you for being part of this research.

Theme 1 – Familiarity with CE

Q1. Are you familiar with the term “Circular Economy”?

Are you aware of the negative impact the Hospitality Industry has on the environment?

Theme 2 – Waste Generation

Q2. What is your biggest waste generation in the hotel?

Q3. Do you have a waste management strategy?

Theme 3 – CE or Sustainability Measures

Q4. What practices do you apply to minimise the hotel’s waste generation?

Do you apply any practices that have a CE approach?

- o If yes, which ones?

Q5. Do you have any recycled or reused products in the hotel?

- o If yes, what exactly?

Q6. Do you have local suppliers?

Do you buy local products for the hotel?

- o If yes, do you give priority to local products?

Q7. Is the hotel equipped with a water-saving system?

Q8. What is your motivation in practising these sustainable measures?

Theme 4 – External factors influencing the application of CE measures

Q9. Has the hotel ever received environmental certification from an independent company?

Q10. Would you be more motivated in applying sustainable/ CE practices if the government presented incentives or programmes for the companies?

Q11. Because of the COVID-19 pandemic, the usage of single-use plastic has risen to guarantee sanitary measures, which has influenced good practices of sustainability. How has the pandemic affected your sustainability strategies?

Q12. From your point of view, what is your consumers' perception of sustainability? Do you think they are concerned?

Appendix II – Hierarchy chart – General codes

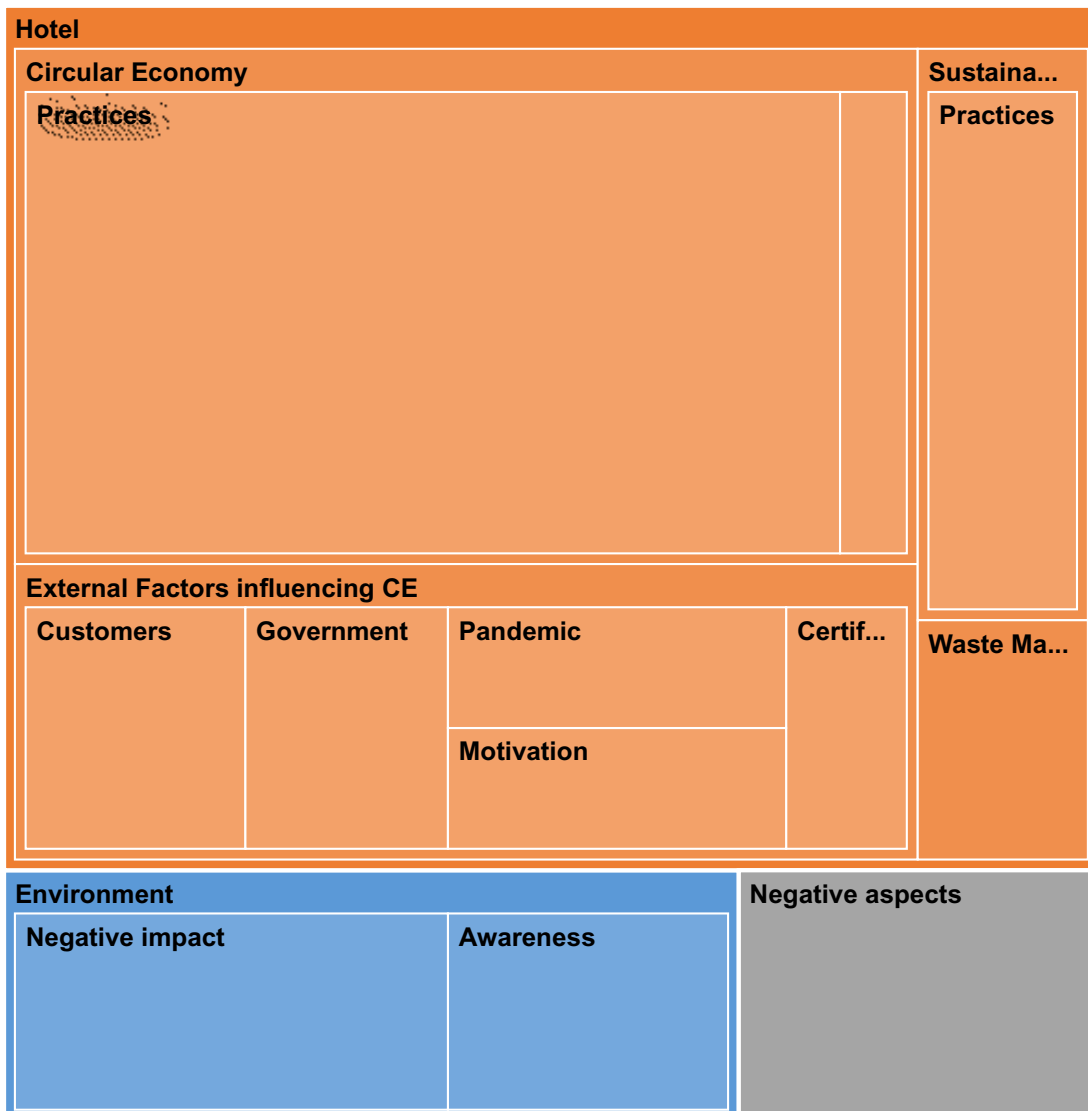


Figure 2 Hierarchy Chart – General Codes

Appendix III – Hierarchy Chart – CE related codes

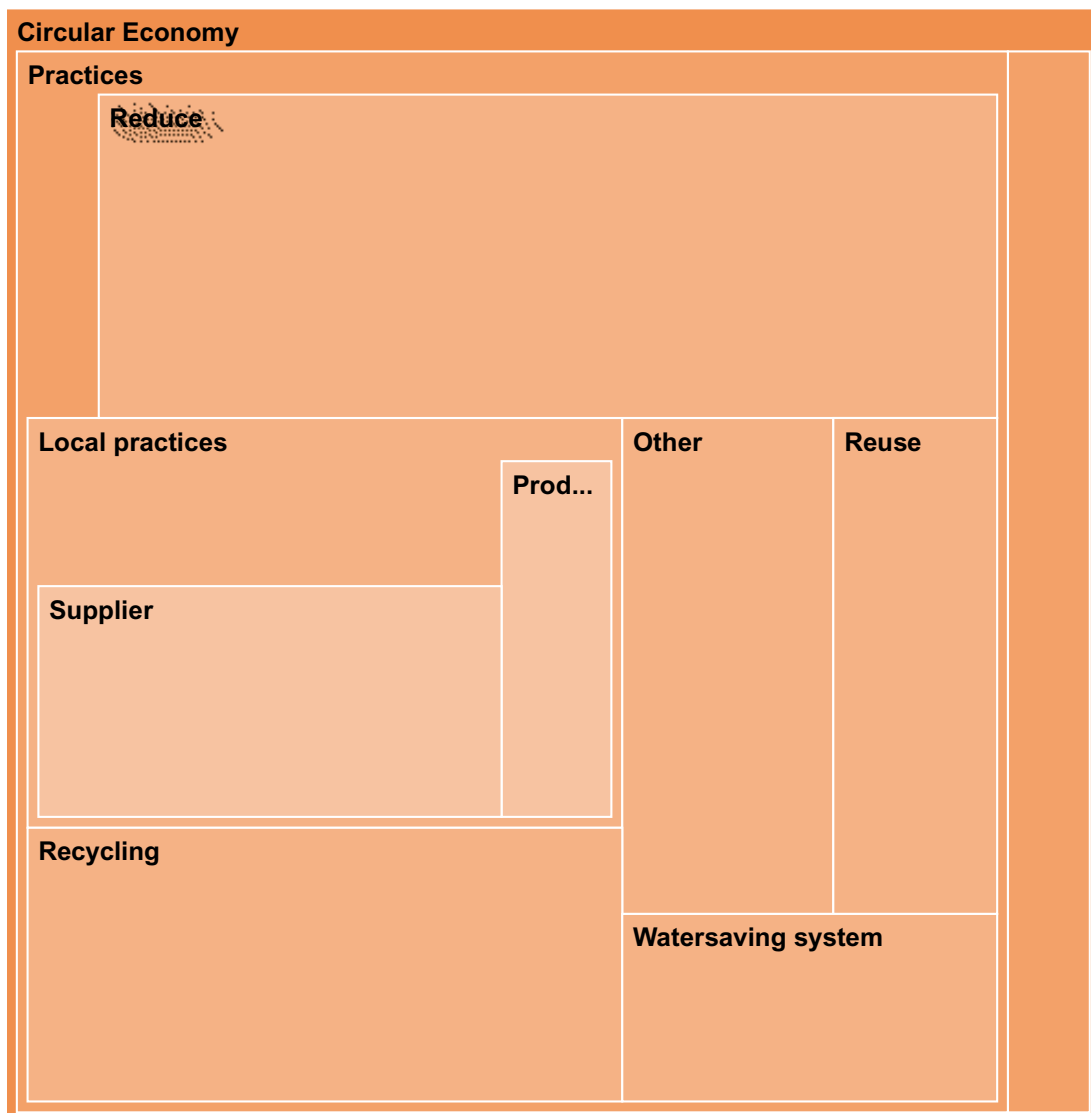


Figure 3 Hierarchy Chart - CE Codes

Appendix IV – Comparing Diagram – Example: Hotel Baumanière & PortoBay Liberdade

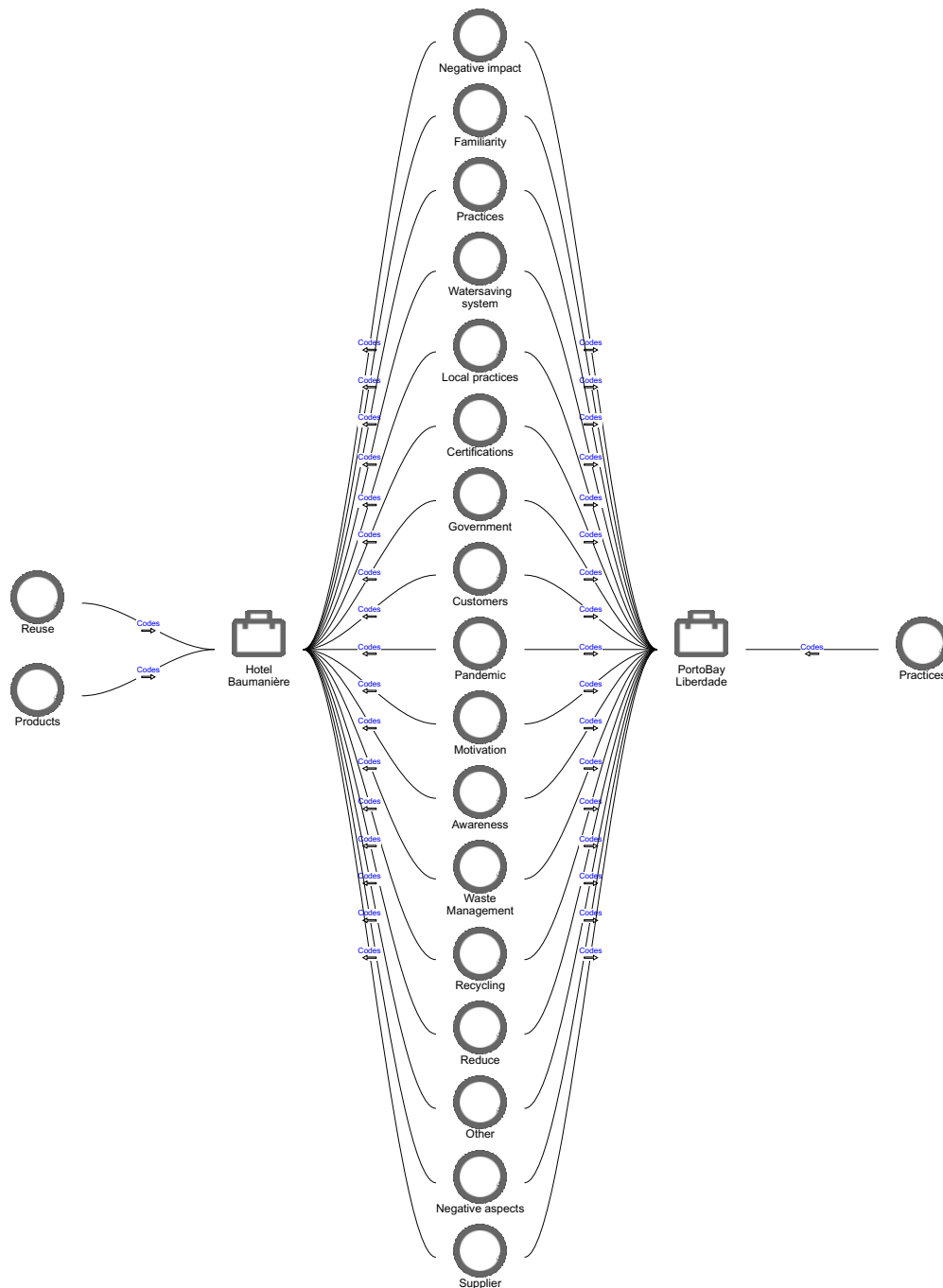


Figure 4 Comparing Diagram Example