LUND UNIVERSITY FACULTY OF SOCIAL SCIENCE

Master Thesis

Green travel onboarding

— *An exploration of the environmental value co-creation in tourism transportation online platforms from the millennial's perspective*

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Abstract

The carbon emissions from tourism transportation have been a significant environmental issue. Studies have tried to investigate the impacts of sustainability initiatives provided by tourism transportation on travellers, but the target group and the types of transportation are limited. Therefore, the thesis aims to understand the environmental value co-creation process of sustainability options provided by tourism transportation companies. Specifically, the thesis investigates perspectives from the millennials and includes tourism service providers such as online travel agencies and transportation companies.

The data collection includes two focus group, eight semi-structured interviews and document analysis to collect data and answer the research question. Interviewees were asked about their experience while booking tourism transportation and their concerns while making purchase decisions. The digital platforms from the selected tourism transportation companies would be shown to the interviewees to understand their willingness to engage or not and the reasons behind it. The results showed that several factors influence whether travellers would engage in value co-creation, including knowledge, awareness of environmental impacts, resources, the influences from travel pals, and social and political structure. Value co-destruction would occur under several conditions: awareness of sustainability options, negative feeling, information mistrust and lack of information.

This thesis contributes to the theoretical and analytical points of view to service management to further understand the customers' perspectives on sustainability issues in the tourism industry. A further investigation on cultural aspects and meanings in tourism transportation for specific groups such as generation Y and millennials would be appreciated.

Keywords: Millennials, Value co-creation, Customer decision process, Tourism Transportation, Sustainability options, Environmental value

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1. Introduction

When it comes to travel, tourism transportation has an essential role in accessibility and experience. The environmental impacts of tourism transportation have already raised awareness from scholars. As transportation has a close relationship to travel, it is crucial that the tourism service providers launch climate actions and offer greener choices for the consumers responding to the global vision of sustainable development in the tourism sector (UNWTO, 2020). Thus, this thesis is about the co-creation of environmental value between tourism transportation providers and customers through sustainable options given to customers (e.g. carbon calculator, eco-label, carbon offset) in digital platforms.

1.1. Tourism transportation and sustainability

Tourism's emissions are composed of several factors from tourism transport, including the number of tourists, distance travel, and transportation mode (Peeters et al., 2018; Wheeller, 2007). In 2016 the tourism-related transport emission represented 22% of all transport emissions and will continue doing so in 2030 (21%) (UNWTO, 2016). If the development continues, it will be difficult to significantly decrease carbon emissions to a sustainable level (Scott et al., 2010). The concerns over carbon emissions and air quality encourage the tourism industry to establish public transport policies and launch initiatives providing new patterns of tourist behaviour (Hall et al., 2017). Researchers argue that the tourism industry should develop and communicate more about sustainable tourism options (Gössling, 2016; Juvan & Dolnicar, 2013).

Scholars have studied the different means that tourism companies use for developing sustainability options. Mayer et al. (2012) observed the commitment of aeroplane companies through their several environmental initiatives. Among their measures, the companies offer a payment feature called ‘‘carbon off-setting’’ which is a voluntarily paid option to compensate for the carbon emissions arising from the flight. Another feature highlighted by the companies is the eco-label. The label stands for the environmental performance of products or services and presents the information about the ecological impact to the consumer in an easier way (Baumeister et al., 2020). The eco-labels have benefits for both providers and customers. Indeed, it provides a way for customers to compare the different services easily and products in terms of sustainability performance (Baumeister et al., 2020; Bratt et al., 2011; Buckley,

2002; Ng & Chan, 2020). In aviation, the eco-label is used to give more information toward environmental impacts that the companies take into account and is a way to differentiate themselves from another flight. For example, this type of label can be found in flying booking websites such as Directflights, where flight options are accompanied by a "smart score" where the price, schedule, comfort, amenities and environmental impacts are considered. To have a high score, the flight should have a low cost, good comfort and low fuel use (Gössling, 2017).

These measures impact the consumer's perception of the green image of the airlines to different degrees (Mayer et al., 2012). This additional sustainability raises awareness of how the flight's choice can impact the environment and how eco-label helps make a more informed choice (Baumeister et al., 2020). These effects on customers can encourage producers and service providers to continue their efforts regarding sustainability initiatives (Baumeister et al., 2020; Galarraga Gallastegui, 2002). However, up to this date, we did not find studies done by scholars about the sustainable initiatives proposed to customers like eco-label and carbon calculator in tourism transportation other than aeroplanes.

1.2. Tourism transportation on digital platforms

The tourism sector has been revolutionised by digitalisation, which influences travel behaviour through the new service platforms, report management systems and information via ICT tools offered by service providers (Ben-Elia & Avineri, 2015; Ruiz-Molina et al., 2010). In the digital era, tourists' demand can be fulfilled through the type of information, social network and recommender systems in the virtual environment such as online travel agencies through web and mobile applications (Neidhardt & Werthner, 2018). With the growth in websites and smartphone applications, there is evidence that digital platforms have greatly influenced transport demand (Gössling, 2017). Digitalisation also granted the possibility of reviewing services and products and making wiser choices while planning the travel (Gössling, 2016; Saseanu et al., 2020).

Researchers argued that digitalisation assists with service provision in the tourism industry and achieve continuous competitiveness through communicating, exchanging and using the information in its variety of forms (Kazandzhieva & Santana, 2019; Neidhardt & Werthner, 2018; Ruiz-Molina et al., 2010). Therefore, tourism stakeholders considered digital platforms a strategic tool for sustainable tourism development (Touray & Jung, 2010). Digitalisation uses encourage sustainability by constant education, monitoring and collaboration thanks to more

accessible information (Benckendorff et al., 2014; Gössling, 2017). As technology plays an essential role in millennials' lifestyle, digital platforms determine their travel behaviour and boost the new business model of tourism (Han et al., 2017; Ketter, 2020). Travellers can choose transportation products from the digital platforms offered by online travel agencies (OTA).

1.3. Environmental value co-creation within tourism transportations

The environmental value represents the belief and behaviour of protecting and the environment (Reser & Bentrupperbäumer, 2005). This value allows the transmission of the willingness to participate in sustainable initiatives such as willingness to pay and the transmission of environmental behaviour, environmental attitudes and ecological behaviour prediction (Brouwer, 2000; Reser & Bentrupperbäumer, 2005). Since the establishment of sustainable initiatives is to engage different actors who share the sustainability vision and are willing to participate. The environmental value is then co-created from the participation of different actors in the initiatives with the definition "Value co-creation is defined as a process that comprises actions from providers, customers, as well as additional actors, that can beget a generation of value" from Grönroos and Voima (2012).

Scholars have applied value co-creation and Service-Dominant Logic to understand the value creation process between customers and the service providers. Gössling (2009) studied how the value co-creation process works within the air travelling industry. The findings show that the air travelling companies undertake environmental actions to have a greener image, attract customers, be more relevant to social context, and respond to the pressure of governmental regulation. While customers, by buying tickets, support airlines' offering of being more environmentally friendly and choose something that would align more customer concerns and identity (Gössling et al., 2009).

Another study case has been done on the online platform value co-creation process of a German travel agency (Font et al., 2021). It suggests that the user experience design plays a vital role in introducing sustainability options and fostering the co-creation of environmental value by attracting customers and stimulate their attention (Font et al., 2021). In this case, the co-creation of sustainable value is considered a failure because travel agents tend to intentionally exclude the information regarding sustainability while interacting with the customers (Font et al., 2021). Indeed, tourism businesses think this information can decrease the customer experience appreciation (Borden et al., 2017; Chen & Peng, 2014; Font et al., 2017; Font et al., 2021). As

it can be noticed, the research mentioned above focuses on aeroplanes. Research regarding the co-creation of sustainable value in tourism transportation such as trains or bus was not found.

1.4. Problematisation of the research

The engagement of digital platforms in the value co-creation concept increases the understanding of different users participating in the value co-creation process (Polese et al., 2018). However, from the background mentioned above, little research has been done about the environmental value co-creation process within the tourism transportation industry, including the role and experience of the consumers in this value co-creation process.

Previous studies in the tourism transport research field utilised the theoretical lens to understand consumer decisions process and behaviours while selecting tourism services, including attitudes and behavioural gap, utilitarianism, technology and other social, cultural and economic aspects (Ben-Elia & Avineri, 2015; Cogut et al., 2019; Cohen, Higham, Stefan, et al., 2014; Gössling, 2016; Gössling et al., 2012). However, those research does not seem to address the tourism transport choice in travel behaviours and environmental value from the perspectives of millennials.

Therefore, the thesis aims to understand how the sustainable initiatives in tourism transportation from travel companies such as eco-label co-creates environmental value with millennials (from the 20s to 30s years old) and how this co-creation process impacts customers sustainability awareness. Hence, to reach this aim, the thesis is divided into three objectives:

- Identify the environmental values co-creation process of the digital platforms with a rework of Schüritz et al. (2019) and Grönroos and Voima's three-sphere model (2012).

- Through Consumer Behaviour Theory - Consumer Decision Making, understand the decision process of tourism transportation services from the millennials and their impressions and actions on the sustainable initiatives and schemes offered by tourism transportation agencies.

- Distinguish the different and common points in millennials' behaviours and consumption patterns regarding tourism transportation and inside the destination.

The research question of the thesis is **"How environmental values are co-created within tourism transportations among millennials?"** In other words, the thesis focuses on

identifying the role of the different actors and the interaction during environmental value co-creation.

1.5. Relevance of the thesis

This thesis focuses on the millennials' travel decision and behaviour on tourism transport by providing both consumers' and provider's perspective on the co-creation of environmental value. On the provider side, the thesis discusses how the tourism service responds to the market needs through digital platforms and corporate initiatives. As previously discussed, digital platforms provide opportunities to guide consumers' choice (Gössling, 2016). The article also investigates how the companies integrate market needs, understand the environmental value and further navigate consumers' decisions. On the consumer side, the thesis studies the diversity within the value co-creation of environmental value in tourism transportation by identifying and understanding the process of consumer participation in the co-creation of value and those who do not.

The decision-making process is the cornerstone of consumer behaviour research (Scott A Cohen et al., 2013). This thesis utilises consumer behaviour theory - consumer decision making to examine the decision process and factors that would influence tourists' purchase behaviour. In other words, this framework can scrutinize the different awareness outcomes within the value co-creation process**.** The theory provides a lens to observe any inconsistency in the attitude regarding the sustainability of the travellers between the transportation selection and their consumption behaviour in the tourism destination (e.g. accommodation selection, food consumption, transportation inside the destination, etc.). If there is inconsistency, the reasons why will be investigated.

Therefore, the thesis provides more details about the purchase behaviour and the perceptions of millennials travellers to the tourism transportation digital platforms. The results can be valuable for online tourism agencies and tourism transportation companies who wish to engage sustainability in their current practices in the context of sustainable travel. This thesis can contribute to service management by providing theoretical and analytical viewpoints to understand further the consumers' perspectives on sustainability issues in the tourism industry and value creation in data-driven services.

2. Theoretical Framework

The value creation spheres model has been selected for studying environmental value co-creation within tourism transportation as it proposes a more interactive and dynamic vision of the co-creation (Grönroos & Voima, 2012). In addition, a rework version of the joint sphere from Schüritz et al. (2019) is used as it suits better a digital service context. Consequently, the models are helpful for this thesis to obtain a more precise and up-to-date vision of the co-creation value in the digital tourism transportation service with more details in the role of each actor and the resources that will be identified using document analysis and interviews.

Further, to understand the environmental value co-creation between customers and the service providers, this thesis utilises consumer decision making as a lens to understand the concerns and the decision process of the purchase decision before accepting the services provided by the tourism transportation companies. This thesis would also investigate how digital platforms influence their decision process and contribute to environmental values through the lens of consumer behaviour and willingness to pay. In this way, the research hopes to gain insights from the factors with the concern of sustainability as well as the experience from digital platforms.

2.1. Defining Value Co-creation

Defined for the first time by Vargo and Lusch in 2004, the SDL suggests a new approach to value creation. The value of a good is determined by the service that the good can offer to its users (Vargo & Lusch, 2004). This approach also redefines the boundaries between production and consumption of goods and services (Vargo & Lusch, 2004). Indeed, the SDL considers the role of the customer in value creation. Initially, it was believed that the value creation process occurred only on the production side and values were considered as inherent to the product (Karababa & Kjeldgaard, 2014). The perspective rejects the idea that value creation occurs only during the exchange between customer and supplier (Karababa & Kjeldgaard, 2014). Customers are perceived then as a co-creator of values by defining what meaning these experiences have for them. At the same time, the providers' role evolves as facilitators of creating values in exchange, which are value propositions by providing the necessary resources needed by the customers for the creation of values (Font et al., 2020; Karababa & Kjeldgaard, 2014). The perspective acknowledges that the perceived values might change for each customer and that they are not inherent in goods but rather created in use and depend on the context. (Font et al., 2021). Hence, Gronröos and Voima (2012) propose a model which offers a new

perspective regarding the co-creation of value where the process and the roles of each actor participating in the process are more detailed. The model consists of three spheres that detail the value co-creation process:

- First, there is the provider sphere. Here, the provider is developing and designing the products or services. The provider is considered as a value facilitator by producing resources that will help customers value creation by offering value propositions, also called "value in exchange" (Gronröos & Voima, 2012; Karababa & Kjeldgaard, 2014). In other words, the provider acts without customer involvement (unless the provider invites the customer for co-producing to facilitates value creation, which are values propositions, where the customer will select potential values (Gronröos & Voima, 2012).
- The joint sphere is where the interaction between customers/providers occurs. The customer invites the provider into the creation process. This interaction, which can be physical or virtual, is an opportunity for providers to influence value creation by impacting the customers' experiences and practices. However, the co-creation of value can only happen with direct interactions and not indirect interactions. Direct interaction is defined as "a process by which the customer's and firm's resources (personnel, system, servicescape) interact through an active and ongoing coordinated, dialogical process" (Grönroos & Voima, 2012, p. 142). The interaction has two possible influence outcomes. The influence can be positive when the interaction between the two parts goes well. The interaction can be, for example, travel agents mobilising their knowledge and skills to assist a customer in booking air travel tickets (Gronröos & Voima, 2012). On the other hand, the influence can be negative when the interaction did not go well. For example, a provider trying to create interaction while not being invited by the customers can lead to the co-destruction of value instead of co-creation (Gronröos & Voima, 2012).
- Lastly, the customer sphere is where the customers are independently combining the experience obtained from the constructed resources given by the providers with the outcomes from the interactions during the joint sphere. This combination begets value-in-use transformation from the provider to real value (Gronröos & Voima, 2012; Schüritz et al., 2019). In this sphere, interactions with actors other than providers such as customer's family or friends and resources interact with the customer about

provider products and services of the provider and the values the latter facilitated (Gronröos & Voima, 2012).

The value creation spheres model raises awareness regarding the interactivity and dynamism of the process. Indeed, the provider can invite the customer in the provider sphere to participate as co-producer in the production process of the service or product, while the customer can invite the provider into the co-creation of the value process and influence it (Grönroos & Voima, 2012).

This model also permits to observe value co-creation from a non-linear perspective. There is no chronological order co-creation of value within the three spheres, meaning that the co-creation of value doesn't necessarily start by the provider sphere and end by the consumer sphere. For example, the action that triggers the beginning of the value co-creation can begin in the provider sphere with the conception of the product or services and facilitation of values. Or it can also start from the customer sphere where other actors interact with the customers by recommending customers about provider service or product (Grönroos & Voima, 2012). Finally, the model points out the possibility of value destruction occurring between the provider and customer. Indeed, before this model, only value co-creation was considered, and it entails a process that increases the customer's well-being, while the negative interactive outcomes weren't considered (Echeverri & Skålén, 2011; Grönroos & Voima, 2012). Thus, the model demonstrates that the interactions between provider and customer can worsen the customer's value creation process (Echeverri & Skålén, 2011; Grönroos & Voima, 2012). For example, both providers and consumers' collective destruction or diminishment can be illustrated when providers and customers cannot agree on procedures, understandings or engagements (Echeverri & Skålén, 2011).

Moreover, Echeverri and Skålén (2011) identified five types of interactions where co-destruction could most likely happen. One of them is "informing" which can be defined as exchanging information related to the service (Echeverri & Skålén, 2011). The interaction between providers and customers is about texts created by providers to inform customers about sustainability options, and initiatives of the transportation companies, the Echeverri and Skålén's (2011) informing the type of interaction and its possibility of value co-destruction is considered during the analysis.

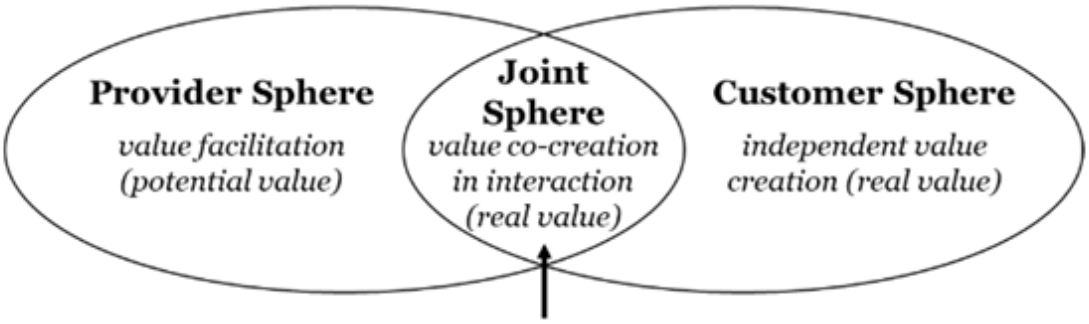

Figure 1. Grönroos and Voima value creation spheres (2012)

However, the understanding of Grönroos and Voima on the joint sphere part about value co-creation through direct interaction is challenged. It has been previously explained that value co-creation only happens during direct interactions between customer and provider (Grönroos & Voima, 2012). Moreover, the examples of value co-creation provided by Grönroos and Voima (2012) show only direct interactions, whether it is physical or digital servicescape. Among those examples, phone calls between tour operators and customers to book the trip or helping the customers to book the trip through the service system are mentioned (Grönroos & Voima, 2012). This interaction perspective seems to be more appropriate to servicescape, where direct interaction is more likely to happen. It is then challenging to incorporate the joint-sphere view of Grönroos and Voima in the context studied in this thesis, where indirect interactions are occurring more often in this context. Indirect interactions situations where customers are consuming resources from the providers (Grönroos & Voima, 2012). In the thesis frame, reading sustainable information provided by the transportation companies or selecting the sustainability options provisioned by the transportation companies is understood as means to consume resources. Therefore, Schüritz et al. (2019) worked on a reconceptualization of the Gronroos and Voima's model (2012) to restructure the joint sphere to make it suitable for a more digital context. In other words, the rework on the joint sphere acknowledges new factors which influence the value co-creation between providers and customers in data-driven services. It also considers the new automated algorithms interactions developed at the arrival of data-driven services.

Data-driven services are defined as Information systems that providers use to gather, store, access, and analyze data that can support the customer's decision-making process via data and analytics-based features and experiences associated with a product or service. On the other hand, data and analytics in services are used by companies as an opportunity to create a new

value proposition for the customer by innovating their service offerings (Hunke et al., 2019; Schüritz et al., 2017).

Companies now use data-driven services from diverse industries to guide their users. This is the case in the tourism industry with the travel agency websites and digital platforms displaying sustainable initiatives such as Skyscanner, Trivago or Booking, which are considered as data-driven services. Indeed, these platforms provide up-to-date information regularly and influence travel planning by giving insight into the flight cost between regions (Dietz, 2018). These digital platforms are also trading data between providers who display the different alternatives of flight and compare them through up-to-date insights and statistics on various criteria like flying time, price, carbon indicator, or in-flight services. It allows customers to evaluate according to the multiple offers available for a particular fare. In exchange, customers provide information on where, when and how often they travel (Trabucchi & Buganza, 2019). Thus it gives data for growing their business by innovating their core offering to customers and enhancing their relationship with them thanks to the insight they gain about the customers (Trabucchi & Buganza, 2019).

Hence, in data-driven services contexts, the joint sphere allows the provider to integrate resources to affect real value creation. Three factors influence the co-creation interactions between providers and customers within the joint sphere. Those factors are “interaction”, “access to customer processes and behaviours”, and “decision power” (Schüritz et al., 2019).

- The interaction consists of contact, which can be mental, virtual or physical. It gives the provider opportunities to engage with the customers' experiences and practices to influence the value creation outcomes. The rework of the model allows a redefinition of interaction that is more suitable to a digital era context. It acknowledges that interactions and decision-making occur through digital interfaces, devices, and algorithms (Schüritz et al., 2019).
- The access to customer process or behaviours refers to the level of provider knowledge about their customers. The more they have access, the more the providers can influence them to ensure value creation by better understanding the motivations and problems that customers have to create value (Schüritz et al., 2019).
- The decision power refers to the fact that one actor can make decisions under the influence of other actors' decision-making, thanks to the information provided by data (Schüritz et al., 2019).

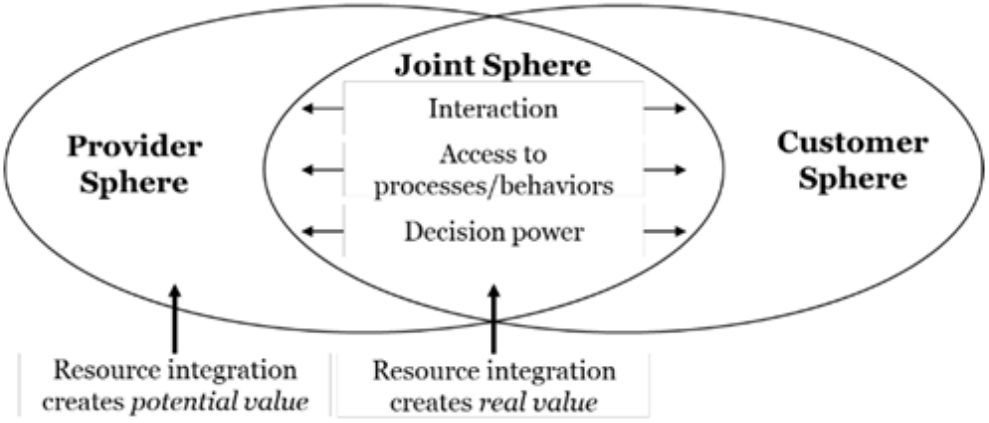

Figure 2. Re-conceptualized value creation spheres (Schüritz et al., 2019)

All three factors are not necessary for having a joint sphere. If the three factors are combined, then the joint sphere is maximized (Schüritz et al., 2019). Thus, depending on the combination, there are three possible joint sphere constellations:

- No or limited joint sphere: In this version of the joint sphere, the provider facilitates value creation by collecting and preprocessing data provided to customers via dashboards and interfaces. However, the provider does not have information on the use of data by customers, such as the insights they derive or how these data impact customer decision making. The customers, who received the data in raw form, find information and take actions by themselves (Schüritz et al., 2019).
- Developed joint sphere: In this joint sphere, more provider-customer activities occur. The customer shares and gives access to data and information that can be incorporated into services. Thus, providers still depend on the customer action to turn insights into real value, but they can gain knowledge about the customer to derive insights from data (Schüritz et al., 2019).
- Extensive joint sphere: In this type of joint sphere, the provider's process intertwines with customer processes and practices. The customer opens processes and empowered providers for decision making and changing customer processes. Thus, through manual interventions or automated processes, the provider acts with or on behalf of the customer to generate value. In this way, the provider can also have insights about the creation of real value (Schüritz et al., 2019).

2.2. Define Environmental Value

The intrinsic value of caring for the environment bears not only the balance with nature but the preservation of the resources for the future generation (Kuhlman & Farrington, 2010). From the economists' perspective, environmental values are measured in money to make them commensurable with other market values through Willingness to Pay (WTP) or Willingness to Accept (WTA) schemes (Brouwer, 2000). The environmental values are also presented as psychological variables, with values providing moral tone (Reser & Bentrupperbäumer, 2005). Corraliza and Berenguer (2000) separated the previous environmental concern (values and beliefs) research with Stern (1992) and Wall (1995)'s idea into three main areas, including environmental behaviour, environmental attitudes and environmental behaviour prediction. Reser and Bentrupperbäumer (2005, p. 141) argued the definition of environmental values as "the individual and environmental values refer to the individual and shared community or societal beliefs about the significance importance, and well-being of the natural environment, and how the natural world should be viewed and treated by humans."

The environmental value within the tourism transport context correlates to the environmental impacts from the transport and its infrastructure (Gaker et al., 2011; Gössling et al., 2009; Kalyviotis et al., 2018). In the aviation industry, customers and airline companies co-create environmental values through carbon offsetting, which is essential to minimise negative impacts on the environment (Gössling et al., 2009). The ecological implications of the different transport modes infrastructures were calculated by Kalyviotis et al. (2018) in the United Kingdom as the environmental value. The value of green represents the willingness to pay for greenhouse gas emissions from various options and its impact on transport behaviours (Gaker et al., 2011).

- Value co-creation occurs thanks to the implementation of ICT tools and platforms that improve the strength and effectiveness of relationships between actors (Barile et al., 2020).
- The role of the customer changes to one that co-produces the services to be experienced because it is the customer who defines the meaning that those experiences have for them. Value is co-created by the customers' co-creating practices, and the providers act as facilitators. Value differs for each customer, rather than being inherent in the goods, because the value is created in use and value is specific to a context (Font et al., 2021).

An organisation designs sustainable products with customers, not for customers; co-creation means acknowledging customers as value-creating partners. This change of mindset, and upfront investment in sharing decision-making with customers, reduce the post-production risk of customer product rejection; the often-seen apathy for sustainable products because they do not resonate with consumer values (Font et al., 2021).

2.3. Consumer Decision Making and Sustainability in Tourism Transport

The decision-making process is the cornerstone of consumer behaviour research (Scott A Cohen et al., 2013). Not until Moutinho (1987) proposed the "vacation tourist behaviour model" by recognising the different stages and behavioural concepts in the decision-making process, the decision-making models were seen as linear. After then, the theories of Reasoned Behaviour and Planned behaviour were utilised to understand the tourists' behaviour but were criticised for ignoring the complexities of decision because of the assumption on rationality (Scott A Cohen et al., 2013). To bring a more comprehensive picture of tourism behaviour, the research field has emphasised the focus on addressing the process and the interdependencies with products or services (Scott A Cohen et al., 2013; Swarbrooke & Horner, 2007).

To understand the complexities of travellers' decisions on tourism services and products, researchers have been working on the factors that can affect the decision process and propose various decision models (Scott A Cohen et al., 2013; Swarbrooke & Horner, 2007). As many of the decision models proposed were linear, Swarbrooke and Horner (2007) emphasised the importance to consider the complexities of decision making. They pinpointed the diverse characteristics in tourism from the demand side, including the emotion, timescale, product choice and security. The way people search for possibilities for holiday influences the transport mode, length of stay, accommodation type and travelling companion (Bargeman, 2001, as cited in Verbeek & Mommaas, 2008). Since tourism and transport are intertwined areas in the tourism industry, the decision-making process of transportation reaching destinations has been discussed in the research topics (Lumsdon & Page, 2007; Sorupia, 2005).

Within the public transportation system context, the decision-making processes include three factors, including structural, individual and contextual ones (Grison et al., 2017). Structural factors discuss the need or accessibility to transportation. Individual factors include the

different socio-demographic attributes, including age, sex and family type, etc. Contextual ones focus on the weather, the type of the trip or even the emotion of the travellers.

Researchers have highlighted the importance of combining several aspects to growing trends of research with the combination of tourists' behaviour in tourism and tourism mobility, including the influences of technology-based solutions, the impacts from generation Y, the editing service options and the better governance from the sustainability concern (Cohen, Higham, Stefan, et al., 2014; Scott A Cohen et al., 2013; Gössling, 2017; Gössling et al., 2012; Peeters et al., 2018).

Pro-environmental behaviour is to identify the attitudes in environmental protection, values and knowledge within the concept and the design of the mechanisms to reduce the environmental impacts and the evaluation of the interventions (Juvan & Dolnicar, 2017; Steg & Vlek, 2009). Though the research of pro-environmental behaviour drivers has been criticised for its universality, the scholars addressed its importance in understanding the process of enabling consumers to engage in sustainability concepts through socio-technical innovations and tourists' behaviour feeling of guilt as a drive (Juvan & Dolnicar, 2017; Verbeek & Mommaas, 2008).

The decision process of the tourism transport can be influenced by several factors, including knowledge understanding the factors influencing the decision-making for tourists while considering engaging in sustainability initiatives from the service providers, sustainability attitudes, knowledge and values, willingness to pay as well as lifestyle (Cohen, Higham, Stefan, et al., 2014; Juvan & Dolnicar, 2017). Technological, structural and organisational characteristics of transport mode and consumers' beliefs are also crucial while understanding consumers' behaviour in holidays and assessing the potential opportunities for the transition towards more sustainability (Verbeek & Mommaas, 2008).

2.4. Willingness to Pay

Within the tourism transport research, willingness to pay has been utilised in understanding tourists' engagement in corporates' initiatives, including carbon offsetting, eco-label and donation of flyer miles (Cohen, Higham, Stefan, et al., 2014; Gössling et al., 2009; Penz et al., 2017). By obtaining sustainability information, the customers become more aware of the most polluting flights to avoid them and enhance their willingness to pay more for less polluting

flights (Baumeister et al., 2020). Although participants showed a willingness to pay to avoid red-labelled flights, they were unwilling to pay more for a green-labelled flight when a yellow-labelled flight was available. In other words, despite having the potential in encouraging consumers to make more sustainable choices, the eco-labels do not always create a willingness to pay for sustainability options due to the lack of awareness and trustworthiness from the customers (Baumeister et al., 2020; D'Souza et al., 2007). The reason can be the unawareness of the eco-label, the way of communication, and the information expressed do not meet the customers' needs (Baumeister et al., 2020; Font et al., 2021). The research demonstrates that eco-label does provoke a behavioural change of passengers by influencing the values and attitudes towards sustainability (Penz et al., 2017).

3. Methodology

This chapter provides and explains the details of the methodology designing process. Through a sequence of discussion from research philosophy, approach, strategy to data collection, the context identifies and presents the selection of approach in each section to map the anchors for the analysis and answer the research questions.

3.1. Research Philosophy

The thesis follows an epistemological interpretivism perspective to investigate the social meanings of environmental value to both service providers and travellers. According to Bryman (2016), interpretivism draws attention to the different interpretations of the objects from the subjective viewpoints of the social actors. The research position would be utilised to investigate how the sustainability options are understood and interpreted by different consumers and tourism transportation companies.

Value co-creation is an interconnected system constructed through the co-creative process by consumers and other actors by integrating various resources and actions (Grönroos & Voima, 2012). Social constructivism would be utilised in this research to understand the process of environmental value co-creation. The perspective is applied to understand the social phenomena and their meaning conducted by reality, knowledge and learning from different social actors (Kim, 2001). Through this angle, the engagement from travellers, service providers and other actors in achieving environmental value co-creation would be assessed.

3.2. Research Approach

For this research, the abductive approach is adopted. The abductive analysis allows approaching the empirical field while rework on the theoretical part based on the findings collected in the empirical field. The abductive reasoning is selected because the investigation is based on incomplete information regarding the diverse gaps explained previously. Additionally, the observation is about how people are discerning and approaching the sustainable initiatives of tourism transportation by acknowledging their own and unique background, previous experiences and point of view regarding some notions such as sustainability. In other words, there is a focus on the stance of the participants toward different concepts from their perspective of the world (Bryman, 2016).

Following abductive reasoning and the findings from the interviews, it has been noted that the failure of co-creating environmental value is a recurring observation. Hence, since it was not an aspect presented in the theoretical framework before, the co-destruction perspective has been added by consideration of the interview findings.

3.3. Research strategy, design and method

Following Bryman (2016), qualitative research as a research strategy emphasises how individuals interpret social phenomena and create social reality constantly and vigorously. Ontological constructivism is a position that sees the social world as an ongoing process built from the interpretive approach of individuals' viewpoint (Bryman, 2016). Therefore, the qualitative strategy assists the research in analysing consumer behaviours, especially the process, while co-creating the environmental value.

With a cross-sectional design, the collected data at a certain point of time can assist in detecting the relationships among the different segmentations (May, 2011). Cross-sectional design from the qualitative strategy entails the approach to understand the context not transferable in the quantitative variables (Bryman, 2016). Due to the time frame of the thesis, the cross-sectional design is more suitable and realistic.

As the research starts from ontological constructivism, both focus group and semi-structured interviews provide the method to understand the subjective understandings undiscovered and find out various interpretations on a particular topic (Bryman, 2016; Flick, 2018). Focus groups help look deeper into the phenomenon and construct the topic's meaning (Bryman, 2016). The semi-structured interview allows the participant to answer questions in their own words and utilise the following-up questions to map out the viewpoints (Bryman, 2016).

The research also includes document analysis as an approach. Document analysis from the online web page provides social reality and resources for understanding the intention to produce (May, 2011). Therefore, to understand the interpretivism of environmental value, the documents assist in understanding the different initiatives provided by tourism agencies. The research design of the thesis is presented in Figure 3.

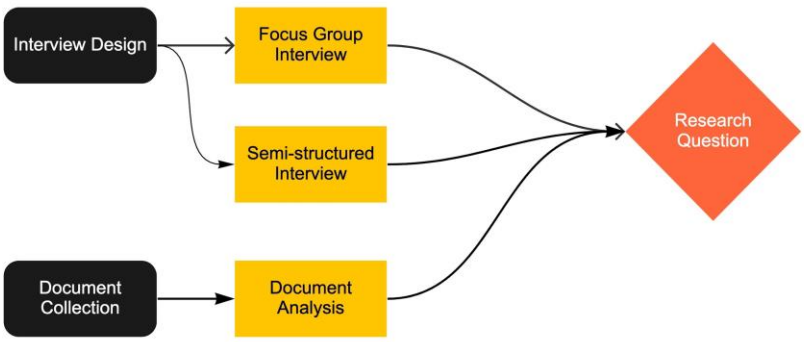

Figure 3. The research design of the thesis

3.4. Data collection and analysis

3.4.1. Interview

Purposive sampling is a process regarding the research questions and allows the questions to be answered (Bryman, 2016). In this thesis work, the participants were selected and invited to the interviews to share their thoughts on attributes chosen to answer the research question. For both the focus group and semi-structured interviews, the participants were selected to specific criteria, including:

- Participants had experience in travelling long-distance travel (over 400 kilometres, according to Reichert and Holz-Rau (2015)) or to another country the year before last year and planned the trip by themselves rather than buying the package from an online/ physical travel agency
- Aged between the 20s and 30s
- Participants have sufficient knowledge and techniques in digital platforms such as websites and mobiles to plan their trip

Both types of interviews were utilised to collect the travellers' perspectives and later served as an important source for analysis. Focus groups can further understand individuals' views as the interviewees within one-to-one interviews are hardly challenged (Bryman, 2016). Semi-structured interviewing offers insights into how the participants perceive the specific topic (Bryman, 2016).

Due to the time limit, challenges under the Covid-19 situation and the university's requirement of number for the interviewees, 16 interviewees were involved in the interviews with four people in each focused group and eight individual semi-structured interviews. The participants were from 9 different nationalities, namely: Brazil, China, France, Germany, Ghana, South Korea, Sweden, Taiwan and Vietnam. There is no specific intention behind the nationality span as it is not considered in the criteria to achieve the research aim.

Because of Covid-19, the interviews took part through online meeting software Zoom with its flexibility and convenience. As the thesis selected the age group between the 20s and 30s and those who have specific knowledge in using technology devices, the limitations mentioned by Bryman (2016), including the familiarity of the software and the consideration of different use habits from various age groups were eliminated.

To understand the consumer decision making while choosing tourism transport, the design of the questions was inspired by the previous research in understanding the decision process of tourism transport service and sustainability. Concepts that the scholars in the decision-making process emphasised were involved in the questions, including sustainability attitudes, knowledge and values, willingness to pay and technological factors (Cohen, Higham, Stefan, et al., 2014; Juvan & Dolnicar, 2017; Verbeek & Mommaas, 2008).

Before the interview, every participant was required to fill out the questionnaire regarding the demographic data, including nationality, occupation and perception as a sustainable tourist. Questions like introducing questions, follow-up questions, probing questions, specifying questions and direct questions were utilised within the question design (Bryman, 2016). The whole question list is attached to the Appendix.

During the interview process, the interviewees were guided to describe their decision-making process of the last trip and explain their concerns in sustainability issues. Questions related to tourists' attitudes, knowledge and values to sustainability are examined within the first section. The second and third sections are to explore the process and factors influencing trip planning. Those sections include sustainable initiatives from service providers and ask if the tourists have noticed and engaged. The last section is to realise tourists' behaviour and habits while travelling. Therefore, the process of determining the accommodation and restaurant were assessed. The questions were divided into five sections:

a. The habits and knowledge of the consumers regarding sustainability issues

b. Tourism transport habits and the digital platforms used

c. Knowledge and awareness of sustainability choices in online booking

d. Perception of the travel companies regarding sustainability options

e. Tourism sustainable habits other than transportations

In the end, the interviews were done in English and last around 40 minutes to 1.5 hours. All the interviews were recorded in Audio and Video format and later transcribed with the assistance of Otter.ai.

3.4.1.1. Interview Transcriptions

Interview transcripts were used to discover the decision process of the millennial travellers on tourism transportation services. The first step is coding, which refines the transcripts to the codes for the data retrieval (Bryman, 2016). In this thesis, coding was processed to find out the keywords and categorise them into the different themes from the majority of the interviewees' responses using the consumer decision-making lens presented in Table 1. With content analysis from the interview transcriptions, the transcriptions aim to provide a source of analysis to comprehend the decision process of the millennial travellers and the procedure of the environmental value co-creation.

Themes	Factors	Keywords by the interviewees
Tourism transportation Habits	Sustainability Knowledge	Research, knowledge, know, understanding
	Price	Costs, budget, price, bargain, pay
	Time (Schedule, distance)	Distance, hours, delay, cancel, in time, schedule,
	Attitudes to sustainability	Think, matter, try
	Social structure	Privilege, capitalist, knowledge
	Political context	Protocol, politics, tax, authority, equity
Knowledge and awareness of sustainability options	Willingness to pay	Take action, compensate, to do, use
	Willingness to know information	Information, go through

	Visibility	Text, background, website, eye-catching, eye-opening, notice, filter, interface
	Negative feeling	Buy more, mess up, guilty, compensate
	Lack of information	Reference, can't feel, certified, different kind, accessible,
	Information mistrust	Trust, certified, prestigious, true, believe, questioning, greenwashing, promote, marketing
Tourism sustainable habits	Travel pals	Family, friends, partner, travel pals
	Safety	Feeling safe, alone, scared
	Accessibility	Infrastructure

Table 1. Keywords of coding

3.4.2. Documents

A total of six websites were analysed. These websites consist of kayak.com, skyscanner.net; raileurope.com; and flixbus.com, which are OTAs in the airline, bus and train industry. Two airline companies, flysas.com and norwegian.com, were also observed. The analysis was about analysing what kind of information the companies provide and how the sustainable initiatives are displayed on their websites.

Document analysis is an analytical method that consists of examining and interpreting data from printed or electronic materials transmitted over the internet, such as webpages (Bowen, 2009). This procedure permits "to gain understanding, and develop empirical knowledge" (Bowen, 2009, p.27). Among the advantages of using document analysis, there is the richness of these documents in terms of information and contexts. Additionally, the documents are unobtrusive data (Bowen, 2009).

Doing document analysis allow approaching the assets employed by the provider side to propose values and facilitate environmental value co-creation. These findings can complete the customer perspective of value co-creation collected from the interviews and focus groups. In other words, the insights from the document analysis can be combined with the interviewees' statements, especially regarding their point of view and experiences regarding sustainable initiatives. The figure below is a summary of the findings from the document analysis.

Compagnies (Transportation companies + OTA)	**Flixbus**	**Skyscanner**	**SAS**	**RailEurope**	**Kayak**	**Norwegian Airlines**
sustainability options provided	Carbon offset	Eco label	BioFuel Carbon offset Carbon Calculator	Carbon Calculator	Carbon Calculator	Carbon Calculator Carbon offset
How the information are displayed	During the purchase process after selecting one specific bus	During the purchase process while comparing the different airplanes	BioFuel & Carbon offset: During the purchase process or any time before departure Carbon Calculator: In a different web page	During the purchase process while comparing the different trains	During the purchase process while comparing the different airplanes	Carbon calculator: During the purchase process while comparing the different flights Carbon offset: After selecting one specific flight
Accessibility: Who can use the sustainability options	Everyone can access	Everyone can access	BioFuel Everyone can access Carbon offset: Only customers who possess SAS membership	Everyone can access	Everyone can access	Everyone can access

Additional informations about sustainability	Explain where the money of the carbon offset goes Explain their sustainability goals and plan for the future Provide more detail about the technologies the company is developing for sustainability Detail their partnerships with sustainable charities and organisations that help to calculate the carbon emission	Partnerships with sustainable charity and organisations that help to calculate the carbon emission Provide the criterias considered for granting a green label	Present other actions that SAS undertake for sustainability (e.g. sustainable diner packaging) Present their. partnership with organisations that help to calculate the carbon emission Explain their sustainability goals and plan for the future Provide more detail about the technologies developed for sustainability Provide sustainability report	Explain how the carbon emitted is calculated Provide the reasons using own calculations rather than other calculators Provide calculation information during the purchase process	Provide tips & guides for customers to be organized a more sustainable travel Users can also create their own eco-travel guide for specific destinations and share with others Answer to Frequently asked questions about CO2 and responsible travel Categorise the most impactful criterias considered in their carbon calculation Partnerships with sustainable charity and organisations that help to calculate	Explain where the money of the carbon offset goes Explain how the carbon emitted is calculated Present their partnerships with sustainable charities Explain their sustainability goals and plan for the future Provide more detail about the technologies the company is developing for sustainability Provide sustainability report

					the carbon emission	
Motivation for delivering sustainability options	Voluntary- Pave the way for the future of Mobility and use technology to give more sustainability options Answer social trends	Awareness of sustainability from travelers	Shares the responsibility with the customers	Voluntary- Providing options to convince that travelling by train is a sure way to make the travel greener	Voluntary- Make the travelling greener Answer the need of the travelers after conducting a survey	Voluntary- Improve the flying experience

Table 2. Sustainable options and additional resources from the selected tourism transportation companies

3.5. Reliability and validity in the research

The criteria for assessing the quality of qualitative research have been discussed concerning the requirements for the research (Bryman, 2016). Reliability and validity are established within quantitative research to evaluate the quality (Bryman, 2016; Flick, 2018). Therefore, to specify qualitative research, scholars have proposed alternate criteria to those concepts, such as trustworthiness (Flick, 2018). The thesis is benefited from the mentioned technique in researching to ensure quality.

To establish the merit of research in dependability as part of trustworthiness, the thesis ensures to keep the complete records through field notes, transcriptions, audio and video recording, documents, information letter, data analysis decisions etc. The aim is to ensure the process through auditing to enable the data created from the procedure is in an accessible manner (Bryman, 2016; Flick, 2018). As a result, the technique allows someone outside the research can approach the resources and provide and pursue critiques to the research process.

Since the research adapts ontological constructivism in understanding consumer behaviour, confirmability is a crucial factor to consider. Confirmability recognises the impossibility to reach complete objectivity and does not allow the researchers to overtly include personal values or theoretical inclinations (Bryman, 2016). To prevent this, the research segmented the interview questions into several sections, utilised various forms of questions to ensure the perceptions from the interviewees and invited the supervisor to provide critical suggestions.

Representativeness is an important factor to be considered while collecting and interpreting different creators' perspective for the document analysis (May, 2011). Therefore, the thesis bears the concept in mind while collecting and analysing the websites and online resources from the tourism transportation companies. The object is to take enough quality as well as reflexivity into consideration while conducting analysis.

3.6. Ethical Concern

As the empirical findings are about interviews and documents analysis, the main ethical concerns towards the research are related to the consent confirmation and ensuring the anonymity and confidentiality of the interviewees to not harm the participants in anyways. To ensure the interviewees' consent to participate in the research, a consent form (Appendix) was

designed, and the participants were asked to sign it before the interviews. The strength of the consent form lies in the ability to provide all the information on the nature and the research process and the implication of the respondents (Bryman, 2016). In-depth, the consent form includes the research purpose, how the study is conducted and how personal details. All of this was explained in meaningful terms to participants (Bryman, 2016). Thus, this document allows giving more information and being completely transparent regarding the treatment of the information collected or their possibility, the right to retract from the research at any stage for whatever reasons, or the opportunity to withdraw any responses given (Bryman, 2016).

Adding to the consent form, one way to avoid the invasion of privacy is to ensure the anonymity and confidentiality of the participants. Hence some modifications were made by using pseudonyms in transcripts and other parts where their name should have been used, modifying any details that could help to identify the participant like where they live for example (Bryman, 2016). The modifications are made so that does not change the meaning of what the participants said (Bryman, 2016).

One additional initiative undertaken at the beginning of the interview is to remind them orally about the research goals and the fact that the interview will be recorded before asking them to confirm their consent. All documents related to the participants, such as the transcripts, the contact details and recordings, were stored on different platforms.

4. Analysis

Conforming to Grönroos and Voima (2012) model, the first actor is the providers who are Online Travel Agency like Kayak and transportations companies like SAS. Their role is to facilitate the customers' creation of environmental value by offering values propositions and creating resources that will influence the value creation process. The resources are presented more in detail throughout the analysis. The second actor is the customers who are the users of the tourism transportations. Their role is to create environmental value with the use of the resources provided by the OTAs and transportation companies. However, the findings suggest that these resources are not used in some cases and can lead to the co-destruction of value. More diverse reasons are more detailed throughout the analysis. Thus, the analysis is divided into four parts where each sphere, the provider, customer and joint spheres are analysed. The last part of the analysis aims to observe customers' behaviour in destination and compare their consumption behaviour in the tourism destination with their consumption behaviour while selecting the tourism transportation.

4.1. Provider Sphere

As explained in the theoretical frameworks, the provider sphere is a space where the provider, as a value facilitator, offers different value propositions and provides resources that the customers can use to create their own values (Grönroos & Voima, 2012; Schüritz et al., 2019). In the context of the thesis, the tourism transportation companies and Online Tourism Agency are considered as the providers. These companies are providing sustainability options and additional information about sustainable actions undertaken by the companies. They are regarded as the resources available for consumers that facilitate their creation of values.

4.1.1. Sustainability options

A total of three OTA (Skyscanner, Kayak and Rail Europe), two aeroplane companies (SAS & Norwegian Airline) and one bus company (Flixbus) were analysed. These sustainability options are carbon offset, a voluntarily paid option to compensate the carbon emissions arising from the flight (Mayer et al., 2012); carbon calculator, to know how much carbon the transportation emitted; and eco-label a feature that gives more information toward environmental impacts that the companies take into account and is a way to differentiate

themselves from another flight (Gössling, 2017). SAS, the Scandinavian airline company, offers one additional option about biofuel. Biofuel is an alternative fuel claimed to "reduces climate-affecting CO2 emissions by up to 80 per cent compared to conventional jet fuel" (SAS, 2019). The passengers of SAS can purchase a block of biofuel. Each block corresponds to a 20 minutes flight. As they can buy as many blocks as they wish, the passenger can choose the amount of time of their travel they want to cover with extra biofuel.

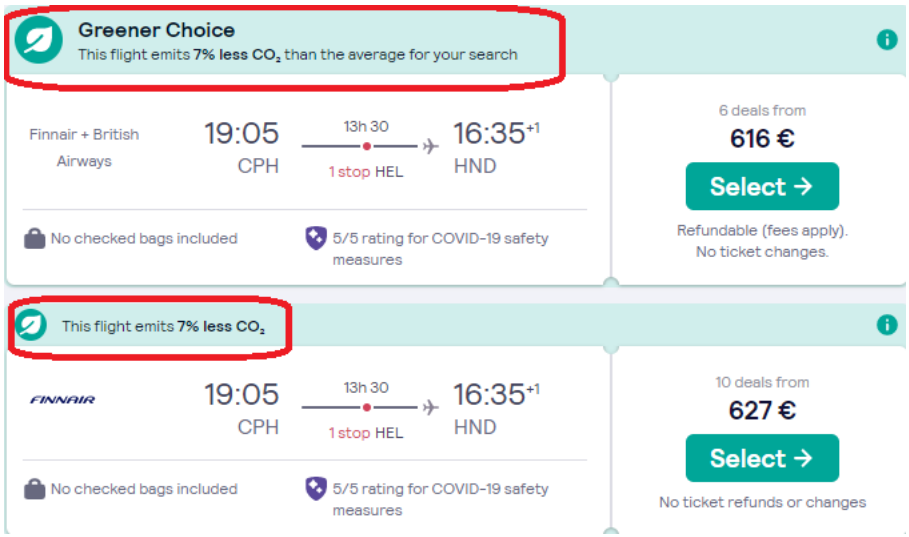

Figure 4. The eco-label displayed on Skyscanner

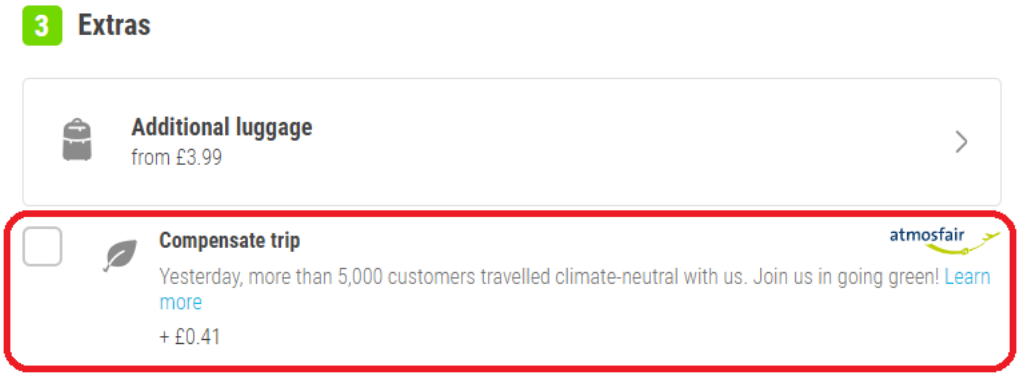

Figure 5. The carbon offset option of Flixbus

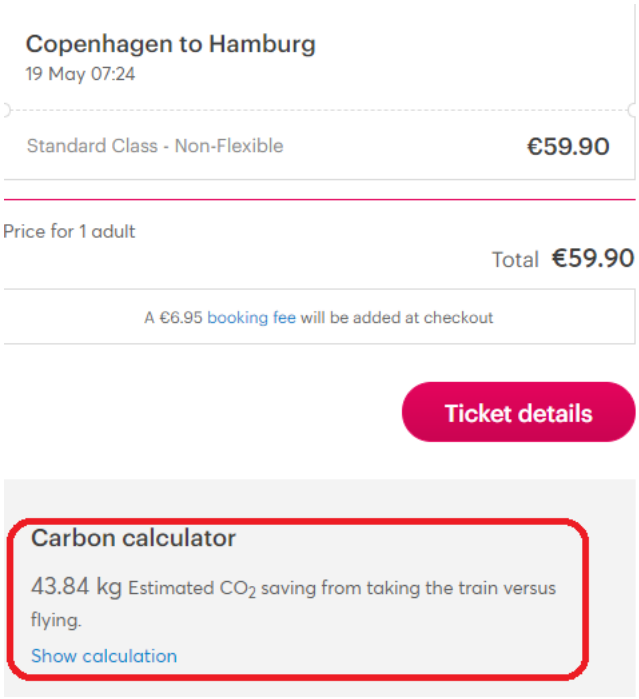

Figure 6. The carbon calculator of RailEurope

4.1.2. Explanation of carbon calculation

Different choices were made in terms of communication to explain how the amount of carbon emitted by the transportation is calculated. Flixbus explains that the calculation is done by sustainable organisations with whom they have a partnership. They rely then on an argument of authority by referring to trustful organisations and making their calculation more credible. Among the partnerships, there are Atmosfair, SkyNRG and First Climate, organisations that deliver more carbon-neutral solutions for transportations by calculating the carbon emission and proposing the carbon offset option for example. In a slightly different way, Norwegian Airlines mentioned that the calculations are made by the airline itself but are based on the official methodology of the International Civil Aviation Organization (ICAO), a specialised agency of the United Nations and the International Council on Clean Transport (ICCT), an NGO working on scientific research and analytics for environmental policies. Some other companies explain how it is calculated by highlighting which criteria are considered in the calculation. For example, Skyscanner provides the criteria considered before granting the eco-label. In comparison, Kayak presents five of the most considered factors in their calculation of CO^2. Only Rail Europe provide the detailed calculation formula used to calculate the carbon emission (Mack, n.d.)

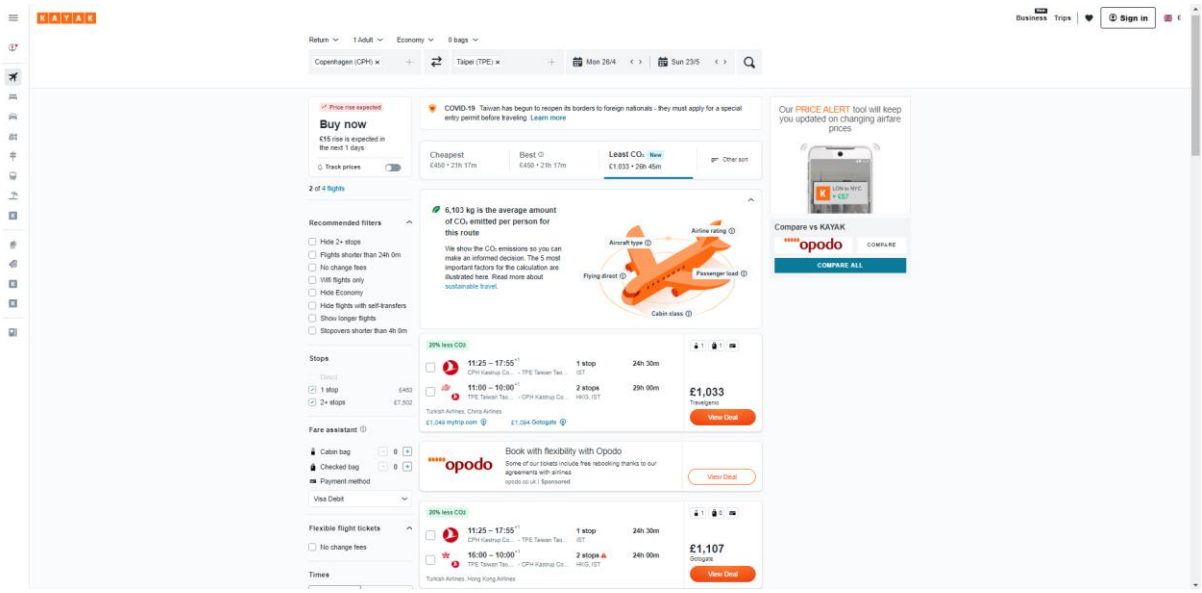

Figure 7. Kayak and the five main factors of carbon calculation

4.1.3. Display of the sustainability options

All the companies analysed display these options during the buying process, meaning that the sustainability information like carbon emissions and green labels are displayed among the other information such as price and time for the customers to compare and select a flight. However, the websites are not showing the sustainability options at the same time in the buying process. There are even differences within the same company as the sustainability options are not displayed altogether at the same moment. For example, Norwegian airlines provide the carbon calculator during the selection of the planes and the carbon offset options are proposed later in the process once along with the seat and food selections. That is also the case of SAS that is providing the biofuel and carbon offset option during the buying process but proposes the carbon calculator in another webpage not related to the buying process.

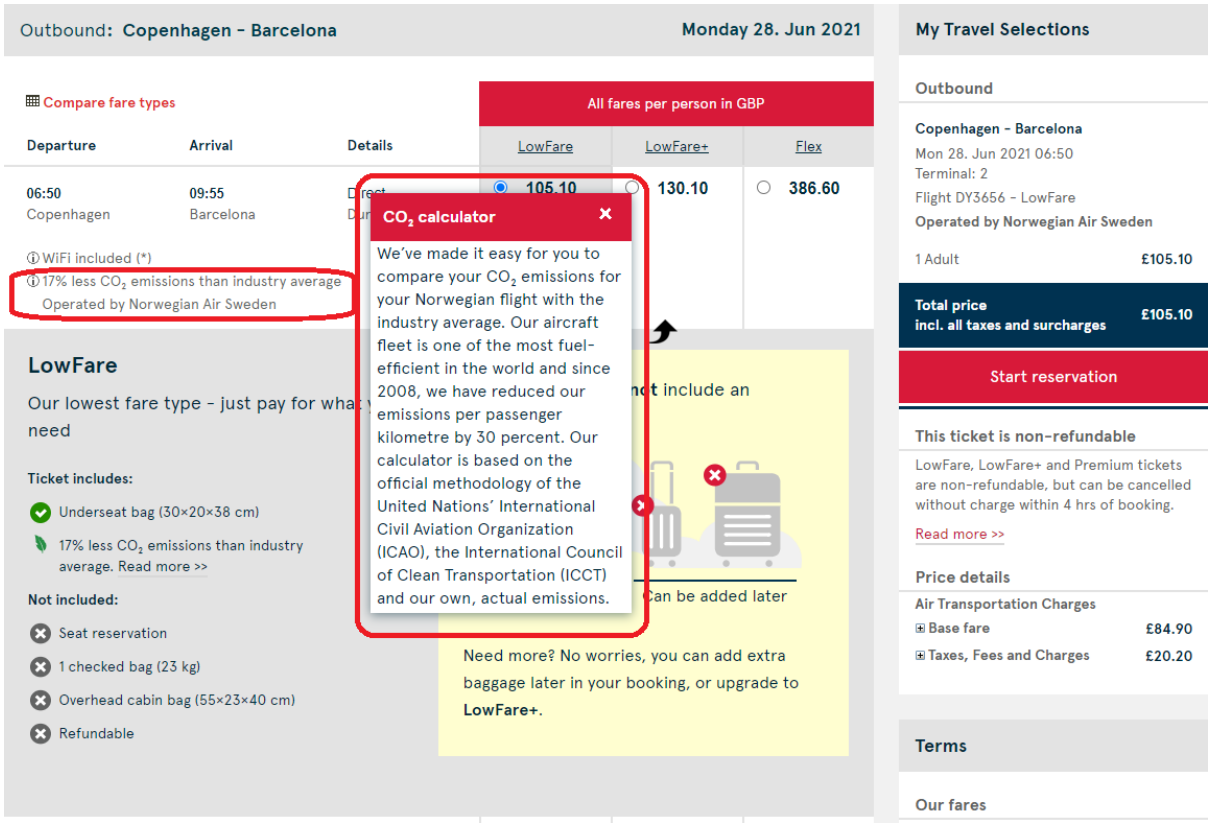

Figure 8. The carbon calculator of Norwegian Airline, displayed at the beginning of the buying process while selecting the flight.

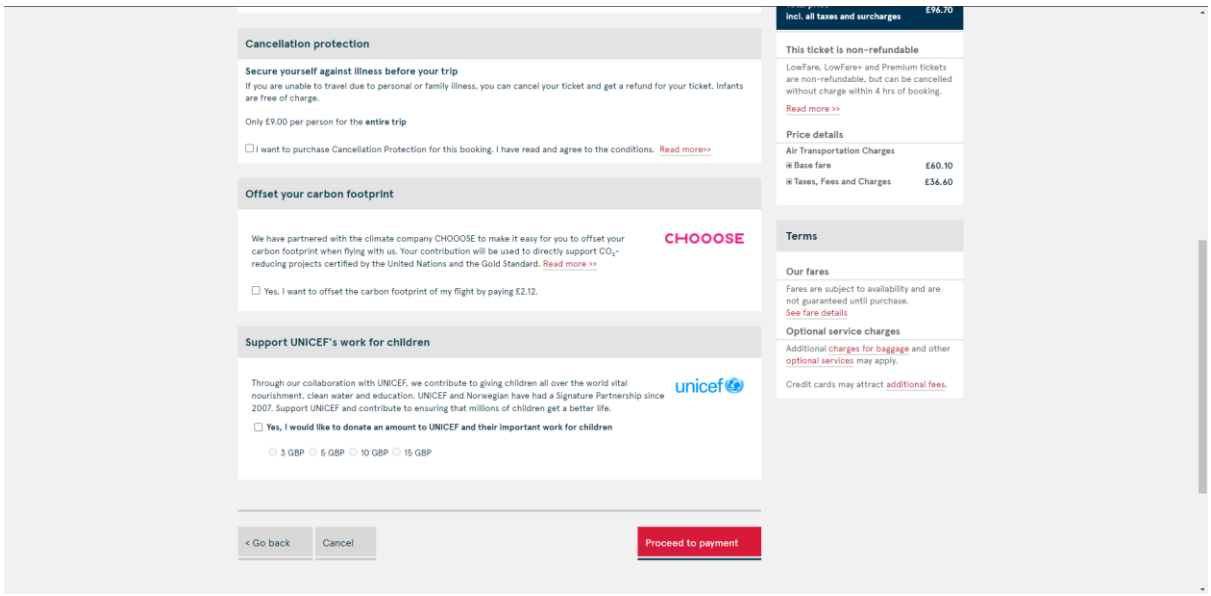

Figure 9. the carbon offset option of Norwegian Airline, displayed at the end of the buying process alongside the seat selection and insurance.

4.1.4. Additional sustainable initiatives

The additional information provided by the companies about other sustainable initiatives were also studied. Among this information, four of these websites detail their partnership with the charities explaining where the money spent on carbon offset is used for. For example, Norwegian Airline is collaborating with charity by funding sustainable projects like creating wind power on the coast of Vietnam with the carbon offset paid by customers. (Norwegian, n.d) Companies also explain how the technology they are using contributes to environmental sustainability. Among the examples, there are the electric buses from Flixbus (Flixbus, n.d) or the airlines' companies that have modernised their aircraft to consume fewer fuels (SAS, n.d; Norwegian, n.d). Companies also mention long-term goals articulated around sustainability. However, a lack of mention of concrete actions can be pointed out on how the companies will reach their goals. For example, SAS is aiming to reduce the co^2 emission by 25% in 2025. However, no detailed actions are provided on how to achieve this goal (SAS, n.d). Kayak also proposed features that were not found on the other websites. They are providing guides documents for customers on how to prepare a sustainable trip (e.g. "How to make a flight more environmentally friendly"; "7 ways to have a more sustainable hotel stay") (Kayak, n.d). They also invite customers to create their own guides and share them on Kayak platforms for other consumers. Kayak also have a dedicated section that answers frequently asked questions such as "How much CO^2 does a plane emits" or "How much of a difference does it actually make if I choose a flight that emits less CO^2" (Kayak, n.d)

4.1.5. Companies' motivation

Finally, what was also observed, are the reasons that motivate the companies to become more sustainable. Flixbus, Skyscanner and Kayak expressed their motivation on fulfilling the customer demands for more sustainable tourism transportation. Kayak based their motivation on a survey that they did to understand travellers' needs regarding environmental sustainability. Another motivation that has been classified is the desire to make tourism transportations more sustainable for the environment on a voluntary movement. Each company communicates this motivation in different ways. For example, Flixbus desire to "Pave the way for the future of Mobility and use technology to give more sustainability options" (Flixbus, n.d), Norwegian Airline want to "setting the pace for environmental sustainability" (Norwegian, n.d). While SAS is motivated to "Shares the responsibility with the customers", "SAS takes responsibility

for its part in global impact on climate and the environment" (SAS, n.d). However, the observations demonstrated that the voluntary motivation expressed by some companies could be affected by different purposes such as marketing to attract more customers or being pressured by government policies about sustainability. In other words, the reliability of their statement cannot be ensured.

Given the observations, it can be deduced that despite providing similar sustainability options, there are essential differences among the companies regarding the amount of information, display, and way of communicating about environmental sustainability. Indeed, the websites do not provide the same quantity of information, creating inequality in the access of information for consumers depending on the websites they use to book their transportation. There is also a range of diversity between the studied websites regarding information display on the sustainability options. Some websites provide all the information simultaneously during the buying process. In contrast, others require the consumers to go on other web pages that are not part of the buying process, making the awareness of sustainable options and access to information more difficult and time-consuming. Finally, the lack of clarity, especially in the communication of the long-term goals, can create confusion for the consumers. Therefore, it can be stated that these differences may affect the awareness of the customers about sustainability options and their propensity to co-create environmental values. The differences explain why a critical number of our participants did not notice the sustainability options, mistrust the information or report a lack of information even though everything could be found on the websites.

4.2. Customer Sphere

Within the customer sphere, customers create value individually or collectively with other customer-related actors through indirect interactions to create value-in-use (Grönroos & Voima, 2012). In other words, customers' concerns with the sustainability options and the influence from other actors on the customers would be discussed. Borrowing the idea of the customer sphere, this section presents the tourism transportation booking behaviour from the millennials and their thoughts of sustainability options with the consumer decision-making lens to answer the second objective.

4.2.1. Independent value creation

Within the independent value creation, customers only interact with resources collected from the firm (Grönroos & Voima, 2012). Therefore, in the following part, the millennial travellers' concerns about tourism transportation regarding resources and their interactions with the service information were analysed.

4.2.1.1. Awareness of environmental impacts from tourism transportation

Ethical consumption increases in the millennials and thus influences tourism behaviour (Scott A. Cohen et al., 2013). In the response from the interviewees, there are two parts regarding the selection of tourism transportation concerning sustainability issues. One is the selection of transportation mode, and the other is the perspectives towards sustainability options. The analysis is not to demonstrate the correlation among different factors but describes the interviewees' diverse perspectives.

Sustainability knowledge affects how the interviewees decide on their services in terms of tourism (Cohen et al., 2014). Some millennial travellers bear the knowledge of the negative environmental impacts from different tourism transportation matters when making the purchase decision.

> "I try to plan to have as few stops as possible and the furthest distance between the different stops. Because it is usually when it comes to flying... it's the starting that is the most CO_2 impact. So, if I then can avoid the number of times I have to start up." (Interviewee 16)

> "It's happened when I decide on using the bus or using the train. And it is because like I have some certain knowledge or some sorts of information about. Yeah, using this kind of transportation will be better in terms of environment, then I will use that." (Interviewee 1)

> "When I first came to Sweden and went back, I took the flight. But as I got more conscious about how bad short distance flying is, I tried to take the train more often." (Interviewee 13)

After giving examples of the sustainability options from the selected digital platforms, the interviews investigated their thoughts about the options. The result came out that the attitudes

were diverse. Several interviewees mentioned the positive impressions from sustainability options, which even increase travellers' positive image towards travel agencies.

> “The filter related to environmentally-friendly flight. I love it. I love it as it gave me a better option.” (Interviewee 1)

> “I like that. It's a choice. You know, they say you can choose to be sustainable if you pay a little bit more. I think the choice is very important because I think some people don't have the means to pay a little bit more.” (Interviewee 7)

The awareness and knowledge of sustainability influence the interviewees towards the sustainability choice and the mode of transport. The interviewees also express their positive impression about sustainability options and their willingness to participate. Even so, the customers described their considerations such as priority and resources while choosing tourism transportation. Thus, the following sections would present their concerns when it comes to tourism transportation and sustainability options.

4.2.1.2. Priority

Even though studies mentioned that millennials are more likely to purchase greener services and products (Arnould & Thompson, 2005; Cogut et al., 2019; Scott A. Cohen et al., 2013). According to the response from the interviewees, the purchase decisions are complex and influenced by various factors, which sustainability may not be the priority to their choices on tourism transportation.

> “When it comes to like buying the things, I want I'm considering the sustainability wouldn't be mine wouldn't be my priority” (Interviewee 6)

> “It's many different factors. And often I feel at the moment for me, sustainability is not something that is actively on my priority list.” (Interviewee 8)

> “Sustainability is quite low in my priority at the moment.” (Interviewee 12)

‘Flyers’ dilemma’ refers to the psychological contradictions of customers who bear both environmentally responsible awareness and knowledge of aviation impacts on the environment (Young et al., 2014). As for tourism transportation, the interviewees also express their concern about when it comes to the contradictions between personal conditions and sustainability.

> “Yeah, internal clash. Like you want to think about it more, you want to live sustainably, but at the same time, you want to travel.” (Interviewee 8)

> “I, unfortunately, had to do those trips at least once a year to go visit my family and boyfriend in South America. So that forced me to take very long trips, even though I was hesitant about the sustainability aspect of it.” (Interviewee 16)

The following sections present travellers ' considerations of their financial and time resources to discover what other reasons pause millennials to purchase the greener tourism transportation options.

4.2.1.3. Limited resource

a. Financial resource

Financial resources, in other words, budget, is considered as one of the factors while selecting the transport mode (Lumsdon & Page, 2007). As the digital platforms offer access to price information, the customers can compare the price more efficiently and make the purchase decision (Hagberg et al., 2015). Interviewees answered budget as one of the major concerns according to their previous experience while booking tickets online.

> “I think that's always the very close correlation between budget and price.” (Interviewee 1)

> “In relation to the price we went for the cheap price like which company's price is cheaper, we just go for it.” (Interviewee 9)

> The interviewees also mentioned their current occupation as students rather than employees influences their purchase decision due to a higher sensitivity on price. This also affects their incentives towards more sustainability options of tourism transportation.

> “Now my habits change since I have enough money to think about it. For sure, when I was students, I would go for the cheapest option” (Interviewee 14)

> “Because even if I have a sustainable option, let's say I am booking a flight, and then that option doesn't really fit my preference… I may still go with maybe a little expensive but relatively unsustainable flight options. So, price is a very key factor for me.” (Interviewee 11)

Regarding the financial resources, the interviewees mostly come from the school network and are current students (12 interviewees). Financial incentives are crucial as a matter of fact in this study.

> "I think the price is I mean, all of us here are students. We're not in their business working field. Yes, maybe. So, I think that price is the key. But yeah, it's an important factor." (Interviewee 8)

Therefore, the financial resource as the determinants of more sustainability options of tourism transportation for millennials would need further investigation.

b. Time resource

Time scale is also another factor in the mode of transport (Lumsdon & Page, 2007). With the application of technology and digital platforms, information such as availability, duration and timetable of tourism transportation can be provided easier to the travellers (Gössling, 2016). According to the interviewees, when it comes to transportation selection towards the destination, convenience, distance, and schedule are three crucial factors.

> "From France to Sweden, I'm just going to take the plane because it's way much convenient. I'm going to spend like 3 to 5 hours to go." (Interviewee 10)
>
> "I want to make sure that I can be there quite a few hours before and so in advance. But at the same time, I want to avoid having to stay at a hotel or something close to the airport. So, I want to time it as good as possible." (Interviewee 16)
>
> "Even though I could take a train from Lund to Lulea, which is maybe about 11 to 12 hours, I considered the time and like the distance involved in that, so I chose to go by two flights from Malmo to Stockholm then to Lulea." (Interviewee 11)

Since the personal preferences and perceptions towards distance and time are different, this can lead to another decision. As the interviewees were asked to provide a long-distance travel experience, more details would be needed to assess the relationship between the three different factors and the mode of tourism transportation.

4.2.2. Independent social value co-creation

The value co-creation process is also influenced by other actors (Grönroos & Voima, 2012). Therefore, the engagement and concerns from other actors leading to the purchase decisions are included in this section.

4.2.2.1. Influence from travel pals

Millennials prefer to first collect experiences from friends, family and online communities (Șchiopu et al., 2016). Therefore, the interviewees were asked to provide their experience if their travel decisions can be influenced by other actors such as family and travel pals. According to the result, the considerations of their travel pals' needs affect their perceptions and decision on selecting sustainability options:

> "But when I'm travelling with my family, then we usually end up going more for comfort... So, my behaviour becomes much worse when I'm travelling with my family." (Interviewee 16)

> "I think it's kind of difficult to be sustainable when you're travelling with friends or family because people have different opinions" (Interviewee 2)

> "I went on the trip with my family or friends, and I don't want to cause some inconvenience. You can only choose the time or the sustainable option and there's not always a perfect match. So, I would rather choose convenience." (Interviewee 5)

Sustainability options seem to be a contradiction when it comes to travel options. Even so, some of the interviewees shared how they tried to persuade their peers on a greener choice of travel.

> "I mentioned it to my partner when we planned the trip. So instead of going somewhere else rather than Sweden, I tried to convince my partner. Oh, why don't we choose a province in Sweden?" (Interviewee 1)

> "If I'm travelling with my friends, then I tried to influence all our decisions to be more sustainable" (Interviewee 16)

The pro-environmental behaviour can be assessed within those interviewees as they described their thoughts and experience towards convincing their travel partners to become more

sustainable on their choice. This provides an understanding of how the environmental value is co-created.

4.2.2.2. Social and political structure

The knowledge towards sustainability empowers the customers to make a more sustainable decision (Benckendorff et al., 2014). The slow mode of travel benefits the privileged group as the resource such as money and time are valuable commodities within many societies (Peeters et al., 2018). Within the discussion on sustainability choice, the interviewees argued that a further discussion on privilege and social structure is needed.

> "Back in my country, we have very limited choices. And speaking up with like asset privilege, I feel like if I had the option to pay for a sustainable Air Flight, I may think twice…They are often very expensive, like those choices that are sustainable are often very expensive." (Interviewee 11)

> "I think privilege really plays a big role in this whole if you can even have the option of loving sustainability. I think it deserves an emphasis on privilege, which plays a key role." (Interviewee 8)

From the discussions, social class and structure appear to be the factors related to the sustainability options. Inequality limits the selections of tourism mobility and influences access to travel (Hall, 2010).

Political structure and policies have been argued as a catalyst for sustainability in the tourism industry (Juvan & Dolnicar, 2013). The engagement of the new policies can provide new patterns of travel consumption (Hall et al., 2017). However, the interviews did not perceive the governments were doing enough for sustainability in tourism transportation.

> "I don't know, coming from the welfare state, Sweden, I pay a lot of taxes... You know, like, I feel like…why should I make this decision? Shouldn't the government help in doing something to force sustainability?" (Interviewee 8)

> "The normal citizens should not be the ones who pay for it, they should come from politics, and they should make something like that already the same thing for everyone." (Interviewee 10)

> "If it's like the government's who make it mandatory… then that would be much more effective than making consumers choose the more like, sustainable option."
> (Interviewee 12)

According to Paul Ceron and Dubois (2007), the next 30 years would be the cultural change of travel with new policies and observed pro-environmental behaviours. Further analysis needs to be done to assess the establishment of the new policies and transformation of the social structure towards a more sustainable tourism transportation initiatives and mobility model.

As the customer sphere is outside of direct interaction with service providers, the value is created through users and their wider networks with experiences, resources and processes (Grönroos & Voima, 2012). The interviews offer a further understanding of the millennials' decision process towards sustainability options and tourism transportation and answer the research objective. The findings conclude that the independent value creation considering knowledge, priority and resources and the value co-creation from other social actors, including travel pals and the social and political structure, are the determinants to the value co-creation with the service providers in the joint sphere.

In the following section, the lens of the data-driven service to the value co-creation and destruction from providers and customers would be analysed.

4.3. Joint Sphere

Digital platforms utilise data to support the decision-making process of the customers (Dietz, 2018). To examine how the interaction between millennial travellers and service providers in the joint sphere, the thesis adopts the idea from Schüritz et al. (2019). The aim is to understand how digital platforms as online travel agencies and companies' official websites utilised data-driven services are to support customers selecting sustainability options.

4.3.1. Co-Creation

According to Grönroos and Voima (2012), value co-creation occurs when the firm directly interacts with the customers via a service marketing platform. Specifically, environmental values are constructed through environmental attitudes and behaviours towards nature (Reser & Bentrupperbäumer, 2005). To understand whether the sustainability options are accepted by

the customers and thus co-create environmental value, the thesis analyses the information from both providers' and customers' perspectives.

4.3.1.1. The access to behaviours

Borrowing from the data-driven service value co-creation model, the access to behaviours presents how the digital platforms tailor their services by integrating activities from the customers (Schüritz et al., 2019). This increases the knowledge and the context of designing their services. The analysis investigates the sustainability webpages to understand if the selected tourism transportation companies utilise customers' activities to drive sustainability options. The results show that only two of the platforms from the selected tourism transportation companies Kayak and Skyscanner examine quantitative and qualitative data from the customers in the design of the sustainability options or for the announcement of the outcomes. Kayak did the customer survey to investigate the customers' perceptions and expectations on sustainable travelling to design the platforms offering sustainability options (Kayak, n.d.).

From the interviewees' response, some of them presented their attitudes upon the willingness to know more information about the sustainability options, including the information disclosed and the digital platforms offering those options. This provides an understanding of the potentials from the engagement of the customers.

> "If I know that information, then I will spend more time going through it. Maybe I can have a better option." (Interviewee 1)

> "Yeah, if I have to choose between two planes. I would take a look and give more attention for sure." (Interviewee 14)

Another behavioural anchor is the willingness to pay, which is applied within the research to understand tourists' engagement in the services (Gössling et al., 2009). To investigate whether the environmental value can be co-created, the interviewees were asked if they would be willing to pay for the sustainability options provided by the selected digital platforms. Some of them present their interests in participation in some conditions such as where the money goes and how the companies spend the money:

> "I think it depends on how much it will be. If it's like 10% of the entire price, and I think I'm willing to do it." (Interviewee 6)

> “I mean, for a few euros, definitely. But then I would want them to be transparent how it would be used.” (Interviewee 12)

> “I'll be able to pay 47 cents or even I don't know, $3 or $5 more… If I know and I can find the options.” (Interviewee 7)

According to Grönroos and Voima (2012, p. 143), value co-creation occurs once “service providers interact with customers’ resources in a merged dialogical process”. In this thesis, millennial travellers' attitudes and potential behaviours on sustainability options are detected through the willingness to pay and know information. The merged process can be presented as the travellers’ willingness to pay and search for more information on the sustainability options designed by the service providers. Service providers supplied resources needed by the customers to facilitate value creation (Font et al., 2021; Karababa & Kjeldgaard, 2014). In this case, the providers offered value propositions regarding the travellers’ needs in sustainability by designing sustainability options and influenced customer value creation on environmental value through communicating the service design. Customers then serve as the co-creator of values by selecting the sustainability options, generating environmental value by value-in-use, which implies the affections and satisfaction from the customers, according to Echeverri and Skålen (2011). Even though conditions such as the price and the accessibility would need to be further discussed and considered, the environmental value is co-created.

> “I remember during that time, when I finished my train ticket booked in on a ticket it showed that hence you're using the train you contribute to say some carbon dioxide or something like that. So, when I read that line of information, I feel so proud of myself.” (Interviewee 1)

4.3.2. Co-Destruction

Many statements from the research participants demonstrate that the tentatives to co-create environmental values through the sustainability options can also fail. Therefore, a link can be done with the informing interaction type of Echeverri and Skålén (2011), where the co-destruction of values can arise as the resources from providers are supplied to the customer for informational purposes. Thus, these failures are leading to co-destruction. The co-destruction process is the opposite of the co-creation process. It concerns the interactions and resources used in the joint sphere by the provider to reach the customers, leading to the negative outcomes

that could arise from the attempt to co-create values (Echeverri & Skålén, 2011; Grönroos & Voima, 2013).

4.3.2.1. Differences in awareness of the sustainability options

First of all, it has been noticed that the majority of the participants have never noticed the existence of the sustainability options in the websites they are using to book their transportation trips:

> "I haven't heard about this before" (Interviewee 7)
>
> "I have no idea." (Interviewee 15)
>
> "I think I would have noticed, but. But yeah, I've never seen one" (Interviewee 3)

These quotations illustrate the first obstacle to the co-creation of value. As these people show no awareness of the existence of these options, the opportunity to co-create has failed as the resources did not reach the customers. The fact that it concerns most participants demonstrates that the lack of awareness is a recurrent issue that affects many websites. The interviewees were invited to express their feelings and opinions to understand their experience and the impression of the sustainability options from the selected digital platforms. Some of the interviewees questioned the effectiveness of the sustainability options by pointing out the visibility and identification on the digital platforms:

> "Looking at these options, I feel like it's not easy like it's in, it's in small text, it's kind of blending in with the background." (Interviewee 8)
>
> "In the interface, when I click on the filter, it will have more options with the filter in terms of being eco-friendly. So, to me, it's not like being visible is not easy, easily noticed." (Interviewee 1)

The online layout is an essential factor in digital platforms as it enables the facilitation of the service provision and minimises confusion for the customers (Ballantyne & Nilsson, 2017). Moreover, as part of the user design experience, the layout has the potential to introduce the sustainability options to the consumers in a more attractive way and stimulate their motivation to read the textual information about these options (Font et al., 2020). However, the interviewees experienced barriers to engaging in the sustainability options due to the placement and design in the digital platforms. This made them easily ignore the sustainability options and

couldn’t engage in the environmental value co-creation. Therefore, the visibility and identification of the digital platforms need improvements to prevent environmental value co-destruction. The lack of awareness does not allow the interactions which consist of contact between service providers and customers via digital interfaces, devices and algorithms (Schüritz et al., 2019). Without these interactions, no influence on the customers' decision behaviour can be done, reducing any chance for value co-creation.
One participant manifested some little knowledge but did not have a complete picture of what these options consist of:

> “Is it something you can take when you're taking your ticket, it costs you more, right?” (Interviewee 2)

Another participant was fully aware of what these options consist of:

> “I only fly with KLM. Because, according to my little research, I think the KLM is one of the air companies that is doing the most sustainability work. You can climate compensate [...] They also do trash recycling. And they offer vegan food alternatives.” (Interviewee 16)

For the participants who were not aware of the sustainability options, the carbon calculator, the eco-label, and the carbon offset options were introduced through diverse examples on different websites. After the explanations, they were able to give their point of view on these options and if they would use them in the future. Through the interviews, the participants have manifested other reasons why the sustainability options could not be successful.

4.3.2.2. Negative feeling

Some participants expressed that they have negative feelings regarding the sustainability options, especially for the carbon offset. They stated that proposing the option to compensate carbon makes them grow a feeling of guilt for travelling and perception of a way to earn money from the customers. Hence it expresses some interviewee reluctance to the resort of carbon offset:

> “The first one when they say you need to pay the money to say,” oh, by buying this, you actually did something bad to the environment”. I just feel it makes the consumers

feel uncomfortable [...] I feel guilty because I did something bad to the environment." (Interviewee 15)

"Compensates mean that you did something wrong and then you want yourself don't feel so guilty about that and then you make the decision to compensate so I don't know. [...] I don't want to feel guilty like that. Why I have to compensate when I need to travel somewhere." (Interviewee 1)

"I also do a lot of accessing the airline fares already. So instead of maybe saying I would prefer to pay an extra, I would rather not be told, I mean, it can be levied on me, but I prefer not to know it. Because if I know that I become more sensitive." (Interviewee 11)

The sustainability options also cause confusion to the interviewees. The scheme design can be uncertain to some travellers and make them hesitant to take part in value co-creation.

4.3.2.3. Information mistrust

The interviews also investigated how much the participants feel that the information displayed, such as the motivation of the companies to have sustainable initiatives are reliable. It has been revealed that there is a lack of trust from the participants towards the information provided by the companies on the sustainability options. Among the reasons why it is challenging for them to trust the information, greenwashing was mentioned. Indeed, some participants are convinced that the companies' intention of becoming more sustainable is not genuine. They show sign of scepticism as they think the intention behind the sustainable development is due to marketing purpose:

"I think they are greenwashing it, like, it's a trend at the moment, so I will be careful for what I'm paying." (Interviewee 14)

"To be honest, I am sceptical. Like, maybe it's their promotion, their marketing strategy. I'm not really sure about leads." (Interviewee 5)

"I think some time I don't think their information is so reliable, you know, maybe some exaggeration there, or some promotion, under the table." (Interviewee 4)

> "It just feels like they have it there because they have to, and that what they want to do is they want to sell, so they want to make money [...] But then you see the sustainable is a small text, but it's not really eye-catching or like eye-opening [...] And if sustainability is their main thing, then that should be the first thing I notice. But what is their purpose behind it? What are they? What is their intent?" (Interviewee 8)

The lack of trust is also expressed through the absence of guarantees that the companies will respect their sustainable engagements. For example, the companies that offer the carbon offset option explain on their websites that the money gained from the carbon offset will be used to help charities or develop more sustainable technologies for their transportations. Some participants are pointing the fact that they have no way to ensure that the money spend will truly be invested into charities or the development of technologies:

> "I don't trust a lot, but when I see these options on the website, I'm not always sure that will these funds, always go to the charities that they say, I don't really know." (Interviewee 2)

> "It's really difficult to actually follow the whole supply chain and see or to follow the money and see, like, where does it actually go? What do they actually do? So, you can only base it on? on who's the least bad? You know? Yeah, no, I don't trust it." (Interviewee 16)

The co-creation of value cannot happen without trust that is considered as an essential criterion in the influence of consumer behaviour in tourism (Scott A. Cohen et al., 2013). This finding is concordant with the results that suggest that the eco-labels do not always create a willingness to pay for sustainability options due to the lack of awareness and trustworthiness from the customers (Baumeister et al., 2020; D'Souza et al., 2007).

4.3.2.4. Lack of information

Finally, while asking the interviewees their perception of the companies and their sustainability options, many participants agree that there is a lack of information, particularly on three types of information. The first lacking type of information is about where the money spent by consumers on sustainability options is going:

> “I don't know what money they use for like it just show you a name of organisation, but it doesn't show what is the organization? What do they use my money for?” (Interviewee 9)

> “I would want them to be transparent how the money would be used. Rather than just like if there was more details and I knew more about where it would be used, definitely, a few euros I would be ok” (Interviewee 12)

The second type of information that participants felt was lacking was the explanation about how the carbon is calculated and the sources from where the calculations are from. These lacks make the customers question the reliability of the information provided by the companies:

> “When they have some certain figure, they must be certified by some organization so I will decide whether the information is a trustable or not [...] My decision is coming from a trustable source or from prestigious organization who can certify that calculation [...] I will trust that information better.” (Interviewee 1)

> “ It'll be good to know if they provide how they calculate the carbon emission.” (Interviewee 6)

The last type of questions raised by the interviewees from the lack of information is the significance of the numbers regarding the carbon emission. By not understand this, some could not understand interviewees could not realise how much impact they can make depending on their choices:

> “The biggest issue for me is that, like, after seeing those numbers, like you can reduce like 10 kilograms of carbon dioxide. But actually, like, I can't feel like how much impact that I've changed if I choose this flight. it'll be good to know if they provide how they calculated.” (Interviewee 6)

> “But like the last one, you show me when "by choose this, then you will contribute to us 6000 kg emission", I don't have a failing to the number to be honest, because I have no idea what that means. It's not like a direct way to tell me the impact.” (Interviewee 15)

Overall, the lack of information makes the participants confused by raising more questions for them such as “how the money collected for sustainability is used?”; “how the carbon emission

is calculated, on which sources do the companies and OTAs rely on for having accurate calculation?; “what is the meaning of the number?” and “how much a customer has an impact on the sustainability of the transportation?”. As they have no answers to these questions, the participants were not inclined to use the options provided by the companies to co-create environmental values. Information is an essential factor that encourages the customers to join the co-creation of environmental values. It allows customers to be more aware of the environmental impact of their decision making and enhance the willingness to pay for less polluting flights (Baumeister et al., 2020).

To sum up, through the interviews, four factors: Differences in awareness of the sustainability options; lack of information; information mistrust; and negative feeling, influence negatively the interactions between the providers and customers were noticed. Indeed, there are differences in the level of awareness of the sustainability options between the participants. Some interviewees express negative feelings for carbon offset. Other participants reveal that they are not trusting the information. A link can be done with previous research stating that the lack of trust and awareness regarding eco-labels does not always convince consumers to pay (Baumeister et al., 2020; D’Souza et al., 2007). Overall, the participants agree that they would like to have more specific insights regarding the sustainability options, such as how the carbon emitted is calculated.

However, any information that the interviewees feel they lack can be found on the same websites. The participants are willing to know how the money customers spend on sustainability initiatives will be used or how the carbon emission is calculated. Figure 10 suggests that these insights can be found, although they might be displayed in web pages other than the one used for buying tickets for transportations. Hence, the interviewees' statements are one more element that shows that the communication and the way display of sustainable information is displayed is a severe and general issue that companies need to address.

4.4. Limited joint sphere

According to Schüritz et al. (2019), there are three types of joint sphere: The limited joint sphere, the developed joint sphere and the extensive joint sphere. The differences between the three joint spheres lie in how deep the engagement is with the customers in the service provision via data and automated processes. The limited joint sphere represents service providers with minimal information on data use compared to the developed and extensive joint sphere

(Schüritz et al., 2019). In the analysis, only the selected digital platforms Kayak and Skyscanner disclosed texts and numerical data collected from customers. Other platforms do not provide a clear explanation of how the companies incorporated the data collected from sustainability options to services. In addition, customers responded to their concern about sustainability options from the co-destruction part, including lack of awareness, details and trustworthiness to the information, negative feeling to the options and design of the page, etc. The extent of value co-creation is limited since the interviewees expressed their concern about the time and financial resources while choosing to engage in sustainability options or not. Since the companies do not access much data and insights from the customers and influence customers to take business actions, the joint sphere of environmental value is limited except for Kayak, who conducted the customer surveys and transferred them into the sustainability options.

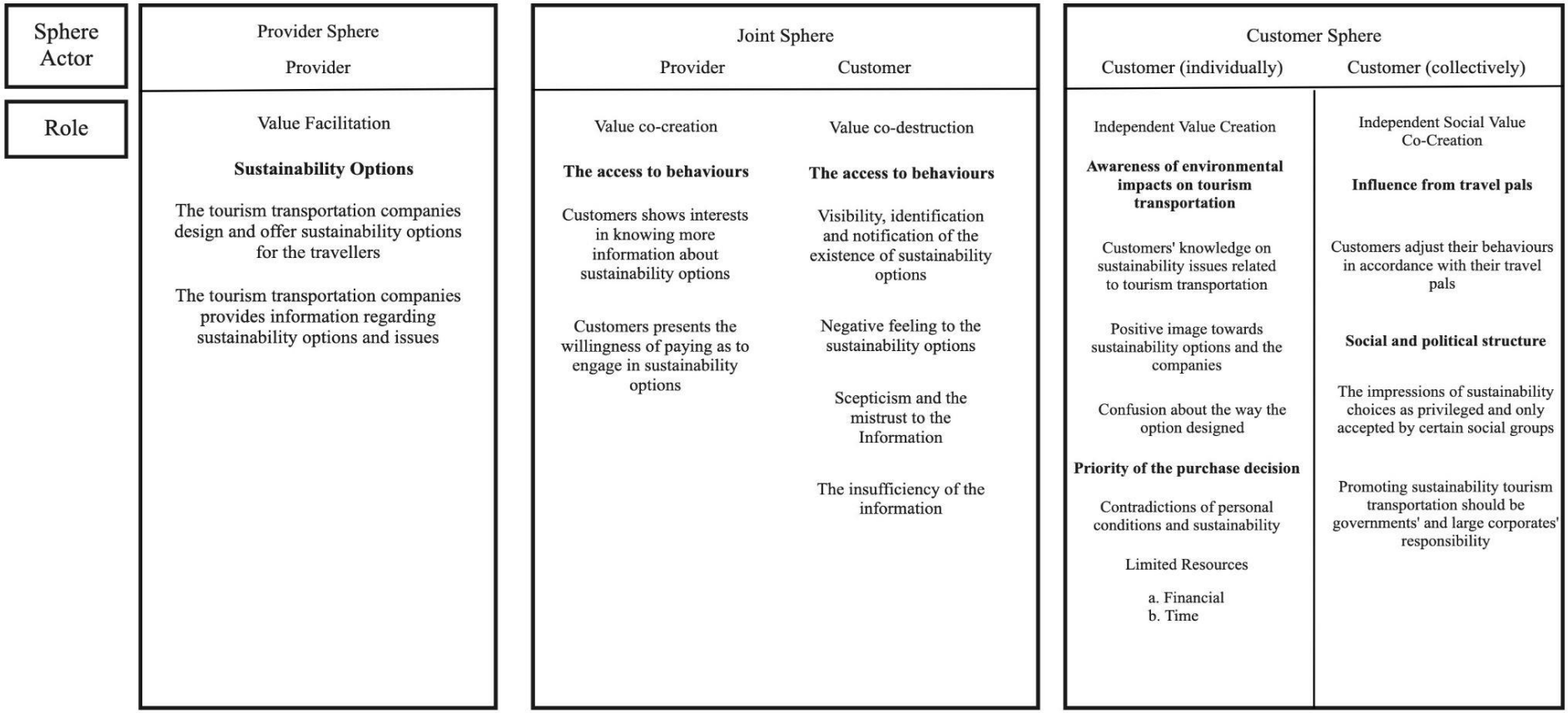

Figure 10. Interactions within the three spheres

4.5. Sustainability in destination

To understand the differences in consumer decision-making in tourism transportation between in and outside of destination as the third research objective, the interviewees were asked to provide their experience and perceptions regarding this issue. After arriving at destinations, the selection of transport mode depends on the characteristics of the destinations and social demographic (Le-Klaehn & Hall, 2015). The safety issue has been one of the negative effects of public transportation and the concern from the visitors (Lumsdon & Page, 2007).

> "For some reason, abroad, taxis have become safer when you go in taxes compared to taking public transport." (Interviewee 16)

In addition, familiarity with the social structure, language and culture can be barriers to choosing public transportation.

> "Usually, I guess, like, if it's a safe city, I do take public transportation if I can speak the language." (Interviewee 12)

> "It's usually less time to do that sort of exploration of what different options are or the website or maybe in a language that you don't understand as well. I think that really hinders me from being more sustainable." (Interviewee 16)

The travellers' responses echo the argument from Steg (2005), who claimed that the transport mode could be affected by social norms and emotional dimensions. Even though public transportation bears the traits of "less environmental impacts", the priority of selecting the transport mode in the destination can be different from before arriving due to the familiarity and safety concerns.

Another additional finding obtained from this research is that most interviewees do not consider sustainability a priority in their buying process for tourism transportation seats. Indeed, criteria such as price, time, or comfort have more influence on the buying decision of the participants. However, if the sustainability fit with the requirements that matter more to the customers, then they will perceive sustainability as a bonus:

> “When I booked the ticket, something popped up to show. I'm like, I'm a greener travel or something like that. But like, I'm just aware of that. But otherwise, I won't choose that proactively.” (Interviewee 5)

> “When I see on my plane ticket that my flight is carbon neutral [...], I'm obviously happy about it but that's not one of my main criteria, if I can't afford it.” (Interviewee 3)

> “If sustainability comes with several options that suit me, maybe I will pick the Greener Option, [...] it's not my priority you know.” (Interviewee 4)

The interviews also compared the consumption patterns for transportation with the consumption patterns once in destination, such as selecting restaurants or accommodations. This comparison allows observing if there are inconsistencies in the buying decisions. Based on the responses given by the participants, the majority are consistent in their buying decisions for tourism transportation and once in the destination but do not consider sustainability as a priority while selecting transportation and during their stay in destination:

> “I think sustainability is not the criteria for the accommodations [...] I don't really care.” (Interviewee 14)

> “I don't think I care that much. It's, it's also similar as a bonus, so I can see the price, the brand the service first, then if they also have these green labels, then Okay, that's nice.” (Interviewee 15).

Two participants presented different behaviours compared to the majority. For example, one participant has an inconsistency in consumption pattern. The participants consider sustainability while selecting transportation as the person include sustainability in the transportation research but do not consider this aspect once travelling in destination:

> “In the very beginning when they started to do such things I would like, and I really believe that it's true. What they are doing and that it's helpful. (Interviewee 13)”

> “For me, I have to say that I have never thought about the sustainability aspect of accommodation” (Interviewee 13)

The other participants are consistent in their consumption behaviour by considering sustainability while selecting the transportation but also while travelling in the destination:

> “I only fly with KLM. Because, according to my little research, I think the KLM is one of the air companies that is doing the most sustainable work. You can climate compensate [...] They also do trash recycling. And they offer vegan food alternatives.” (Interviewee 16)

> “Whereas when I lived abroad for a longer period, then suddenly you've become some I became so much more sustainable in all my habits compared to when I was short-term traveling.” (Interviewee 16)

The findings showed that most interviewees do not have inconsistencies in their consumption patterns regarding transportation and other travel decisions. The other two interviewees present pro-environmental behaviour in selecting tourism transportation, but one did not show other tourism services. Therefore, a further investigation of how sustainable tourism can be incorporated in tourism transportation and other services is needed.

Technology plays an essential role in millennials' lifestyle, which they are used to the digital services provided by the digital platforms (Han et al., 2017; Ketter, 2020). In the tourism industry, digital platforms have been utilised to offer tourism services following the customers’ demand (Neidhardt & Werthner, 2018). Most of the interviewees usually obtain tourism transportation information online and book the tickets through digital platforms:

> “I usually go to Google to see all the flights of Skyscanner.” (Interviewee 12)

> “It's like a comparative website, you compare prices of different companies. And you can book on that website.” (Interviewee 3)

In addition to tourism transportation, the interviewees also mentioned that digital platforms and social media are crucial sources for collecting travel information:

> “Usually, I go on TripAdvisor or just googling restaurants in the area. I think it's mainly because I feel like a lot of people are using it. So on average, the comments and the notation are quite correct and close to the reality.” (Interviewee 14)

> “Tripadvisor is good in the sense that it can have the categories for you. You can manage categories. So I think it is nice.” (Interviewee 15)

> “Red ID is because it's actually a very active social media platform. You can find how it is your favourite.” (Interviewee 15)

As millennials are the first generation to accept and utilise a fully digital travel journey, this creates a demand for the travel tech field (Ketter, 2020). Therefore, it is interesting to discover that digital tools have been a tight connection to the millennials in the tourism aspects and look forward to new applications in the future.

5. Discussion and Conclusion

To conclude, the thesis investigated how the sustainable initiatives in tourism transportation from travel companies co-creates environmental value with millennials and how this co-creation process impacts customers' sustainability awareness. The research question and three objectives have been answered in three parts.

First, the thesis studies the current situation of the environmental co-creation process through the three spheres model of Grönroos and Voima (2013) and the rework of Schüritz et al. (2019) on the joint sphere. Hence the interviews and documents analysis of the actors and resources participating in the co-creation were identified: (1) The first actor is the provider. Incarnated by the OTAs and transportations, their role is to facilitate the customers' creation of value and offers values propositions through the resources they are creating. The resources consist of the sustainability options, which are the carbon offset, carbon calculator and eco-label. The additional information regarding sustainability, such as partnerships with sustainable charities or how the carbon emitted is calculated, is also considered resources. (2) The second actor is the customer: the users of the transportation online booking platforms. They are the value creator using the resources given by the providers. The interviews revealed that the value of co-creation is expressed through the willingness to pay and search for more information related to sustainability options. Other than the providers' resources, the customers' creation process is also influenced by other factors that are detailed further in the next paragraph. However, the results also demonstrate that some resources and the providers and customers can lead to the co-destruction of environmental values. It can be divided into four factors: (1) the differences in the provided sustainability information between the different OTAs and transportation booking platforms as well as the level of awareness in sustainability options between the participants, that generate an unequal awareness and accessibility to sustainability options (2) the negative feelings expressed for carbon offset, (3) the lack of trust regarding the sustainable information, and (4) the need of more explained sustainable information.

Second, as the thesis aims to understand the millennials' concerns in engaging the environmental value co-creation in the customer sphere, millennial travellers were invited to share their experience in tourism transportation and thoughts while making the purchase decisions. The findings show that the knowledge, awareness of environmental impacts, resources, the influences from travel pals and social and political structure are the factors that

would affect their decisions in selecting sustainability options, which is referred to as value creation in this thesis. Two of the concerns were brought up and agreed by many interviewees: (1) the internal clashes from using tourism transportation and following sustainability values and (2) the equality in resources and knowledge to include a broader group in the sustainability options. The result contributes to the perspectives of the younger generation in tourism, transportation and sustainability.

Finally, in addition to the findings of the millennials and engagement to environmental value co-creation, some conclusions were made about the consumption behaviour patterns of the millennial group on tourism transportation and in-destination travel. The majority of the interviewees are consistent in the consumption pattern but do not consider sustainability as a priority while selecting transportation and during their stay in the destination. Two participants stand out of the others with a different consumption pattern. One participant has inconsistency in consumption pattern. Indeed, the participant considers sustainability while selecting transportation as the person includes sustainability in the transportation research but does not consider this aspect once travelling inside the destination. The other interviewee with a different consumption pattern is consistent in his/her consumption behaviour by considering sustainability while selecting transportation and travelling inside the destination. Overall, most of the 16 participants use digital tools to book their transportation travel and organise their journey once in destination. However, the majority stated that they do not consider sustainability as a priority while booking transportation. Criteria such as price, time, and comfort were more considered.

5.1. Research contribution

The thesis provides business owners and decision-makers insight into millennial travellers' behaviour in the tourism transportation service companies regarding sustainability. To encourage more travellers to engage in the sustainability options, the design of the digital platforms and the communication of the message are crucial from the findings. The result includes the layout of the digital platform, transparency of the information and educating the customers. Another message from the findings is the inclusion of institutional context to transit the traveller behaviours and reach sustainable tourism transportation.

It would be recommended to the providers to have a more explicit way to communicate this information so the customers could understand better the climate issues of tourism and the

impact related to the choices of the customers. For example, using a more common language that is easier to read by everyone could be envisaged. Another suggestion would be to compare the carbon emitted by the selected transportation with an equivalent such as the number of trees required to absorb the CO_2 emitted from the transportation. These comparisons would help people understand the number of carbon emissions by giving an order of magnitude of their sustainable impact.

Several limitations were encountered throughout the thesis. First, as the thesis focuses on both provider and customer perspectives on environmental value co-creation, the lack of time makes that the provider perspective could not be further investigated. For example, with more time, interviewing members of provider companies could have been done, and the usage of data collected on the customers' related sustainability options would have been explored. Another limitation faced was that the model of Grönroos and Voima's model (2012) does not fit the context of the study. Indeed, in the joint sphere, this model only considered physical interactions for the co-creation or destruction of value. Thus, as the digital platforms are the object of study this definition cannot be used for the research. An alternative has been found in Schüritz et al. (2019) framework as it is a rework of Grönroos and Voima's model (2012) for data-driven context. However, despite the model of Schüritz et al. (2019) fit better in a digital and data-driven context, the concept of value destruction is not mentioned in the model rework in contrast to Grönroos and Voima's model (2012). Therefore, for this thesis, a mix of the provider and customer spheres from Grönroos and Voima's framework (2012) and the acknowledgement of value co-destruction with the joint sphere of Schüritz et al. (2019) is used.

Earlier studies within the field of tourism value co-creation and consumer decision making shed lights on the economic perspective of value co-creation (Gössling, 2009) and service experience design in digital platforms (Font et al., 2020). The thesis contributes to the research field of value co-creation within the area of tourism transportation through (1) analysing the value co-creation process of data-driven service such as online travel agencies and transportation companies and (2) providing a further exploration on direct and indirect interaction in the critical service logic.

Further, previous research within the field of tourism transportation in consumer decision making has focused on seeking the factors in consideration of transport mode: instrumental, structural, individual, affective and socio-demographic factors (Grison et al., 2017; Lumsdon & Page, 2007; Steg, 2005; Verbeek & Mommaas, 2008), travellers' knowledge, awareness,

lifestyle and behaviour in sustainability (Cohen, Higham, Stefan, et al., 2014; Juvan & Dolnicar, 2017), travellers' dilemma and conflicts in sustainability self-concept and travel (Baumeister et al., 2020; Young et al., 2014) and technological implications (Gössling, 2017; Verbeek & Mommaas, 2008). Despite extensive studies of consumer decision and sustainability in tourism transportation, few had focused on millennials' perspectives, especially understanding the social meanings of sustainability and sustainability options in tourism transportation.

The predicted transition of political and cultural context would change customers' behaviour and perceptions towards transport and sustainability (Gössling et al., 2012; Paul Ceron & Dubois, 2007). Therefore, future digital research can further investigate the political and cultural meaning and the factors of tourism transportation for the millennial generation and its comparison with the other generations. Another research area would be generalised the data-driven co-creation model within tourism and mobility industries providing services through digital platforms. The themes would be interesting to shed light on how the data is collected and managed to drive sustainability options provision or develop sustainability strategies.

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Appendix

Consent form

We are Jung-Tzu Tsai and Michael Le, master students at Lund University in Service Management. We would like to invite you to take part in this thesis research concerning sustainable consumption in tourism and transport. You are asked to participate because you have expressed your interest in the study. The object of this document is to: provide you with details about the project, explain what participation in the project would mean for you and ask for your informed consent to participate.

About this study

The primary object of this research is to understand how the sustainable initiatives in tourism transportation from tourism agencies such as eco-label co-creates environmental value with young customers (from 20 to 30 years old) and tourists' sustainability awareness. Tourism consumption implies the complexities of consumption patterns from different types of tourists. The consumption patterns matter to the environment, for example, tourism transport has dominated over a quarter of the world energy consumption.

How will the study be conducted?

The thesis uses two primary methods of data collection, one of which entails conducting interviews with tourists. We are conducting group and individual interviews with people who have experiences in travelling and using public transport to tourist destination. Your participation involves engaging in a conversation about these topics and articulating your thoughts and views on sustainable tourism transport and consumption. The interview is expected to take no longer than one hour and will be conducted digitally.

What will happen to your personal details?

Your interview will be transcribed from an audio recording, with identifying details (such as your name, the names of other people, places, events etc.) removed so that it would be

exceedingly difficult to connect the transcript to you. The transcribed interview will be coded and analysed and only authorised individuals will have access to this data. Neither your real name nor other identifying details will be used in any form in the publication of the research unless you explicitly consent to this being done.

Your participation is voluntary, so you are also free to withdraw your participation from the study at any time if you prefer to do so without any explanations or consequences. Also, if you feel uncomfortable answering any questions or feel it's too personal, you can choose not to answer.

Your participation in this study should not expose you to any potential harm, risks or burdens, but rather you could potentially help contribute to scientific knowledge by helping us understand more about sustainability value within tourism and transport transportation.

Results of the study

The results of this research will be published in Lund University Publications Student Papers. If you would like to read the published results of this study, please let us know and we will send you a digital or printed copy once the research completes.

Informed Consent

By signing this document, you are:

(1) providing consent to allow me to record this interview,
(2) acknowledging that you understand the purpose of this research project as outlined in this document and have asked for any necessary clarification prior to signing, and
(3) agreeing to participate in the research project as explained, and authorizing me to collect and process your data, as outlined above, including what you say during the interview.

Signature: Date:

Description of the interviewees

Interviewee Number	Nationality	Occupation
1	Vietnamese	Student
2	French	Student (actually doing an internship in a museum)
3	French	PhD Student
4	Taiwan	Medical Doctor
5	Taiwanese	Student
6	Taiwan	Engineer
7	Brazilian	Engineer
8	Swedish	Student
9	Chinese	Student
10	French	Student / Entrepreneur
11	Ghana	Student
12	South Korean	Masters student
13	German	Student
14	French	Material Engineer
15	China	Student
16	Swedish	Student

Interview questionnaire design

The habits and knowledge of the consumers regarding sustainability issues and the environment (to measure their sustainable awareness in general)

1. Do you perceive yourself as a sustainability consumer?
    a. What factors make you perceive that way?
2. Do you take action to support sustainability during your daily life? What and why?
3. Are you actively engaged in sustainable movements?

Tourism transportation habits (Remember the highlight of ICT tools used)

1. How do you plan your transportation for the trip? Can you describe how did you plan your last trip?
2. What platforms do you use for planning? (OTA, PTA, others)
    - Why those specific platforms?
3. What matters to you when it comes to choosing transportations (e.g. price, distance, time, sustainability, accessibility, etc)
4. (Ask if they are booking all of this in one and same website)
5. Does the environmental impact of travel you are consuming matters to you

Towards knowledge and awareness of sustainability choices in online booking (to measure their sustainability awareness regarding tourism transportation)

6. If available, do you consider the environmental impacts while planning your transportation:
    - At what point do you consider that?
7. Have you ever noticed sustainability options while planning your transportation? (ex. eco-label, carbon offsetting, etc.) **[SHOW EXAMPLES]**
    - Can you provide examples?
    - Where do you notice them?
    - Have you ever use these options?
    - Why or why not?
8. Are you willing to pay an additional fee to compensate for the carbon footprint of your airline travel?
9. Are you willing to spend more time to look for sustainable options?

10. How do you feel while using these options?
11. After traveling, do you feel you are more aware about the sustainable issues within tourism? (more understanding about it)
12. Does the understanding of those issues encourage you to use sustainable options for the next times? (For people who are already aware)
13. After having informed you the sustainable options, would that encourage you to use sustainables options for the next times? (For people who weren't aware)
14. Would you prefer to select a transport booking website that provides sustainable options?

Perception of the travel companies regarding sustainable options

15. How does sustainable initiatives affect your perception of the travel company and the OTA?
16. Do you think sustainable initiatives are too exaggerated/ Do you think the informations are reliable? (green washing)?
17. Do you think that sustainable options are well explained and placed in prominent places on the website?
18. Do you think travel companies should communicate more/better about their sustainable options? How?

Tourism sustainable habits other than transportations (Focus on environmental aspects, such as bio, vegan, local farmers, etc.)

19. What matters to you when it comes to choosing for the rest of trip planning such as restaurants or accommodations? (e.g. price, authenticity, quality, sustainability, experience, etc…)
20. What platforms do you use for planning? (OTA, Physical Tourism Agency, others) What?
    - Why those specific platforms?
21. If available, do you consider the environmental impacts while planning your trip:
    - At what point do you consider that?

Regarding anything that we have talked about, do you have anything else to add?