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Research Exposé:

The effects of sustainable marketing on airline passengers' values, beliefs, and purchasing intention

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Abstract

Background: Air transportation is a major industry with 2.4 billion passengers in 2021, and its impact on the world economy is significant. On the other hand, this also means that the aviation industry has a considerable effect on the environment. Indeed, global aviation produces 2.5% of all carbon dioxide (CO_2) emissions and 1.9% of all greenhouse gas emissions. Facing an increasing number of environmentally motivated regulation policies and environmentally aware consumers, airlines need to provide and market sustainable choices to their customers, such as carbon offsetting programs. However, it remains unclear how the marketing of these sustainable choices affects passengers' values and purchasing intention.'

Aim: The research aims to investigate how sustainable marketing can affect consumers' values and beliefs on air traveling and detect possible changes in their purchasing intentions.

Methodology: The research will be conducted quantitatively using an online questionnaire distributed by social media and online channels. The respondents need to be over 18 years old and have traveled within the last three years by air for leisure purpose. A Likert-type scale will be used to gather the data, having 1 = "strongly disagree" to 7 = "strongly agree". Moreover, a Structural Equation Modelling (SEM) will be used to analyze the collected data.

Contributions: This study will mainly contribute to the sustainable aviation literature since none of the previous studies have studied the effect of marketing stimuli on the consumers' values, beliefs, and purchase intention. In addition, this research adds a new context of application to the extended Value-Belief-Norm theory of sustainable air travel. Moreover, this study helps hospitality sector professionals understand the effects of sustainable marketing on their customers and develop improved green marketing strategies.

Keywords: Sustainability, marketing, sustainable tourism, consumer behavior, carbon offset

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List of Abbreviations

AC	Awareness of consequences
AR	Ascription of responsibility
AV	Altruistic value
BV	Biospheric value
EU	European Union
EV	Egoistic value
MS	Marketing stimuli
NEP	New ecological paradigm
PI	Purchase intention
PPN	Pro-environmental personal norm
SEM	Structural Equation Modeling
VBN	Value-Belief-Norm

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1. Introduction

Air transportation is a significant global industry. Before the Covid-19 pandemic, the aviation industry was under constant and rapid growth (Rice et al., 2020). Airline travel peaked in 2019 with 4.5 billion passengers (IATA, 2021a) and is forecasted to return to pre-pandemic levels in 2024 (IATA, 2020). In the year 2021, the industry served 2.4 billion flying passengers (IATA, 2021a). The aviation industry also employed 65 million people and contributed 3.5% or 2.7 trillion U.S. Dollars to the world's gross domestic product in 2017 (ICAO, 2021).

The growth of the air travel volume also directly impacts the number of emissions. Global aviation, which includes passenger and freight travel, produces 2.5% of all carbon dioxide (CO_2) emissions and 1.9% of greenhouse gas emissions (Ritchie, 2020). In addition to the carbon dioxide (CO_2) emissions, air travel causes other emissions, such as nitrogen oxides (NO_x) and water (H_2O) which are emitted at flight altitude (Gössling et al., 2021). In the past, airlines tended to downplay the effects of pollution and exaggerate the benefits of new technology, leading to transparency issues. However, the aviation industry also faces increasingly more environmentally motivated regulation policies (Hagmann et al., 2015).

International Civil Aviation Organization, ICAO, has created regulations for environmental protection already in 1997, where the objective was set to respond to the worldwide environmental problems associated with civil aviation (ICAO, 1997). Moreover, International Air Transport Association, IATA (2021b), is concerned with environmental issues such as emissions, waste, noise, industrial processes and tackling significant global issues such as wildlife trafficking. In addition, all airlines operating in the European Union (EU) are under the EU Emissions Trading Scheme, which means that they must monitor, report and verify their emissions (European Commission, 2021).

In recent years, consumers have become more aware of the environmental effects of air travel. Many airlines, such as Lufthansa (2021), Singapore Airlines (2021), and Japan Airlines (2021), inform their consumers about the CO_2 emissions as well as provide carbon offset programs that consumers can pay extra for their airline tickets to offset the carbon emissions. However, despite a large number of offset programs, it is still not clear how they affect the consumers' behavior and whether the consumers that pay the offset emissions believe that they can use more activities that create carbon emissions in the future because they have compensated their actions beforehand (Günther et al., 2020). From the customers' point of

view, the willingness to participate in carbon offset programs depends on their price elasticity of demand; however, travelers are generally willing to accept fees used for initiatives for the environment (Kelly et al., 2007).

Previous studies have investigated the consumers' willingness to pay extra for sustainable aviation options. Most notably, Rice et al. (2020) experimented on consumers' willingness to spend additional money for sustainable air travel, and people were willing to pay extra to reduce greenhouse gases, women generally more than men. Consumers are also willing to spend more for the opportunity to fly with an eco-friendly airline; however, consumers showed higher willingness towards amenities like added legroom (Hagmann et al., 2015). Moreover, Ragbir et al. (2021) investigated the relationship between an individual's knowledge of sustainability, specific knowledge of sustainability in aviation, and how it affects the consumers' willingness to support the practices of sustainable aviation. In addition, Winter (2019) examined the consumers' overall support for sustainability in the aviation industry, such as biofuels and construction and manufacturing materials.

Sustainable marketing is a widely researched topic in travel and tourism; however, only a few studies focus on aviation (Hagmann et al., 2015; Rice et al., 2020; Winter et al., 2019). Several studies have compared sustainable marketing tactics among airlines, such as in media and marketing publications (el Moussaui, 2021) and social media (Lehtonen, 2021). Moreover, Ritchie et al. (2021) explored the effectiveness of communication messages that were aimed at increasing the passengers' willingness to offset their carbon emissions, and Lu et al. (2018) discovered that choosing the appropriate media can help to create positive attitudes for the passengers towards the carbon offsetting programs. Nonetheless, these studies focus on how sustainable marketing affects values, beliefs, or purchasing behavior in air travel.

In this study, an online survey will be used to investigate the possible effects of airlines' sustainable marketing on German and Finnish passengers' beliefs, values, and purchasing intention. The aim is to understand how airlines' sustainable marketing affects consumers' values, beliefs, and purchase decisions. The research will be done quantitatively and will be conducted by an online questionnaire.

The theory used in this research is the Value-Belief-Norm theory by Stern, which combines the elements essential for this research: values, beliefs, and their impact on the consumer's behavior. Moreover, it is a theory that is developed for sustainable behavior. The

theory has been used by much other research focused on consumer behavior and sustainable traveling (Kiatkawsin & Han, 2017; Han, 2015, Sánchez et al., 2018; Sharma & Gupta, 2020).

The Value-Belief-Norm theory has been used in tourism research (Han, 2015; Kiatkawsin & Han, 2017; Lee et al., 2018; Sharma & Gupta, 2020) but is new to the aviation literature. With this research, a new context of application, sustainable air travel, will be added. This research adds knowledge to the current literature of sustainable aviation by exploring how the marketing stimuli affect the consumers' values and purchase intention, which has not been studied before. In recent years, customers have become increasingly aware of environmental issues. Therefore, it is essential to understand how people react to sustainable marketing.

Due to the Covid-19 pandemic, air travel was massively hit by international travel restrictions. With the recent easing of travel restrictions leading to recovering passenger numbers and growing emissions, it is essential to establish how airlines can market sustainable consumer choices. The implication of this research to the business is that industry professionals can understand the effects of their sustainable marketing, develop improved green marketing strategies, and understand how the marketing actions affect the consumers' purchase intention. In addition, this research will help society understand how the marketing of sustainable air travel can change lifestyles through the values towards more environmentally friendly behavior. Moreover, this study adds knowledge on how passengers perceive the sustainability in air travel context through marketing stimuli and how it affects their purchase intention, which helps the marketers to do better marketing and ultimately the people to make better green consumption choices.

The following sections of this exposé will go through the theoretical framing of the research, the literature review, proposed research models, hypothesis, methodology, and expected contributions.

2. Context of the study

2.1. Green consumer behavior

Consumer behavior describes how people, who purchase goods and services, behave (Vinerean, 2013). According to consumer behavior research, affective, cognitive, and conative components drive consumers' buying behavior and disposal decisions (Salem et al., 2020). Environmentally sustainable behavior is an umbrella term for concepts such as eco-friendly buying, water-saving, food waste reduction, solid waste minimization, and many more (Han, 2021). Green behaviors are associated with green consumption, which means consumption of goods that do not cause pollution and do not harm the environment together with social responsibility (do Paço et al., 2019). Consumers who believe that it is their responsibility to take good care of the Earth are also more likely to use more eco-friendly products and services (Chan, 2013; Chen, 2010).

In essence, green consumer behavior describes how consumers who place a high value on environmentally sustainable choices try to decrease their personal consumption of natural resources for the benefit of society (Han, 2021). There are decisions, ideas, activities, or experiences that satisfy the wants and needs of the consumers involved in consumer behavior (Cohen et al., 2014). Moreover, sustainable consumption is concerned about the sustainability of the different resources for future generations, which can be affected by choosing recyclable products with high quality, durability, and ecological labels when at the same time reducing the consumption of energy and resources (He et al., 2016; Tripathi and Singh, 2016).

The importance of green services and products has been understood in all industries due to the increasing levels of consumption having a harmful effect on the environment (Aliyev et al., 2019). Consumers' increased need for sustainable choices can also be seen in the tourism industry. As the demand for green products and services has grown, companies have become more acquainted with providing those options for environmentally aware consumers (Hagmann et al., 2015; Han, 2021).

In recent years, the tourism industry, including the airline industry, has seen an increase in eco-conscious customers, leading companies and practitioners to pay more attention to it (Han & Kim, 2019). Since airline passengers are increasingly concerned about environmental issues and the purchase of eco-friendly services and products, more environmental

management is needed. Therefore, the airlines' product offering that satisfies the needs of environmentally conscious passengers will create a positive environmental-friendly image of an airline. (Hwang & Lyu, 2020). However, even though people are worried about climate change and believe that air travel contributes to it, only very few people are paying for carbon offsetting programs (Gössling et al., 2019).

There is an information gap between air passengers and the airline industry of how aviation impacts the environment and the actions that can be done to mitigate the impacts. Air passengers do not receive enough specific information about the environmental impacts of aviation, carbon offsetting, and the impact that a traveler can make by changing behavior towards reducing emissions. (Lu & Wang, 2018). Moreover, the public perception of carbon offset programs is that they are confusing and lack credibility and transparency, which accounts for their low adaptation (Babakhani et al., 2017).

2.2. Sustainable marketing

Sustainability is defined as a combination of attitudes, ideas, intentions, and behaviors that consider environmental, social, and economic resources that enable the success of both current and future generations (Vadakkepatt et al., 2021). On the other hand, sustainability can be seen as consuming both goods and needs that meet the basic requirements and quality of life but do not threaten future generations' needs. The general act of sustainable marketing is also known as "green" marketing (Gordon et al., 2011).

Green purchasing behavior, environmentally green behavior, and green marketing have recently brought environmental awareness to the spotlight. In addition, consumers have started to understand the importance of sustainability and the severity of environmental issues (Lee & Jan, 2018). Sustainable marketing can be achieved with the combination of green marketing, which means creating and marketing more sustainable products and having sustainability as the core of marketing, social marketing, which means encouraging sustainable behavior by using upstream and downstream marketing, and with critical marketing, which means challenging the institutions and marketing systems to construct better discipline for marketing (Gordon et al., 2011).

Sustainable tourism marketing is often directed to consumers interested and knowledgeable in sustainable consumption, which are also known as the "Pro-sustainability"-consumers or consumers with biospheric-altruistic value orientation (Vinzenz et al., 2019). These customers are well informed about the sustainability issues, and they have positive attitudes towards sustainable consumption (Grunert & Juhl, 1995; Han et al., 2011). Moreover, the advertisements aimed at these consumers tend to emphasize the biospheric-altruistic characteristics (Vinzenz et al., 2019). However, the consumers that are less environmentally conscious with self-enhancement values are often neglected as a target group in green tourism marketing (Kong & Zhang, 2014; Schultz & Zelezny, 1999).

To raise positive attitudes in consumers, sustainable marketing efforts should be perceived as positive, convincing, and trustworthy (Vinzenz et al., 2019; Watts & Giddens, 2017). Positive emotions and product credibility have been shown to positively affect consumers' sustainability behavior (Vinzenz et al., 2019). However, there is still debate whether sustainable tourism should empower small-scale forms of tourism or develop mass tourism into a more sustainable choice (Pomering et al., 2011).

Airline consumers are aware of the environmental impacts, and airlines have engaged in using green marketing messages to inform consumers about their environmental commitment. In addition, airlines can differentiate themselves from competitors with a green image which relies on a marketing strategy that helps influence the environmental perception of an airline (Mayer et al., 2012). According to Lehtonen (2021), 11% of the airlines' Instagram marketing communication concerns sustainability. Green marketing in air travel is mainly related to carbon neutrality, carbon emissions reduction, or biofuels (el Moussaui, 2021). Regarding the message of carbon offsetting, the airlines need to consider developing different communication approaches for the consumers who have already done carbon offsetting and those who have not (Zhang et al., 2019).

3. Theoretical Framing

The previous research in sustainable aviation has focused mainly on consumers' willingness to pay for sustainable aviation products and passenger's perception towards carbon offsetting. Other studies have focused on the marketing as well as the communication methods and messages of sustainable aviation. These topics will be more extensively discussed in the following chapters.

The analysis of this research will focus on the values and beliefs and the purchase intention of the air travelers and how they are affected by the marketing stimuli. The research is based on the Value-Belief-Norm theory by Stern (1999), which combines all the essential elements for this research. The theory will be thoroughly introduced later in this chapter.

3.1 Willingness-to-pay and passenger's perception towards carbon offsetting

The willingness-to-pay has been one of the most researched topics in sustainable aviation, together with consumers' perception of the carbon offsetting programs. Most markedly, Rice et al. (2020) researched the willingness of the consumers to pay additional money for sustainable air travel, and the results were that people were willing to pay extra to reduce greenhouse emissions, but men were less than women. According to Hagmann et al. (2015), the opportunity to fly with an eco-friendly airline is why consumers spend more; however, consumers showed higher willingness towards other amenities such as added legroom in the research.

Ragbir et al. (2021) researched the relationship between the respondent's knowledge about sustainability and specific knowledge about sustainability in aviation and how these affect the consumer's willingness to support the practices linked with sustainable aviation. The result was that increasing people's happiness and caring towards sustainable aviation increases their willingness to pay more for sustainable choices. Moreover, Segerstedt et al. (2016) found key drivers linked to people's lifestyles that affect their willingness to participate in voluntary carbon offsetting programs. Also, the programs should attempt to persuade tourists who are committed to environmental issues and have a positive idea about carbon offsetting programs but have not yet taken part in them. Winter et al. (2019) had a different angle in the research;

they predicted the consumer's support for sustainability in aviation through biofuels and manufacturing materials.

Different attributes of aviation voluntary carbon offsetting programs also influence the passenger's preferences for the programs. Involving different co-benefits in the communication of carbon offsetting programs increases passengers' willingness to participate. Moreover, consumers are more willing to pay for specific offsetting programs linked to environmental and social co-benefits in domestic communities (Zhang et al., 2021). According to Mayer et al. (2012), consumers appear to differentiate the level of environmental friendliness between full-service network airlines and low-cost airlines. In addition, consumers consider using a newer aircraft as the best environmental prevention method for airlines.

3.2 Marketing and communication of sustainable aviation

While some research has been carried out on the marketing and communication of sustainable aviation, the topic remains understudied. Most notably, Kim et al. (2016) discovered that only half of their respondents knew about voluntary carbon offsetting schemes. In addition, green marketing should not only focus on the green image in aviation but also provide targeted messages to different segments that seek to increase knowledge and participation in carbon offsetting programs. Other studies on sustainable marketing focused on the marketing tactics among different airlines and their marketing publications (el Moussaui, 2021) and social media marketing (Lehtonen, 2021).

The effectiveness of communication messages, researched by Ritchie et al. (2021), sought to increase passengers' willingness to offset their carbon emissions. The results were that the passengers preferred the local programs to mitigate emissions, and it was important for the passengers that they could choose the program they were funding. Moreover, Lu et al. (2018) detected that choosing the appropriate media can help the passengers gain more knowledge about how aviation impacts the environment, create positive attitudes towards carbon offsetting programs and help passengers become more willing to offset their emissions. In addition, Babakhani et al. (2017) found that refining a more positive tone of voice increases consumers' attention level and the likelihood of taking part in voluntary carbon offsetting.

3.3 Value-Belief-Norm theory

The theoretical framework of this study is based on the Value-Belief-Norm (VBN) theory (Stern, 1999). The foundation of Value-Belief-Norm theory comes from Schwartz's norm-activation model of altruism (Schwartz, 1968). The VBN theory emphasizes that an individual's environmentally responsible action is based on normative factors, belief factors, and value orientation. The normative factors mean the obligation to take on pro-environmental actions, the belief factors include the ascribed responsibility and ecological worldview, and the value orientations are egoistic, altruistic, and biospheric (Han, 2021).

The VBN theory (see Figure 1) was built to explain how environmentalism is connected to public support, which is considered an essential source of coping with social problems (Kiatkawsin & Han, 2017). The Value-Belief-Norm theory's capability to explain different environmental action types has been proven successful (Stern et al., 1999).

Figure 1: *Value-Belief-Norm theory*
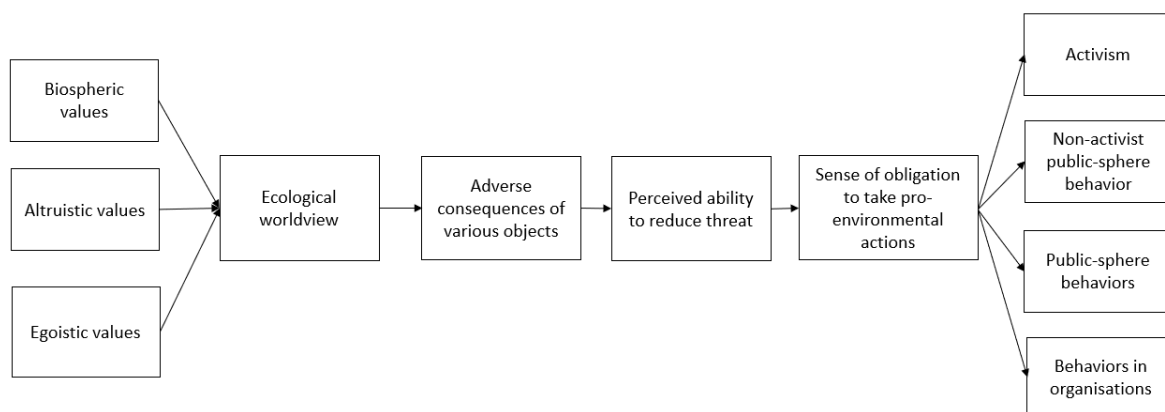
According to the VBN theory, values, attitudes, and beliefs are behind the social norms and responsibilities that influence particular behaviors such as environmentally responsible behavior and pro-environmental behavior (Stern et al., 1999). Thus, the VBN theory was implemented into this study's framework to assess the customer's behavioral model in air travel.

The VBN theory suggests that green behaviors occur more when a causal series of variables are present, such as values, beliefs, and personal norms (Ghazali et al., 2019). The values are divided into three values: altruism value (AV) that promotes environmental awareness, biospheric value (BV) that is connected with the biosphere and other species and

egoistic value (EV) that refers to the importance of one's own interests in the society (Stern, 2000).

The values relate to the new ecological paradigm (NEP), also known as the new ecological worldview, which believes in humanity's ability to shake the balance of nature and control it (Dunlap et al., 2000). Adverse consequences of various objects, also known as the awareness of consequences (AC), relating to the belief that environmental wellbeing can either enhance or threaten other people, other species, or the biosphere (Stern, 2000). Adverse consequences of various objects are followed by the ascription of responsibility (AR), which means the belief that human actions can escalate or prevent the negative consequences. The sense of obligation to take pro-environmental actions, also called the pro-environmental personal norms (PPN), means the sense of moral obligation towards the environment. (Stern et al., 1999).

The VBN theory has been applied in the tourism literature, but in the literature that concerns aviation, no essential papers are using this theory. Kiatkawsin & Han (2017) examined by using VBN theory together with Vroom's expectancy theory a young group of tour travelers and their intention to behave pro-environmentally when traveling. In the tourism context, Lee et al. (2018) used the VBN theory together with the theory of planned behavior, the technology acceptance model, and social identity theory to create an integrated ecotourism behavioral model.

Previous studies measured the pro-environmental behavior in tourism. Sharma & Gupta (2020) examined empirically the pro-environmental behavior of tourists visiting protected areas to understand the mitigation of the adverse effects of tourism on the environment through the VBN theory. Moreover, Han (2015) merged the VBN theory and the theory of planned behavior to get a comprehensive understanding of the formation of travelers' pro-environmental intention in the context of green lodging.

3.4 Alternative theories

The other theory considered for this research was the theory of planned behavior (Ajzen, 1991). The theory emphasizes subjective experience, how social pressure affects people's behavior, and how people's actions are affected by what others think (Ciasullo et al., 2017).

The theory of planned behavior has been vastly used in the tourism research of consumer behavior (Han, 2014; Lee et al., 2018; Oreg et al., 2006; Pan et al., 2018; Wang et al., 2018). The theory would have been suited for the research; however, this theory was not chosen because it has been used so vastly in the literature that it would not be possible to add new information to the theory.

3.5 Personality traits

Personality traits will be part of this research to see how they moderate between the awareness of consequences and the ascription of responsibility. There are numerous ways to measure personality that exist in the literature. The Big Five, consisting of conscientiousness, neuroticism, extraversion, agreeableness, and openness to experience, has been considered the most well-known and most popular in tourism research (Ying & Norman, 2017). In recent years, the Big Five personality traits have been considered an essential part of personality trait literature (Tan & Tang, 2013). Moreover, the professionals on the field agree that the Big Five adequately provide a full picture of an individual's personality (Myers et al., 2010; Rose et al., 2010). It is a verified measurement in validity and reliability, and it has been widely used in tourism and hospitality research (Ying & Norman, 2017).

The five personality traits are extraversion, agreeableness, conscientiousness, emotional stability, and openness (McCrae & John, 1992; Oshio et al., 2018). Extraversion means the extent to which a person is social, assertive, talkative, energetic, and outgoing. (McCrae & Costa, 1985). Agreeableness refers to an individual's empathy, warmth, compassion, and generosity (McCrae & John, 1992). Conscientiousness is a trait characterized by rule-following, organized, detail-oriented, responsible, and reliable individuals (Rose et al., 2010). Neuroticism is referred to the tendency to experience anxiety, anger, fear, sadness, irritability, and insecurity. Openness, then again, is associated with how imaginative, intelligent, broad-minded, and artistically sensitive the person is (McCrae & Costa, 1985).

4. Literature Review

The literature on sustainable aviation mainly focuses on consumers' willingness to pay for sustainable choices and voluntary carbon offsetting (Ragbir et al., 2021; Rice et al., 2020; Segerstedt et al., 2016, Zhang et al., 2021). A portion of the studies focuses on the passenger's perception of the green image of airlines (Hagmann et al., 2015; Mayer et al., 2012; Winter et al., 2019). However, the essential studies considering this research are the ones that focus on sustainable marketing and communication, but there are only a few studies about this (Babakhani et al., 2017; el Moussaoui, 2021; Kim et al., 2016; Lehtonen, 2021; Lu et al., 2018; Ritchie et al., 2021).

The database query that works specifically for Google Scholar is Sustainability OR green AND consumer AND airline OR aviation AND carbon offset AND marketing OR communication. The query does not find all the articles in the literature review because some have been found through the references of other articles. The final number of papers analyzed is 13, and the literature review can be found on the following page.

Table 1: *Literature review*

Title	Authors	Year	Findings
Improving carbon offsetting appeals in online airplane ticket purchasing: Testing new messages, and using new test methods	Babakhani, N., Ritchie, B. W., & Dolnicar, S.	2017	The awareness of carbon offsetting schemes is low. Refinements towards a more positive tone of voice will increase the attention level and the likelihood of voluntary carbon offsetting. Additionally, informing consumers about the benefits of carbon offsetting increase the adoption of offsetting.
How has sustainability shaped communication and marketing in aviation industry?: A comparative case study	el Moussaoui, F.	2021	A comparative case study on green marketing in the aviation industry through airlines KLM, Finnair, Qantas, and American Airlines found that marketing mainly focused on carbon emissions and fuels. No distinct trend was detected, but there was a difference between the topics presented on different channels like YouTube and press releases.
Exploring the green image of airlines: Passenger perceptions and airline choice	Hagmann, C., Semeijn, J., & Vellenga, D. B.	2015	Consumers are willing to spend more to fly with an eco-friendly airline. However, the increased willingness was motivated by amenities such as added legroom.
How consumer knowledge shapes green consumption: An empirical study on voluntary carbon offsetting.	Kim, Y., Yun, S., Lee, J., & Ko, E.	2016	Slightly more than half of the passengers know about the voluntary carbon offsetting schemes. Green marketing advertisers should segment consumers by knowledge and give clear participation instructions to increase consumers' self-confidence in their ability to participate instead of only focusing on the green image.
The role of social media in sustainable marketing communication-a study on airline industry on Instagram	Lehtonen, S.	2021	11% of all airlines' Instagram marketing communication is sustainable marketing. The most frequently communicated topics were social elements, safety, health care, and equal rights. In addition, two-thirds of the sustainability-related posts were informative, which conflicts with the purpose of social media in engaging followers.

Investigating the impacts of air travellers' environmental knowledge on attitudes toward carbon offsetting and willingness to mitigate the environmental impacts of aviation.	Lu, J. L., & Wang, C. Y.	2018	Appropriate media channels could be adopted to enhance passengers' knowledge of the aviation industry's impact on the environment and the benefits of carbon offsetting programs. This may also help create positive attitudes towards carbon offsetting and increase willingness to offset emissions.
Passenger perceptions of the green image associated with airlines	Mayer, R., Ryley, T., & Gillingwater, D.	2012	Half of the research respondents distinguished differences between full-service network airlines and low-cost airlines based on their environmental friendliness. The paper also found that consumers perceive the use of new aircraft as the most efficient environmental prevention measure. In addition, air travelers' green perception and attitude of an airline varied depending on if they had flown with the airline or not.
Emotions and caring mediate the relationship between knowledge of sustainability and willingness to pay for greener aviation	Ragbir, N. K., Rice, S., Winter, S. R., & Choy, E. C.	2021	Increasing people's caring and happiness towards sustainable aviation increases their willingness to pay more for sustainable practices.
Willingness to pay for sustainable aviation depends on ticket price, greenhouse gas reductions and gender	Rice, C., Ragbir, N. K., Rice, S., & Barcia, G	2020	People are willing to pay extra to reduce greenhouse gases, women generally more than men.
Which types of product attributes lead to aviation voluntary carbon offsetting among air passengers?	Ritchie, B. W., Kemperman, A., & Dolnicar, S.	2021	Passengers prefer to fund local programs that effectively mitigate emissions and are accredited. Moreover, they want to choose the program they are supporting. The willingness to pay for offsetting carbon emissions was lower for group bookings than individuals, and preferences differed between customer segments.
Increasing adoption of voluntary carbon offsets among tourists	Segerstedt, A., & Grote, U.	2016	People who are young, adventurous, and on a vegetarian diet are most likely to take part in carbon offsetting programs voluntarily. Some travelers are aware of such programs but have not yet taken part in them, although they remain optimistic about the idea. Additionally, these travelers have made donations and committed to environmental issues in other ways. Carbon offsetting programs should attempt to persuade them to take part in the program.

What factors predict a consumer's support of environmental sustainability in aviation? A multi-model analysis	Winter, S. R., Thropp, J. E., & Rice, S.	2019	The research found four models where the perceived value of sustainability is a significant factor: support of aviation biofuels, support of sustainability in aviation, support for sustainable aviation manufacturing, and support of sustainable aviation construction materials.
Air Passengers' Preferences for Aviation Voluntary Carbon Offsetting: A Co-benefits Perspective.	Zhang, B., Ritchie, B. W., Mair, J., & Driml, S.	2021	Different attributes of voluntary aviation carbon offsetting programs influence passengers' preferences towards the programs. Involving different co-benefits in the programs' communication may increase passengers' willingness to participate in them. The preferred carbon offsetting programs included environmental and social co-benefits in domestic communities. Also, consumers are willing to pay more for certain programs and make trade-offs between the cost and some program attributes.

5. Hypotheses and the research models

In the Value-Belief-Norm theory, the causal chain flows from values to ecological worldview, which directly impacts awareness of consequences and then continues to the ascription of responsibility which triggers the personal norm (Han, 2015; Klöckner, 2013; Li et al., 2018). Previous research has shown that personal norms are the main predictor of behavior or intention (Chen, 2014; Han, 2015). Altruistic and biospheric values are positively related to the worldview (Denley et al., 2020; Liu & Wu, 2021), but egoistic values have a negative impact on it (Stern, 2000).

Consumers who possess biospheric altruistic value orientation, meaning interest in sustainability, are persuaded by messages that have details about the sustainability performance to increase the social-environmental wellbeing. (Vinzenz et al., 2019). According to Font & McCabe (2017) and Hardeman et al. (2017), tourism advertisements primarily emphasize altruistic values and link social and environmental welfare to sustainable consumption. It results in that the behavioral motivations of the biospheric-altruistic consumers are addressed (Vinzenz et al., 2019). Two hypotheses were developed based on the previous knowledge:

Hypothesis H1: *Sustainable marketing stimuli positively affect biospheric value.*

Hypothesis H2: *Sustainable marketing stimuli positively affect altruistic value.*

Recent studies have shown that egoistic appeals positively affect advertising messages (Vinzenz et al., 2019). Furthermore, the egoistic appeals in an advertisement have generated positive attitudes towards organic food (Kareklas et al., 2014). Similarly, the clear focus on self-benefit affects holidaymakers' preferences when taking sustainable actions (Hardeman et al., 2017). Even though there is no clear evidence the egoistic values, based on the previous research, the following hypothesis was formed:

Hypothesis H3: *Sustainable marketing stimuli positively affect egoistic value.*

The VBN theory's applicability is supported by various research that proves the sequential variables (values – new ecological worldview – awareness of consequences – ascription of responsibility – pro-environmental personal norm – intention or behavior) of the study to generate pro-environmental behavior or intention (De Groot et al., 2010; Klöckner, 2013; Stern, 2000). The past research has proven that the values lead to an ecological

worldview, which leads to awareness of consequences and then to the ascription of responsibility, which eventually flows to the personal norm that predicts the pro-environmental intention. The three constructs of VBN theory: awareness of consequences, the ascription of responsibility, and the pro-environmental personal norm, that are the base of the norm-activation model by Schwartz (1977), have been validated by many researchers empirically (De Groot & Steg, 2009; Han, 2015; Van Riper & Kyle, 2014).

Environmental attitude is positively affected by biospheric value (Lee & Jan, 2015; Liu & Wu, 2021; Gupta & Sharma, 2019). In addition, according to scholars, biospheric value can be understood as people's judgment based on the benefits or costs of the environment (Lee & Jan, 2018). Altruistic value has been proven to positively affect the new ecological paradigm (Gupta, & Sharma, 2019). Given this evidence, in the context of air travel, the following hypotheses were developed:

Hypothesis H4: _Biospheric value positively affects new ecological paradigm._

Hypothesis H5: _Altruistic value positively affects new ecological paradigm._

Hypothesis H6: _Egoistic value positively affects new ecological paradigm._

According to the causal chain, the new ecological paradigm influences the awareness of consequences (Stern, 2000). Moreover, van Riper and Kyle (2014) discovered that a new ecological paradigm positively influences awareness of consequences when examining the traveler's eco-friendly behavior. In addition, Liu and Wu (2021) and Gupta and Sharma (2019) found a positive connection between the new ecological paradigm and the awareness of consequences. Based on this, the following hypothesis was created:

Hypothesis H7: _New ecological paradigm positively affects the awareness of consequences._

The previous literature has found a positive relationship between the awareness of consequences (AC) and ascription of responsibility (AR) in different contexts such as tourists' pro-sustainable behavior (Kiatkawsin & Han, 2017), in green lodging (Choi et al., 2015; Han, 2015), and museum travelers and cruise traveler's eco-friendly behavior (Han et al., 2017).

Moreover, Liu and Wu (2021) found a positive connection between the awareness of consequences and the ascription of responsibility. Based on this, the following hypothesis was formed:

> **_Hypothesis H8:_** _Awareness of consequences positively affects the ascription of responsibility._

In their studies, Choi et al. (2015) and Han (2015) found that the ascription of responsibility positively influences pro-environmental personal norm (PPN) in the context of green accommodation. Moreover, Han et al. (2017) and Gupta and Sharma (2019) validated this finding, who found that AR positively influences the PPN in the context of tourism. The following hypothesis was developed:

> **_Hypothesis H9:_** _Ascription of responsibility positively affects the pro-environmental personal norm._

The final construct of the causal chain measures purchase intention in this research. Even though this research considers only intention instead of behavior, many researchers have proved that intentions are a prominent indication of behavior (Boldero, 1995; Oreg & Katz-Gerro, 2006). Many researchers have validated empirically that the pro-environmental personal norm positively influences the pro-environmental behavior or intention (Choi et al., 2015; Gupta & Sharma, 2019; Han, 2015; Kiatkawsin & Han, 2017; van Riper & Kyle, 2014). Based on this, the following hypothesis was formed:

> **_Hypothesis H10:_** _Pro-environmental personal norm positively affects purchase intention._

5.1. Research model A

The model of this study has been created based on the analysis of the VBN theory, the variables, and the hypothesis deriving from there. The following model (Figure 2) was developed by matching the VBN theory with the marketing stimuli and purchase intention. The causal chain of the original model has been kept in its original form.

Figure 2: _Research Model proposal A_
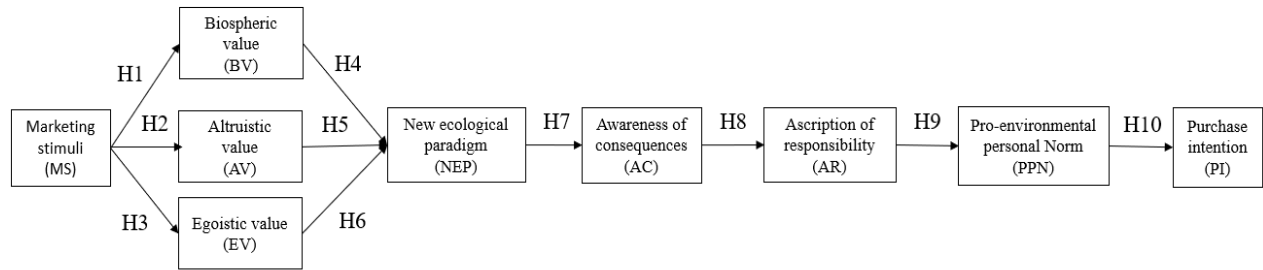
5.2. Research model B

Research model B is based on research model A. However, in this, the aim is also to measure the impact of the personality traits and how they work as a moderator between awareness of consequences and ascription of responsibility.

In several previous studies, it has been seen that some of the personal traits affect pro-environmental behavior. Agreeableness refers to being a good citizen, and the individuals who have this personality trait may act environmentally friendly because they believe that the behavior is socially acceptable (Markowitz et al., 2012; Pavalache-Ilie & Cazan, 2018). Moreover, the trait of conscientiousness is linked with a long-term orientation, which means that they look and plan for a better future, which is associated with greater environmental engagement (Milfont et al., 2012). Openness was consistently and strongly correlated with pro-environmental behavior (Hirsh, 2010; Kesenheimer & Greitemeyer, 2021; Milfont & Sibley, 2012;). Moreover, Wiseman and Bogner (2003) found that also neuroticism is positively affecting environmental behavior. However, for extraversion, the results are controversial. Hirsh (2010) and Hirsh and Dolderman (2007) found no links between extraversion and environmental behavior. However, Fraj and Martinez (2006) and Markowitz et al. (2012) discovered a link between high scores in extraversion and pro-environmental behavior. Based on this, the following moderators were formed and added to research model proposal B (Figure 3).

Expected moderators:
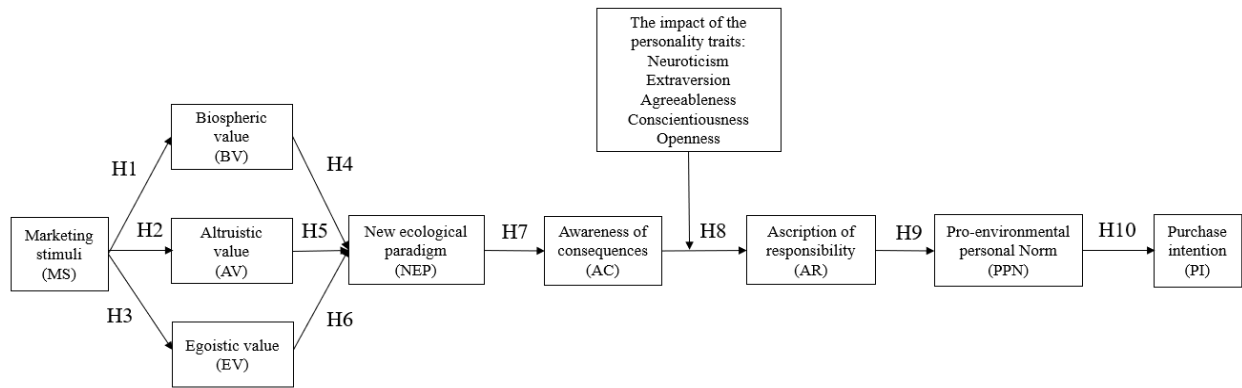*Neuroticism mediates the relationship of AC to AR.*
Extraversion mediates the relationship of AC to AR.
Agreeableness mediates the relationship of AC to AR.
Conscientiousness mediates the relationship of AC to AR.
Openness mediates the relationship of AC to AR.

Figure 3: *Research Model proposal B*

6. Methodology

The following sections will present the research design, application context, target sample characteristics, data collection procedures, sample size, and data analysis procedures.

6.1 Research design

The research will be conducted using the quantitative research method, and the questionnaire will be done online using the random sampling method. The research will have an analytic observational study design to establish the connections between the exposures and the outcome. The research design will be developed based on the assumption that the research is cross-sectional to "snap the picture" at a specific point in time. The survey will be designed and spread through the online platform Sphinx.

6.2 Application context

The research will be conducted in Germany and Finland. Germany was decided due to it being the European hub for many airlines. Moreover, many airlines operate in Germany, making it a good ground for getting responses about different airlines' practices.

According to the International Monetary Fund, Germany is one of the largest economies in the world, and in addition, it is also a top country in terms of travel and tourism demand with over 100 million trips of four-night minimum stays (Marcussen, 2011). In addition, Germans have ranked as the number one spender globally in international tourism expenditure during 2003-2011 (Marcussen, 2011). The trend was still ongoing until the covid-19 pandemic, which halted the entire industry. Because Germans themselves are top travelers, it is appropriate to survey Germans' opinions on sustainable airline marketing.

Finland was chosen for this research for its convenience to the researcher. Finland is a relatively small country with over 5.5 million inhabitants (Statistics Finland, 2021). The tourism expenditure in Finland was 16.9 billion euros in 2019 (Finnish Government, 2021), and air travel directly supports 25 000 jobs and indirectly 16 000 jobs. The forecast for the passenger traffic in Finland predicts that from 2017 to 2037, there will be an additional 2.5 million passenger journeys (IATA, 2017).

6.3 Sample description

The selection of the respondents is based on random sampling. The study sample will consist of German and Finnish consumers that are over 18 years old. More specifically, participants must have traveled for leisure purposes at least once in the past three years by air. In addition, the income level will be asked in the survey to understand the effect on the research matter. Participants' gender will also be of interest as there may be differences in results between men and women, as was in the research by Rice et al. (2020).

6.4 Data collection procedures and the sample size

The data will be collected via an online questionnaire that will be distributed using social media platforms and email distribution in Finland and Germany. The people will be contacted by direct messages and by social media posts. To maximize the number of participants in the survey, the people who have answered the survey are asked to send it forward to the people they think will be relevant. It is called the snowball sampling method, where the individuals suggest others participate in the survey (Salvia et al., 2019).

Slovin's Formula has been used in order to calculate the study sample in both countries. There n is the sample size, N is the total population in a country in this research, and e is the margin of error.

$$n = N / (1 + N*e^2)$$

Slovin's Formula will be calculated for both of the countries to get the representative study sample size. In Finland, the population is 5 543 659 at the end of July 2021 (Statistics Finland, 2021). In this research, the sample will consist only of people over 18 years, so the population under 18 need to be eliminated from the sample. In Finland, 19% of the population is under 18 years old (Statistics Finland, 2020). The confidence level in this research is at 95% to get good accuracy, so the margin of error is 5%. The challenge is that the number of people who have traveled for leisure within the last three years is unknown.

N=5 543 659*(1-0,19) = 4490363.79

e = 0,05

4490363.79/(1+4490363.79*0,05²) =399,96=400

The ideal sample size from Finland when using Slovin's Formula would be 400. To be sure, it is essential to use other methods to calculate the sample size. The online calculator Raosoft gives the ideal sample size of 385.

In Germany, the population was 84 103 285 in September 2021 (Worldometer, 2021). In 2019 there were 13 680 000 people under 18 years (Statista, 2019). The confidence level will be kept the same, at 95%, so the margin of error is 5%.

N=84 103 285-13 680 000= 70 423 285

e = 0,05

70 423 285/(1+70 423 285*0,05²)=399,97=400

The ideal sample of Germany would be 400. Raosoft calculates the ideal sample to be 385 like for Finland. However, the challenge for both countries is to know how many people have flown during the past three years, which also affects the sample. There is data about the total times Finnish people have flown for leisure purposes in different years, but there is no certainty how many times one person has flown to make statistical assumptions.

6.5 Data analysis procedures

To gather data in this research, a Likert-type scale will be used, having 1 = "strongly disagree" to 7 = "strongly agree". In this research, a Structural Equation Modelling (SEM) will be used to analyze the collected data. Indeed, the SEM method is one of the most fitting to study the relationships arising among the variables presented in the research model and verify its hypotheses.

7. Expected Contributions

Air transportation is a significant industry, with 4,5 million passengers in 2019 (IATA, 2021a). Indeed, before the Covid-19 pandemic, the aviation industry was under rapid growth (Rice et al., 2020). Due to the Covid-19 pandemic, the passenger numbers have been at low levels; however, the vaccination is easing the traveling again now in 2021, and according to IATA (2020), the passenger numbers are forecasted to return to pre-pandemic levels in 2024. Now, when traveling is picking up again, it is important to research sustainable air travel.

In addition, global aviation produces 2.5% of all carbon dioxide emissions and 1.9% of greenhouse gas emissions (Ritchie, 2020). The impact on the environment is significant, and if air travel continues to grow, there will be more emissions in the future. Moreover, consumers have become more aware of the environmental impact of the aviation industry. Therefore, the communication from the airlines towards the consumers is important regarding the environmental actions. Due to this, it is essential to understand how the different marketing stimuli affect the consumers so that they can make more sustainable choices when buying flights.

With the numbers growing in air passengers and the emissions, it is crucial to get an understanding for the airlines that they can do better green marketing and understand how it affects their passengers. This study will provide new insight into the sustainable marketing of airlines and its impact on consumer values (egoistic, altruistic, and biospheric) and purchase intention, which currently remains understudied in the domain of sustainable marketing.

7.1 Scholarly Contributions

The VBN theory has been getting widespread attention in research. A considerable amount of research has validated the applications of the theory, such as by a cross-national study of pro-environmental behavior (Oreg & Katz-Gerro, 2006), by exploring conservation behavior (Kaiser et al. 2005) as well as by tourists' consumption in the green accommodation context (Han, 2015). This research adds another context to applying the VBN model of sustainable air travel and how the marketing stimuli affect consumers' values, beliefs, and behavior.

This study adds knowledge to the current literature on sustainable aviation. The central part of the research has focused so far on willingness-to-pay for carbon offsetting programs as well as the consumer's perception of those (Hagmann et al., 2015; Mayer et al. 2012; Ragbir et al., 2021; Rice et al., 2020; Segerstedt et al., 2016; Winter et al., 2019; Zhang et al., 2021). The other topics investigated are marketing and communication of sustainable aviation (Babakhani et al., 2017; el Moussaui, 2021; Kim et al., 2016; Lehtonen, 2021; Lu et al., 2018; Ritchie et al., 2021). However, none of these studies combine the effect of marketing stimuli on the consumers' values, beliefs, and purchase intention.

7.2 Implications for Business and Society

This research helps airline industry practitioners understand the effects of sustainable marketing on their customers and develop improved green marketing strategies. The research will reveal new information on how marketing stimuli may affect the consumers' sustainable purchase intention.

Since expression of values is involved in both lifestyles and behavior, one would first need to address the values to change an individual's lifestyle. (Oreg & Katz-Gerro, 2006). Moreover, the efforts to increase pro-environmental behavior often do not succeed due to the role of values, and the opportunity to show the link between behavior and value fulfillment is overlooked (Smallbone, 2005). Thus, this study focuses on the links between the values and behaviors and can help society understand how the marketing of sustainable air travel can change lifestyles through the values towards more environmentally friendly behavior.

The government should set policies that encourage airlines to put more resources in meeting international standards of aircraft emissions and work together with airlines to educate passengers about the emissions of aviation and the benefits of carbon offsetting (Lu & Wang, 2018). Thus, this study increases knowledge on how passengers perceive sustainability in the air travel context through marketing stimuli and how it affects their purchase intention, allowing society to grow greener.

8. Chapters Overview

The final thesis will have the following structure:

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References

Appendix

9. Work Plan

The work plan to complete the thesis is presented in the following Table 2.

Table 2: *Plan of work*

Plan of work - EMBS Master Thesis																			
ACTIVITIES	September			October					November				December				January			
	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3
Exposé research and writing	█	█	█	█																
Exposé submission				█																
Questionnaire design				█	█	█	█													
Questionnaire testing and improvements							█	█	█											
Data collection								█	█	█	█									
Data analysis										█	█	█								
Writing the results												█	█	█						
Writing the conclusion													█	█	█					
Preparing for the thesis presentation																█	█	█	█	
Thesis presentation and defense submission																				█

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