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Exploring User Satisfaction and Preferences in Public Transport Services

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Master in Management

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BUSINESS
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Department of Marketing, Operation and General Management

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*Dedico esta conquista pessoal à minha querida avó,
Maria Celeste Orvalho Costa Pinto.*

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I aspire that my work will contribute significantly to understanding public transportation services and their impact on user satisfaction.

Resumo

O estudo, intitulado “Explorando a Satisfação e Preferências dos Utilizadores nos serviços dos Transportes Públicos”, investiga as percepções individuais sobre potenciais alterações nos transportes públicos. Através de metodologias quantitativas e de um processo de segmentação que utiliza dados recolhidos de seis países da União Europeia (UE), esta pesquisa explora três questões fundamentais. Ao empregar variáveis demográficas como idade, género, rendimento, frequência de utilização do transporte público, características e preferências, o processo de segmentação revela percepções de grupos diversos sobre possíveis mudanças no transporte público e os respetivos níveis de satisfação. As implicações destas descobertas estendem-se a decisores políticos, autoridades de transporte e prestadores de serviços, oferecendo percepções acionáveis com o intuito de aperfeiçoar os sistemas de transporte público e melhorar as experiências dos utilizadores em toda a UE, impulsionando assim avanços nos serviços de transporte com base em perspetivas demográficas variadas.

Palavras-chave: Transportes Públicos; Segmentação e Melhoria dos Transportes.

JEL: E58: Urban economics D63: Microeconomics: Consumer behavior D91: Microeconomics: Time allocation I25: Public economics: Urban economics R15: Transportation

Abstract

This study, titled “Exploring User Satisfaction and Preferences in Public Transport Services”, delves into individuals' perceptions of potential alterations in public transportation. Through quantitative methodologies and a segmentation process utilizing data gathered from six European Union (EU) countries, this research explores three pivotal inquiries. Employing demographic variables such as age, gender, income, public transportation usage frequency characteristics, and preferences, the segmentation process unveils insights into diverse groups' perceptions of potential changes in public transportation and their corresponding satisfaction levels. The implications of these findings extend to policymakers, transportation authorities, and service providers. They offer actionable insights aimed at refining public transportation systems and enhancing user experiences across the EU, thus fostering advancements in transportation services based on varied demographic perspectives.

Keywords: Public Transportation; Segmentation and Transportation Enhancement.

JEL: E58: Urban economics D63: Microeconomics: Consumer behavior D91: Microeconomics: Time allocation I25: Public economics: Urban economics R15: Transportation

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LIST OF ABBREVIATIONS

EU - European Union

TRB - Transit Capacity and Quality of Service Manual

TRB Handbook - Customer Satisfaction and Service Quality

CEN - European Committee for Standardization

DRT - Demand-Responsive Transport

MaaS - Mobility-as-a-Service

OECD - Organisation for Economic Co-operation and Development

ITF – International Transport Forum

PT - Public Transportation

CHAPTER 1

Introduction

Public transportation plays a crucial role in modern society, providing a vital means of transportation for individuals across the globe. Growing urban populations emphasize the need for improved accessibility in transit (Samek Lodovici and Torchio, 2015; Saghapour et al., 2016). From a sustainability perspective, Bryson, Ackermann and Eden (2007) defend that it's imperative to recognize public transport as a fundamental element of a sustainable local government strategy for comprehensive community development. Local public organizations aim to achieve success by effectively serving public purposes such as welfare. To attain a high level of success, these organizations must engage with various stakeholders and fulfill their diverse satisfaction criteria (Bryson, Ackermann, & Eden, 2007).

Previous research indicates that the provision of high-quality public transport services contributes to enhanced overall travel satisfaction (Olsson et al., 2020). Moreover, studies have shown that satisfaction with daily travel experiences is closely linked to individuals' overall quality of life (Ettema et al., 2010). Recognizing the importance of meeting the evolving needs and expectations of public transportation users, this dissertation aims to investigate the significance individuals attribute to potential changes in public transportation and its relationship with user satisfaction.

The overarching goal of this research is to address three key research questions. First, we seek to understand the perceived importance individuals attribute to potential changes in public transportation. This involves exploring various aspects such as reliability, accessibility, affordability, comfort, and sustainability, among others. By examining the level of importance placed on these potential changes, we can gain insights into the factors that individuals prioritize when it comes to their transportation needs.

The second research question examines how the perceived importance of potential changes in public transportation influences user satisfaction with the services provided. Understanding the impact of these changes on user satisfaction is vital for transportation authorities and policymakers, as it provides valuable information for decision-making and resource allocation to improve the overall user experience.

Additionally, this research seeks to identify variations in the importance attributed to potential changes in public transportation across the six European Union (EU) countries surveyed. By considering a diverse range of countries, encompassing various geographic,

cultural, and transportation infrastructure characteristics, we can uncover nuanced differences in the significance individuals assign to these potential changes.

To achieve these research objectives, a quantitative research approach will be employed, utilizing a survey-based methodology. The survey collected the data from representative samples in each of the six EU countries under investigation. By analysing the collected data, statistical techniques will be applied to draw meaningful conclusions and provide actionable insights.

CHAPTER 2

Literature Review

2.1. Introduction to Public Transportation and User Satisfaction

Herawati (2019) defines the concept of service as the concerted efforts made by companies to effectively address consumer needs and ensure their satisfaction. Similarly, Karma (2020) provides a comprehensive definition of service, highlighting the actions taken to meet the specific requirements of individuals, such as consumers, customers, clients, and guests. This focus on meeting their needs results in a mutually beneficial experience, as both the service provider and the recipient experience satisfaction.

Recent research by Surti and Anggraeni (2020) underscores the significant influence of service provision on customer satisfaction, highlighting the importance of exceptional service delivery in enhancing satisfaction levels. Thus, businesses in the service sector must prioritize not only product quality but also the provision of excellent service to meet customer expectations effectively (Surti & Anggraeni, 2020).

Furthermore, recent studies by Nguyen et al. (2020) and Daskalaki et al. (2020) underscore the abstract nature of satisfaction, which can only be attained through various elements such as hospitality, establishing a favorable impression with customers. Consequently, the provision of exceptional services can be perceived as a form of psychological communication (Hong et al., 2020; Mathodah, 2019). By effectively engaging with customers on an emotional level and creating positive experiences, businesses can enhance customer satisfaction. The aforementioned studies highlight that satisfaction is derived from fulfilling consumer needs, desires, and expectations.

In essence, delivering excellent service is imperative to satisfy consumers' wants and expectations, encompassing aspects such as friendliness, establishing a comfortable atmosphere, and providing comprehensive facilities (Suhaya, 2020). In practical terms, consumers greatly appreciate good service, as it signifies special treatment and acknowledgment of their expectations. The level of service directly influences consumers' perceptions of a company, resulting in satisfaction and cultivating loyalty (Le, Nguyen, & Truong, 2020). By consistently delivering excellent service, businesses can effectively shape consumers' perceptions, foster satisfaction, and cultivate a loyal customer base (Le, Nguyen, & Truong, 2020).

According to Tyrinopoulos and Antoniou (2008), assessing and enhancing the quality of service in public transit is a critical priority for public transport operators, particularly in response to the escalating rate of car ownership and deteriorating traffic conditions that impact urban mobility sustainability (Tyrinopoulos & Antoniou, 2008). The perception of transit performance by passengers is instrumental in determining the quality of service in public transit. To evaluate the effectiveness of services, various approaches and techniques, such as customer satisfaction and loyalty, are utilized.

Customer satisfaction in public transit refers to the degree to which a customer's expectations are met, expressed as the percentage of fulfilled expectations (Tyrinopoulos & Antoniou, 2008). Conversely, customer loyalty entails a commitment from the customer to maintain an ongoing relationship with the transit service, often driven by satisfaction (Tyrinopoulos & Antoniou, 2008).

Benchmarking is a valuable method used to compare service provision across different time frames, routes, and operators (Tyrinopoulos & Antoniou, 2008). This enables public transport agencies to evaluate their performance relative to industry standards and identify areas for improvement (Tyrinopoulos & Antoniou, 2008).

Several manuals and guidelines have been developed to measure and enhance public transit quality. These include the Transit Capacity and Quality of Service Manual (TRB, 2004), the TRB Handbook for Measuring Customer Satisfaction and Service Quality (TRB, 1999), and the EC-CEN Transportation—Logistics and Services—Public Passenger Transport—Service Quality Definition, Targeting, and Measurement (CEN, 2002) (Tyrinopoulos & Antoniou, 2008). The overall process of improving service effectiveness encompasses identifying customers' priorities and needs, measuring satisfaction using appropriate indices, utilizing feedback to evaluate service parameters, and implementing measures to enhance the services provided (Tyrinopoulos & Antoniou, 2008).

2.2. User Satisfaction in Public Transportation

In order to effectively enhance travel satisfaction in public transport, it is crucial to gain a deeper understanding of the external factors that are both necessary and sufficient for creating a high level of satisfaction among users of public transport services. To assess travel satisfaction, the prevailing theory is the utility-maximization theory (McFadden, 2001).

According to McFadden (2001), this theory posits that individuals maximize their utility or satisfaction by making rational choices that consider various factors such as convenience,

comfort, affordability, reliability, and accessibility when utilizing public transportation. By understanding the underlying principles of this theory, transportation planners and policymakers can identify and prioritize the key factors that contribute to a positive travel experience (McFadden, 2001).

Previous research has recognized the dynamic nature of the user experience, acknowledging that factors such as repeated experiences, past experiences, and interactions between experiences play a significant role in capturing the viewpoint of users and gaining a comprehensive understanding of their overall experiences (Verhoef et al., 2009). These aspects are vital in providing greater insight into the holistic experiences of individuals utilizing public transport services.

According to Woodside (2013), the complexity of real-life relationships implies that additional factors, interactions, and contextual nuances may affect experienced utility and overall travel satisfaction. On the same matter, Woodside (2013) argues that, by employing a range of methods and approaches, researchers can capture the richness and complexity of individuals' experiences and perceptions related to travel. This holistic understanding can inform decision-making processes, enable more nuanced policy interventions, and facilitate the design of public transport services that better align with the needs and preferences of users.

To capture experienced utility effectively, various types of self-assessment measures are commonly utilized (Woodside, 2013). Individuals tend to rate their satisfaction or dissatisfaction with travel in general and with specific quality-related attributes, such as availability of seats, air conditioning, cleanliness or self-surveys yield valuable information that can be explored in different ways, depending on the specific questions asked (Woodside, 2013).

Some travelers may report high levels of travel satisfaction, which can be attributed to various service attributes, such as reliable and user-friendly payment options (Miranda et al., 2018). The author also states that for other travelers, satisfaction may stem from a combination of real-time information availability and punctuality in departure and arrival times [Question 25-26: Frequency and reasons for stops during travel]. In this hypothetical scenario, it is conceivable to conclude that a satisfactory level of comfort is not necessarily a prerequisite for high overall travel satisfaction, even though it may hold true for certain travellers (Miranda et al., 2018).

Given the extensive research efforts dedicated to identifying the determinants of travel satisfaction and the likelihood of interactions among these determinants, it is surprising that only a limited number of studies in the public transport domain have explored the configurations of service characteristics associated with high overall satisfaction (Miranda et

al., 2018). Expanding research to investigate such combinations can provide valuable insights into the complex dynamics of travel satisfaction and contribute to a more comprehensive understanding of the factors that drive overall satisfaction in public transport settings (Miranda et al., 2018).

Several studies have been conducted to identify the attributes of public transport services that contribute to user satisfaction (Friman & Felleesson, 2009; Hensher et al., 2010; De Oña & De Oña, 2015; De Oña et al., 2013; Susilo & Cats, 2014; Van Lierop et al., 2018; Susilo et al., 2015). According to Redman et al. (2013), two types of quality attributes can be distinguished in public transport: perceived attributes and physical attributes.

Perceived attributes directly relate to users' experiences of specific conditions. For example, the implementation of new information boards or improved air-conditioning in vehicles can be assessed through self-assessments (Redman et al., 2013). On the other hand, physical attributes are measured without direct user involvement. For instance, changes in pricing can be evaluated by examining the number of boarding travelers before and after the change, providing an indication of how users perceive the price of the service.

Redman et al. (2013) emphasize the importance of considering the effects of both perceived and physical attributes on user satisfaction as a means to enhance public transport services. By understanding and addressing both types of attributes, improvements can be made to better meet the needs and expectations of public transport users (Redman et al., 2013).

Previous research has indicated that the rising demand for travel and the preference for private vehicle usage have led to a significant increase in motorization in developing countries, contributing to extensive traffic congestion (Ellaway et al., 2003; Hafezi & Ismail, 2011a). According to Borhan et al. (2011), a well-developed public transportation network should prioritize easy access and affordable costs for its users. Transit companies often face challenges related to operating and fixed costs, which need to be effectively managed.

Increasing accessibility extends beyond enhancing transportation capacity and encompasses multiple dimensions, as emphasized by Farrington and Farrington (2005) [Question 3: How many people, including yourself, live in your household?]. It is crucial to acknowledge that accessibility entails more than the mere ability to travel. It includes aspects such as physical accessibility, which pertains to the availability and proximity of transportation options and infrastructure. Affordability is another vital dimension, ensuring that transportation services are economically feasible and accessible to all individuals. Temporal accessibility considers the availability of transportation services at different times to accommodate diverse travel needs (Velaga et al., 2012; Papangelis et al., 2013). Additionally, social and psychological dimensions

of accessibility should be considered. This involves creating an inclusive transportation system that addresses the needs of diverse populations, including older adults, individuals with disabilities, children and other vulnerable groups (Geurs & Ritsema van Eck, 2001) [Question 2: What is your gender?]; [Question 4: Do you have children living in your household?]; [Question 5: In your family unit, do you live with any dependent person?]; [Question 8: Which, if any, of the following disabilities do you have?]; [Question 24: Do you usually travel with a dependent person in this trip? (children, elderly, caring for disabled people)?]; [Question 44: Sexual orientation]. Psychological accessibility relates to the comfort and safety of the transportation experience, encompassing factors such as personal security and ease of use [Question 45: Feelings and experiences in public transport]. By acknowledging and considering these diverse dimensions of accessibility, transportation planners and policymakers can develop comprehensive strategies that cater to the varied needs of communities (Geurs & Ritsema van Eck, 2001). This comprehensive approach ensures that transportation services are accessible to individuals across different circumstances and locations (Farrington & Farrington, 2005).

Accessibility is a multifaceted concept influenced by various factors, including land use patterns, spatial distribution of workplaces and housing, transport systems, an individual's ability to traverse distances, availability of opportunities at different times, and individual needs, opportunities, and abilities (Geurs & Ritsema van Eck, 2001). The author defends that these factors collectively shape the level of accessibility experienced by individuals in their day-to-day lives [Question 18: To which of the following transport modes do you have access, even if you never use them?]; [Question 19: Think about the trips you make in a typical week for you(e.g. commuting to work, related to your training or education, escorting and caregiving, going on errands). Which travel modes do you use?]. The spatial arrangement of land use, such as the proximity of residential areas to workplaces, educational institutions, and essential services, plays a crucial role in determining the ease of accessing these destinations (Smith et al., 2012) [Question 12: Mode of transport used for job/university commute?]. The efficiency and coverage of transport systems, including public transportation networks and road infrastructure, also significantly impact accessibility (Geurs & Ritsema van Eck, 2001).

Furthermore, an individual's capacity to bridge distances, which can be influenced by factors like age, income, physical mobility, and access to transportation options, further shapes their ability to access various opportunities (Geurs & Ritsema van Eck, 2001) [Question 1: What age bracket are you in?]; [Question 41-42: Education level and average monthly income].

Additionally, according to Geurs and Ritsema van Eck (2001), the availability of opportunities and services at different times of the day is an important consideration, as it

affects individuals' ability to engage in activities and access necessary resources [Question 13-17: Mode of transport for various activities (visiting friends, running errands, going out, shopping)]. Recognizing and understanding these interconnected factors allows for the development of comprehensive strategies to improve accessibility and ensure that individuals can effectively access the opportunities and services they require in their daily lives (Smith et al., 2012).

In the context of accessibility, the authors Smith et al. (2012) defend that it's important to recognize that what may be considered accessible for one individual might not hold true for another, even if they reside in close proximity. Therefore, initiatives aimed at enhancing mobility and accessibility for diverse groups need to take into account the geographical and social context in which individuals live (Gray et al., 2006) [Question 10: In which country do you currently live?]; [Question 11: What is your professional status?]; [Question 43: Country of birth, parents' birth, citizenship]; [Question 46: In which country do you currently live?]; [Question 46: Which ethnic group do you belong to?]. By considering these contextual factors, interventions and policies can be better tailored to address the unique challenges and constraints faced by different populations (Smith et al., 2012).

Additionally, providing passengers with a high level of facilities, convenience, and quality of service is crucial. Understanding passenger behavior and preferences towards the use of public transportation is also essential for improving the overall transportation experience (Borhan et al., 2011). By addressing these factors, public transportation can become more attractive and meet the needs of a wider range of passengers.

In the context of public transportation, two key aspects that contribute to its attractiveness and marketability are customer satisfaction and punctuality. Satisfaction, as defined by Oliver (1997), refers to the level of fulfillment experienced by customers and their judgment of the product or service features. It encompasses the pleasurable level of consumption-related fulfillment and can involve perceptions of under- or over-fulfillment.

Various studies have focused on investigating satisfaction and punctuality in public transport to enhance its appeal. For instance, Stradling et al. (2007) conducted a survey in Edinburgh, Scotland, with the aim of understanding and improving the satisfaction levels of public transport users. During their survey, Stradling et al. (2007) explored various factors that influence passengers' attitudes towards public transport. They investigated aspects such as feelings of safety, security, preferences for walking and cycling, issues with service provision (e.g., lack of direct routes), discomfort, unwanted arousal, preference for car use, cost, disability, and low self-image [Question 32-34: Attitudes towards safety, security and

sustainability of public transport]. Their findings indicated that expanding the coverage of the public transport network can significantly encourage more people to use public transportation.

In another study, Gatersleben and Uzzell (2007) examined the affective experiences of daily commute and specifically focused on satisfaction parameters in public transportation. They discovered that both commuting by car and using public transport can be stressful due to traffic congestion and resulting delays. Furthermore, public transport was found to be stressful due to its unpredictability and longer travel times (Gatersleben & Uzzell, 2007). These findings highlight the importance of addressing these issues to improve the satisfaction levels of public transport users [Question 35-40: Satisfaction with mobility, service, safety, security, and infrastructure of public transport].

Van Vugt et al. (1996) conducted a questionnaire-based investigation to explore the motivational factors influencing individuals' decision to commute by car or public transportation. The study found strong evidence indicating that individuals prefer transportation options that offer shorter travel times and high frequency of public transport (Vugt et al., 1996) [Question 20-22: Origin, destinations, and duration of most frequent trip].

In their research on Portugal public transport users, Beirão and Cabral (2007) summarized the advantages of using public transport. The results emphasized the importance of a cost-effective and less stressful public transport service. Public transport was perceived as less stressful since it eliminates the need to drive, allowing passengers to relax, rest, or engage in activities such as reading (Beirão & Cabral, 2007).

Friman et al. (2001) conducted a mail survey to examine the factors influencing customer satisfaction in public transport services in Sweden. The study revealed that overall cumulative satisfaction was influenced by attribute-specific cumulative satisfaction and the frequency of negative critical incidents that passengers remembered, such as instances where the driver behaved unexpectedly or the bus departed before the scheduled time (Friman et al., 2001).

Safety concerns have been identified as a barrier for individuals choosing public transport as their preferred mode of travel. Smith and Clark (2000) and Ambak et al. (2009) found that safety issues such as pickpocketing, overcharging, overcrowding, and lack of supervision were among the important concerns of travelers (Smith & Clark, 2000; Hafezi & Ismail, 2011b) [Question 27-29: Experience and reporting of harassment or violence during travel]; [Question 30-31: Reporting of incidents and reasons for not reporting].

2.3. Importance of Potential Changes in Public Transportation

In contemporary society, the presence of transportation challenges presents significant obstacles to accessibility and social inclusion, particularly for individuals residing in rural and sparsely populated areas (McDonagh, 2006; Farrington & Farrington, 2005). Extensive research has been conducted to investigate the issues surrounding everyday mobility and accessibility among rural populations. Transportation's social exclusion and car dependence, commuting patterns, payment approaches about transportation forms the primary theme of this study. A number of studies have been conducted on these subjects that discuss the mobility and social integration challenges faced by rural communities (Shergold & Parkhurst, 2012; McDonagh, 2006; Gray et al., 2006; Gray et al., 2001; Sandow, 2008; Schwarzlose et al., 2014).

There has been a lot of research on alternative transport modes such as car-sharing, car-pooling, demand responsive transport and information technologies (Parker et al., 2011; Wang et al., 2015; Davison et al., 2012; Velaga et al., 2012; Papangelis et al., 2013).

In line with other Western societies, Sweden has actively pursued various initiatives to tackle the issue of rural transport (Lindgren & Berg, 2017; Organisation for Economic Co-operation and Development/International Transport Forum [OECD/ITF], 2015). Among the commonly employed solutions, demand-responsive transport (DRT) has emerged as a prominent option, particularly in Great Britain and Ireland (Lindgren & Berg, 2017; Wang et al., 2015; Davison et al., 2012; Velaga et al., 2012; Brake et al., 2004). DRT systems can be implemented with fixed or flexible timetables and routes, but typically require advanced booking to effectively cater to passengers' needs. By adopting DRT approaches, communities can better address the specific transportation requirements of rural areas and enhance accessibility for residents (Lindgren & Berg, 2017; OECD/ITF, 2015).

Nevertheless, studies showed that many of these efforts did not significantly increase public transit use. This can be due to factors such as economic constraints, inadequate marketing strategies and short promotional periods (Davison et al., 2012; De Jong et al., 2011; Trafikanalys, 2014; Börjesson, 2010). These limitations can hinder effective initiatives, which underscore the need for detailed planning, adequate funding and ongoing efforts to encourage greater use of public transport in rural areas (Davison et al., 2012; De Jong et al., 2011 Trafikanalys, 2014; Börjesen, 2010).

Furthermore, there is frequently a lack of comprehension regarding the needs and mobility prerequisites of citizens, leading to the development of new transportation solutions that are poorly tailored to potential users (Davison et al., 2012; De Jong et al., 2011 Trafikanalys, 2014; Börjesen, 2010). The OECD/ITF (2015) emphasizes the necessity of altering the perception of public transportation, promoting a transition from individual vehicle ownership to perceiving

the car as a service. However, the OECD/ITF (2015) defends that the expansion of mobility-as-a-service (MaaS) is primarily observed in urban areas, leaving small towns and rural regions without equivalent services, except for a few privately organized car-pooling initiatives. This discrepancy highlights the need for inclusive transportation strategies that address the specific requirements of non-urban areas and provide accessible and convenient mobility options for residents (OECD/ITF, 2015) [Question 9: Do you consider yourself to live in a?].

Public transportation planners have expressed expectations and put forth a range of solutions to encourage greater utilization of public transportation in rural areas (Davison et al., 2012; De Jong et al., 2011; Trafikanalys, 2014; Börjesson, 2010; OECD/ITF, 2015). These solutions encompass several key strategies. Firstly, the provision of real-time information is proposed to assist individuals residing along bus routes with significant variations in punctuality (Davison et al., 2012). By keeping passengers informed about the current status and arrival times of buses, this approach aims to enhance reliability and convenience.

Secondly, the introduction of "next-generation" payment systems is suggested to address the challenges associated with integrating public transportation and specialized transport services (De Jong et al., 2011; Trafikanalys, 2014). The authors also refer that, by developing innovative payment methods and ticketing systems that can be used across different modes of transportation, this solution aims to simplify the travel experience and improve accessibility for rural populations [Question 23: What method of payment do you use on your trip?].

Lastly, the potential utilization of automated and driverless vehicles is considered as a future possibility to offer distinct mobility services in rural areas (Börjesson, 2010; OECD/ITF, 2015). By leveraging advanced technologies, these vehicles could provide efficient and tailored transportation options that cater to the specific needs of rural communities.

Collectively, these proposed solutions demonstrate the efforts of public transportation planners to enhance rural mobility, provide better information and payment systems, and explore future innovations that could positively impact public transportation usage in rural areas (De Jong et al., 2011).

According to De Jong et al. (2011) it is true that, despite these expectations and proposed solutions, rural areas continue to face challenges in attracting public transportation and moving resources effectively. It is important to recognize that technological solutions alone cannot adequately address the complex issues of transportation and accessibility in rural areas (De Jong et al., 2011). While real-time information, next-generation payment systems, and automated/driverless cars hold potential benefits, they can't afford improved public transit infrastructure without rural areas being completely reduced (Davison et al., 2012).

Efforts to enhance public transportation availability in rural regions are crucial. It is essential to focus on developing comprehensive strategies that consider the specific needs and travel patterns of rural communities (Velaga et al., 2012). This may involve considering factors such as population density, geographical constraints, and community input to tailor transportation solutions accordingly. Collaborative efforts between transportation authorities, local governments, and community stakeholders are needed to address the systemic challenges and invest in the expansion and improvement of public transportation services in rural areas (Velaga et al., 2012).

Addressing systemic challenges requires concerted efforts by transport authorities, local governments and local stakeholders to invest in expanding and improving public transport services in rural areas (Velaga et al., 2012). In to a recent research review on the co-benefits of mass public transportation, Kwan & Hashima (2016) found that multiple studies have examined the environmental advantages associated with reduced emissions and air pollution - these benefits are a result of the modal shift from private cars to public transport and the utilization of alternative fuels for buses, which contribute climate change mitigation (Kwan & Hashima, 2016) [Question 6: How many people have a driving license in your household?]; [Question 7: How many cars are available at your household?]. Furthermore, the review highlighted the potential reduction in traffic injuries through the decreased number of vehicles on the road and the promotion of increased physical activity among individuals with improved access to public transportation who tend to engage in more walking (Kwan & Hashima, 2016).

Other studies have indicated that the proximity to public transportation can have significant effects on land use and land values. Cervero and Kang (2011), Kay, Noland, and DiPetrillo (2014), Duncan (2011), and Bocarejo, Portilla, and Pérez (2013) have found evidence of higher housing prices and increased density around bus stops and stations. Furthermore, Wang et al. (2012) propose sustainability as a guiding principle in public management, while Fiorino (2010) emphasizes its conceptual focus for public administration.

In terms of sustainability initiatives, the research conducted on American cities highlights the connection between local sustainability, environmental pressures, and the characteristics of local governance (Wang et al., 2012). This suggests that the effectiveness of sustainability efforts is influenced by the specific context of each city. Supporting this notion, Bryson, Ackermann, and Eden (2007) found that national initiatives for climate change policy implementation are often weaker in comparison to the activities taking place at the local level.

2.4. Questionnaire Design: Academic Correlation

The following table provides a comprehensive overview of the questionnaire (Appendix – 8.1) used in this study, encompassing various demographic, transportation, safety, and accessibility aspects, crucial for understanding public transportation dynamics and user satisfaction. Additionally, this table provides insights into the correlation between the statements made by authors in the literature review and the questions formulated in the questionnaire.

Question Number	Content of Creation	References
1	Age bracket	(Geurs & Ritsema van Eck, 2001).
2	Gender	(Geurs & Ritsema van Eck, 2001).
3	Number of people in household	Farrington and Farrington (2005).
4	Number of children in household	(Geurs & Ritsema van Eck, 2001).
5	Dependent persons living in household	(Geurs & Ritsema van Eck, 2001).
6	Number of people with driving licenses in household	(Kwan & Hashima, 2016).
7	Number of cars available in household	(Kwan & Hashima, 2016).
8	Disabilities	(Geurs & Ritsema van Eck, 2001).
9	Type of environment lived in (rural, urban, suburban)	(OECD/ITF, 2015).
10	Country of residence	(Gray et al., 2006).
11	Professional status	(Gray et al., 2006).
12	Mode of transport used for job/university commute	(Smith et al., 2012).
13-17	Mode of transport for various activities (visiting friends, running errands, going out, shopping)	Geurs & Ritsema van Eck (2001).
18	Access to various transport modes	(Geurs & Ritsema van Eck, 2001).
19	Travel modes used in a typical week	(Geurs & Ritsema van Eck, 2001).
20-22	Origin, destinations, and duration of most frequent trip	Van Vugt et al. (1996).
23	Method of payment	(De Jong et al., 2011; Trafikanalys, 2014).
24	Traveling with dependent persons	(Geurs & Ritsema van Eck, 2001).
25-26	Frequency and reasons for stops during travel	Woodside (2013).
27-29	Experience and reporting of harassment or violence during travel	(Smith & Clark, 2000; Hafezi & Ismail, 2011b).
30-31	Reporting of incidents and reasons for not reporting	(Smith & Clark, 2000; Hafezi & Ismail, 2011b).
32-34	Attitudes towards safety, security and sustainability of public transport	Stradling et al. (2007).
35-40	Satisfaction with mobility, service, safety, security, and infrastructure of public transport	(Gatersleben & Uzzell, 2007).
41-42	Education level and average monthly income	(Geurs & Ritsema van Eck, 2001).
43	Country of birth, parents' birth, citizenship	(Gray et al., 2006).
44	Sexual orientation	(Geurs & Ritsema van Eck, 2001).
45	Feelings and experiences in public transport	(Geurs & Ritsema van Eck, 2001).
46	Ethnicity	(Gray et al., 2006).

Table 1 - Correlation between literature and questionnaire

CHAPTER 3

Methodology

3.1. Study

For methodological decisions, Saunders, Lewis, and Thornhill (2016) point out the need to define research objectives and methods. Therefore, as the study aims to evaluate perception and extract relevant insights, we can classify it as exploratory.

The methodology employed in this research involves a quantitative approach to analyze the *importance attributed to potential changes in public transportation and its association with user satisfaction*. The study aims to gather empirical evidence and generate statistical insights that contribute to the understanding of this relationship. Regarding the research method, it is deductive research.

3.2. Sample

The sample for this research consists of 1403 individuals residing in six European Union (EU) countries - Portugal, Spain, France, Italy, Sweden and Greece. The sampling technique used is non-probabilistic, specifically convenience sampling. Convenience sampling does not involve a selection based on probabilistic procedures but rather focuses on obtaining results conveniently (Saunders et al., 2009).

The countries were selected to ensure geographic and cultural diversity, as well as varying transportation infrastructure. A purposive sampling technique was used to target individuals who regularly utilize public transportation services within these countries.

Respondents were sourced exclusively through online methods. The study was promoted via social media, online forums, and targeted advertisements.

Participants were invited to complete an online questionnaire, which included questions about their usage and perception of public transportation services in their respective countries.

3.3. Method

The research methodology entails a survey-based approach. A structured questionnaire was developed to collect data on the perceived importance individuals attribute to potential changes in public transportation and their satisfaction levels with the existing services. The questionnaire incorporates validated scales and measures to ensure the reliability and validity

of the collected data. As a result, an array of variables, categorized into distinct domains for systematic analysis and interpretation.

Demographics: Age, gender, household size, presence of children, possession of a driving license, and number of cars owned were captured through categorical responses. Additionally, country of residence and professional status were measured on a nominal scale.

Accessibility and Transport Mode: Questions regarding transportation modes (walking, cycling, private car, and public transport) were framed as nominal variables measured through categorical responses. Access to different modes of transport was also assessed nominally.

Trip Details: Detailed commuting information, including origin and destination of the most frequent trip, trip duration, payment method, presence of dependents during travel, and regular stops, was collected. Incident locations during travel or at stops were captured as nominal variables.

Safety, Infrastructure and Sustainability Concerns: Participants' perceptions of safety, security, infrastructure and environmental sustainability aspects related to public transport were measured on a Likert scale ranging from 0 to 5.

Service Satisfaction: Public transport service satisfaction levels were assessed using a Likert scale, evaluating aspects such as pricing, reliability, frequency, information availability, connections, and overall service quality.

Education and Income: Variables capturing participants' educational attainment, monthly income, ethnicity, and citizenship status provided socio-economic contextualization for transportation utilization patterns and attitudes were captured as nominal variables.

Public Transport Experience: Subjective comfort and interaction perceptions during travel were likely measured on a scale of agreement or frequency.

3.4. Data Collection

Data collection for this study was conducted using an online survey platform. The survey was distributed to the users of public transportation in the selected EU countries - Portugal, Spain, France, Italy, Sweden and Greece. Participants were invited to voluntarily complete the questionnaire, providing their responses to the specified items. The data collection process followed ethical considerations, ensuring the privacy and anonymity of the participants over a period of a couple of months.

3.5. Overview of the Dataset

The dissertation provides an in-depth overview of the dataset and analysis techniques employed to explore correlations between public transportation changes and user satisfaction, alongside understanding respondents' demographics, travel preferences, and environmental consciousness. The questionnaire includes items that align with the validation provided by Woodside (2013), who suggests that individuals tend to rate their satisfaction or dissatisfaction with travel in general and with specific quality-related attributes, such as availability of seats, air conditioning, cleanliness, etc. As of which, the questionnaire has the following structure:

- *Demographic Information*: Age bracket; Gender; Household composition; Presence of children and dependents; Driving license ownership; Number of cars in the household; Disabilities; Residential environment; Country of residence; Professional status; and Job/university affiliation.
- *Travel Behavior*: Purpose of trips; Access to various transportation modes; Modes used for typical weekly trips; Origin and destination of frequent trips; Trip duration and payment methods; Traveling with dependents and stopping behavior; and Experience of harassment or violence during travel.
- *Perceptions and Satisfaction*: Safety and security perceptions; Mobility and accessibility considerations; Sustainability attitudes; Mobility restrictions and satisfaction with infrastructure; Service indicators and reliability; Safety and security indicators; Infrastructure indicators; and Walkability perceptions.
- *Socioeconomic and Cultural Factors*: Education level; Monthly income; Citizenship and ethnic background; and Sexual orientation
- *Feelings in Public Transport*: Perception of others' behavior; and Comfort level in public transportation

3.6. Statistical Analysis

For the completion of this dissertation, it is worth noting that a statistical analysis was conducted to select and subsequently analyze the recommended clustering technique, considering the appropriate number of clusters.

In addition to the survey-based approach, the methodological framework for the statistical analysis included Principal Component Analysis (PCA). PCA was conducted on a specific subset of variables related to safety and security (3.1) and mobility in public transport (3.2).

This analysis aimed to unveil latent structures in public transportation preferences and priorities, focusing on variables such as:

- *Safety and security* (3.1): Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night (3.1_1); Availability of a smartphone application for more personalized contact with public transportation users and providers/police to alert to potential danger situations (3.1_3); Availability and clearer advertisement of contact numbers in stations to contact public transportation providers and/or the police (3.1_4); and Conductor selling tickets on-board at night (3.1_5).
- *Mobility – Public transport* (3.2): Increase of dedicated space for children in public transport (3.2_1); Increase of dedicated space for people traveling with trolleys/wheelchairs in public transport (3.2_2); Transport service that adjusts routes according to passenger needs (3.2_3); Availability of schedule information and integration with multiple modes of transport in a smartphone application (3.2_4); Availability of schedule information and integration with multiple modes of transport in bus stops and stations (3.2_5); Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process (3.2_6); Provision of panic/alarm buttons at bus stops/stations (3.2_7); Provision of panic/alarm buttons inside vehicles (3.2_8); Provision of a reliable camera surveillance system at bus stops/stations (3.2_9); Provision of a reliable camera surveillance system inside vehicles (3.2_10); Provision of emergency telephones at bus stops/stations (3.2_11); and Special fares for people who have multiple tasks per day (3.2_12).

The inclusion of these variables allowed for a deeper understanding of the underlying factors influencing individuals' perceptions and preferences regarding public transportation.

Hierarchical Clustering (Dendrogram): Hierarchical Clustering provided insights into natural groupings and segmentation of public transportation users based on the aforementioned variables. This analysis further elucidated patterns and relationships within the dataset, facilitating the identification of distinct clusters representing different user preferences and priorities.

Complete Linkage Clustering: This method was utilized to measure the distance between clusters and group individuals based on similarities in their responses to the structured questionnaire. The selection of this clustering technique was based on rigorous analysis criteria, including interpretability, stability, validity, frequency balance between clusters, diversity, and complementarity of results among clusters.

The analysis criteria for selecting the clustering technique involved considerations of interpretability, stability, validity, frequency balance between clusters, diversity, and complementarity of results among clusters. After a rigorous analysis, the Complete Linkage 4 Clusters solution was chosen, facilitating a nuanced understanding of diverse user groups and informing policy interventions tailored to specific demographic preferences.

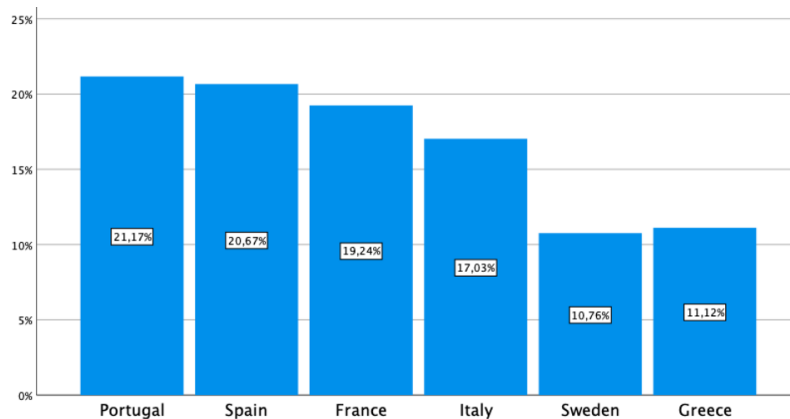
In summary, the methodological approach integrated survey-based data collection, validated measures, and advanced statistical techniques, such as PCA, Hierarchical Clustering, and Complete Linkage Clustering, to comprehensively explore public transportation dynamics and user satisfaction levels across EU countries.

CHAPTER 4

Data Analysis

4.1. Sample Profiling

Before the Principal Component Analysis, it is essential to characterize the sample distribution by countries and sociodemographic factors both overall and by country. Additionally, a descriptive analysis of the variables to be reduced through PCA should be conducted.



Graphic 1 - Sample Frequency

In *Sample Frequency* (Graphic 1), Portugal has the highest frequency of participants, with 297 individuals, representing approximately 21.2% of the total sample. Spain closely follows with 290 participants, accounting for 20.7% of the sample. France and Italy have similar frequencies, with 270 and 239 participants, respectively, making up around 19.2% and 17.0% of the total sample. Sweden and Greece have lower frequencies, with 151 and 156 participants, respectively, comprising approximately 10.8% and 11.1% of the sample.

Overall, the chart provides a visual representation of the distribution of participants across different countries, highlighting the relative proportions of participants from each country within the total sample of 1403 individuals.

		Frequency	Percent
Valid	18-24 years	161	11,5
	25-34 years	270	19,2
	35-44 years	311	22,2
	45-54 years	310	22,1
	55-64 years	213	15,2
	65-74 years	111	7,9
	> 75 years	27	1,9
	Total	1403	100,0

Table 2 - Sample What age bracket are you in?

In *Sample What age bracket are you in?* (Table 2), it illustrates the distribution of participants across different age brackets. Among the 1403 participants surveyed, the largest proportion falls within the 35-44 years age bracket, accounting for 22.2% of the sample. This is followed by participants in the 45-54 years age bracket, comprising 22.1% of the sample. The smallest proportion is in the >75 years age bracket, representing only 1.9% of the sample.

In *Sample What is your gender?* (Table 18 – Appendix 8.2), it represents the distribution of gender among the participants. The data shows that out of 1403 participants, 49.0% identified as men, while 51.0% identified as women.

		Frequency	Percent
Valid	No formal education	3	,2
	Primary education	18	1,3
	Lower secondary education	77	5,5
	Upper secondary education	236	16,8
	Post-secondary education	187	13,3
	Short-cycle tertiary education	162	11,5
	Bachelor degree	342	24,4
	Master degree	313	22,3
	PhD degree	59	4,2
	Total	1397	99,6
Missing	System	6	,4
Total		1403	100,0

Table 3 – *Sample What is the highest level of education you have achieved?*

In *Sample What is the highest level of education you have achieved?* (Table 3), it depicts the distribution of participants based on their highest level of education achieved. Among the 1397 participants with valid responses, the largest proportion holds a bachelor's degree, constituting 24.4% of the sample. This is closely followed by participants with a master's degree, comprising 22.3% of the sample. On the other hand, the smallest proportion is represented by individuals with no formal education, accounting for only 0.2% of the sample.

In *Sample What is your average monthly income? Consider the average salary in your country* (Table 19 – Appendix 8.2), it illustrates the distribution of participants based on their average monthly income relative to the average salary in their respective countries. Among the 1396 participants with valid responses, the largest proportion falls into the 'Average' income category, representing 31.1% of the sample. Following closely behind, 29.2% of participants reported incomes 'Below average,' while 26.2% reported incomes 'Above average.' Additionally, a small percentage of participants did not provide an answer (6.3%) or chose not to disclose their income (6.8%).

		In which country do you currently live?						Total
		Portugal	Spain	France	Italy	Sweden	Greece	
What age bracket are you in?	18-24 years	12,1%	13,1%	13,7%	8,8%	8,6%	10,3%	11,5%
	25-34 years	23,6%	13,4%	21,1%	18,8%	19,9%	18,6%	19,2%
	35-44 years	22,2%	22,1%	23,0%	22,2%	16,6%	26,3%	22,2%
	45-54 years	19,9%	22,4%	17,8%	20,9%	25,2%	32,1%	22,1%
	55-64 years	16,2%	13,8%	14,8%	15,9%	17,9%	12,8%	15,2%
	65-74 years	5,4%	11,4%	8,5%	9,2%	11,3%	0,0%	7,9%
	>75 years	0,7%	3,8%	1,1%	4,2%	0,7%	0,0%	1,9%
Total		297	290	270	239	151	156	1403

Table 4 - Cross-country What age bracket are you in?

As for *Cross-country What age bracket are you in?* (Table 4), it shows that in Portugal, Spain, France, and Italy, the age group of 35-44 years is the most represented, ranging from 20.9% to 23.0%. Participants aged 25-54 years constitute a significant portion in these countries, ranging from 17.8% to 22.4%. However, the age groups of 18-24 years and >75 years have the lowest representation, with percentages ranging from 0.7% to 12.1%. In Sweden, participants aged 45-54 years are the most represented, comprising 25.2% of the sample, followed by individuals aged 35-44 years. Similarly, participants aged 25-54 years constitute a significant portion, ranging from 19.9% to 25.2%. However, the representation of age groups <75 years is relatively low, ranging from 0.7% to 17.9%. In Greece, the age group of 45-54 years has the highest representation, comprising 32.1% of the sample. Participants aged 25-54 years constitute a significant portion, ranging from 18.6% to 32.1%. Similar to other countries, the representation of age groups <75 years is lower, ranging from 0.0% to 12.8%.

For *Cross-country What is your gender?* (Table 20 – Appendix 8.2), it can be observable that in Portugal, Spain, France, and Italy, the proportion of male participants ranges from 47.5% to 53.0%, with the highest percentage in Sweden and the lowest in Greece. Conversely, the percentage of female participants ranges from 46.8% to 53.5%, with the highest percentage in Greece and the lowest in Sweden. Overall, the gender distribution is relatively balanced across the countries, with a slight predominance of female participants in Greece and male participants in Sweden.

		In which country do you currently live?						Total
		Portugal	Spain	France	Italy	Sweden	Greece	
What is the highest level of education you have achieved?	No formal education	0,3%	0,0%	0,0%	0,0%	1,3%	0,0%	0,2%
	Primary education	0,7%	3,1%	0,0%	0,0%	4,0%	0,6%	1,3%
	Lower secondary education	1,4%	7,0%	1,9%	12,6%	7,9%	3,8%	5,5%
	Upper secondary education	4,8%	13,6%	18,9%	38,1%	14,6%	12,2%	16,9%
	Post-secondary education	29,9%	11,5%	8,1%	6,3%	9,3%	9,6%	13,4%
	Short-cycle tertiary education	9,2%	15,3%	22,6%	1,3%	8,6%	9,0%	11,6%
	Bachelor degree	38,8%	31,4%	15,9%	7,9%	21,2%	28,2%	24,5%
	Master degree	13,6%	15,3%	24,8%	31,8%	24,5%	31,4%	22,4%
	PhD degree	1,4%	2,8%	7,8%	2,1%	8,6%	5,1%	4,2%
Total		294	287	270	239	151	156	1397

Table 5 - Cross-country What is the highest level of education you have achieved?

Related to *Cross-country What is the highest level of education you have achieved?* (Table 5), it exhibits that in Portugal, Spain, France, and Italy, the majority of participants have

achieved a bachelor's or master's degree, ranging from 45.0% to 54.6%. However, in Sweden and Greece, participants with upper secondary education are more prevalent, constituting 38.1% and 26.0% of the sample, respectively. Notably, Sweden has the highest proportion of participants with upper secondary education, while Greece has the highest proportion with post-secondary education. Additionally, Greece has a higher percentage of participants with a doctoral degree compared to other countries.

Finally, the *Cross-country What is your average monthly income? Consider the average salary in your country* (Table 21 – Appendix 8.2), it shows that in Portugal, Spain, and Greece, the majority of participants report having an average income, ranging from 31.2% to 49.7%. In Italy and Sweden, a significant proportion of participants consider their income to be below average, with percentages of 48.1% and 34.4%, respectively. France stands out with the highest percentage of participants reporting above-average income, at 53.3%. Notably, a considerable proportion of participants in France did not disclose their income, constituting 25.6% of the sample.

		Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night	Have more stops closer to my residence for my daily activities	Availability of a smartphone application for a more personalised contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations	Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police	Conductor selling tickets on-board at night	Increase of dedicated space for children in public transports	Increase of dedicated space for people travelling with trolleys/ wheelchairs in public transport	Availability of schedule information and integration with multiple modes of transport in a smartphone application	Availability of schedule information and integration with multiple modes of transport in bus stops and stations	Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process	Provision of panic/ alarm buttons at bus stops/ stations	Provision of panic/ alarm buttons inside vehicles	Provision of a reliable camera surveillance system at bus stops/ stations	Provision of a reliable camera surveillance system inside vehicles	Provision of emergency telephones at bus stops/ stations	Special fares for people who have multiple tasks per day
N	Valid	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mean	3,5617	3,5725	3,6215	3,5987	3,3842	3,2003	3,4619	3,7491	3,7313	3,6572	3,6180	3,6165	3,7962	3,7491	3,6144	3,7869
	Median	4,0000	4,0000	4,0000	4,0000	3,0000	3,0000	4,0000	4,0000	4,0000	4,0000	4,0000	4,0000	4,0000	4,0000	4,0000	4,0000
	Std. Deviation	1,20313	1,16670	1,19059	1,16935	1,26737	1,21531	1,17411	1,17777	1,11138	1,11535	1,18214	1,18650	1,17963	1,15543	1,19449	1,17124
	Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
	Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table 6 – Descriptive Variables considered for PCA

In *Descriptive Variables considered for PCA* (Table 6), the descriptive analysis of the variables reveals several key insights. For instance, the mean scores for most variables range between 3.38 and 3.78, indicating a moderate level of agreement with the provided statements. However, there is notable variability in respondents' perceptions, as reflected by the standard deviations, which range from 1.17 to 1.27. Variables such as "Availability of schedule information and integration with multiple modes of transport in a smartphone application" and "Provision of a reliable camera surveillance system at bus stops/stations" demonstrate relatively higher mean scores, suggesting greater importance or satisfaction among respondents in these areas. Conversely, "Conductor selling tickets on-board at night" receives a lower mean score, indicating less agreement or importance attributed to this aspect.

Overall, these variables cover a wide range of features and services related to public transportation, from safety and security measures to convenience and accessibility enhancements. Understanding the importance and satisfaction levels associated with each

variable is crucial for identifying areas of improvement and prioritizing interventions in transportation planning and policy development.

4.2. Principal Component Analysis

The Principal Component Analysis (PCA) sought to condense information and identify key dimensions within the dataset. This analytical process was further validated by the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test, providing additional support for the analysis (Table 22 - Appendix 8.3).

Communalities from variables related to *Safety and security* and *Mobility in public transport* revealed a total of 17 initial variables, but one variable, “*Routes According to Passenger Needs*”, exhibited a low communality (below 0.2), therefore it was excluded from the study. As a result, it was considered a total of 16 variables and the rotation method used was Promax with Kaiser Normalization, and it converged in 6 iterations.

For Component 1: “Provision of a reliable camera surveillance system inside vehicles” with a loading of 0.886; “Provision of a reliable camera surveillance system at bus stops/ stations” with a loading of 0.877; “Provision of panic/alarm buttons inside vehicles” with a loading of 0.850; “Provision of emergency telephones at bus stops/ stations” with a loading of 0.819; “Provision of panic/alarm buttons at bus stops/ stations” with a loading of 0.810.

Component 1 explains 57.289% of the total variance.

For Component 2: “Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night” with a loading of 0.890; “Have more stops closer to my residence for my daily activities” with a loading of 0.881; “Availability of a smartphone application for a more personalized contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations” with a loading of 0.740; “Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police” with a loading of 0.724.

Component 2 explains 8.905% of the total variance.

For Component 3: “Availability of schedule information and integration with multiple modes of transport in a smartphone application” with a loading of 0.896; Availability of schedule information and integration with multiple modes of transport in bus stops and stations) with a loading of 0.870; “Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process” with a loading of 0.643.

Component 3 explains 5.921% of the total variance.

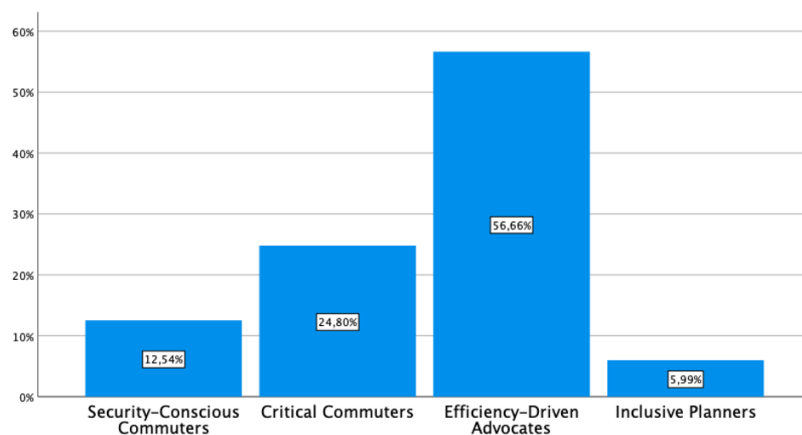
For Component 4: Special fares for people who have multiple tasks per day) with a loading of 0.604; Increase of dedicated space for children in public transports) with a loading of 0.250.

Component 4 explains 4.469% of the total variance.

Four distinct principal components emerged (as observed in Table 7 of Annex 8.2):

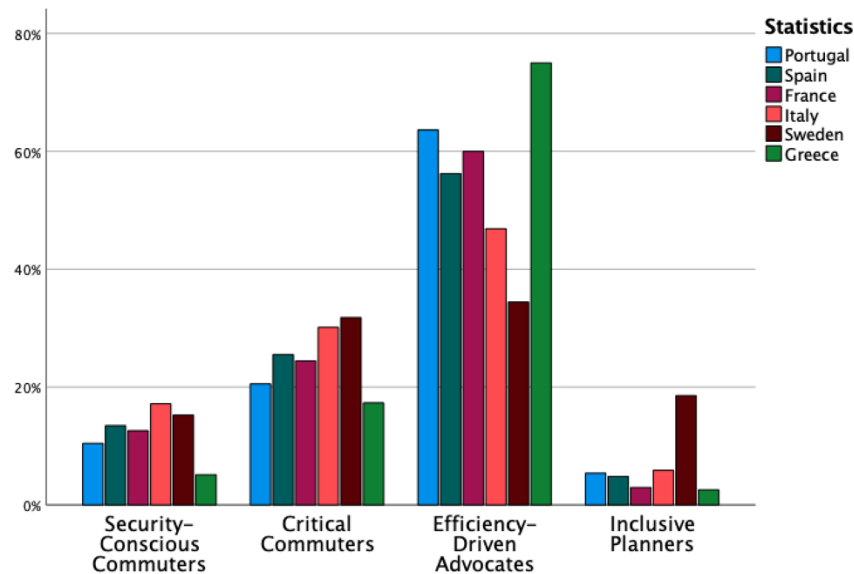
- 1° Component, *Transportation Security and Surveillance System*: Emphasized safety features like panic buttons.
- 2° Component, *Enhanced Flexible Transportation and Safety System*: Prioritized customizable, safe transportation.
- 3° Component, *Multimodal Transport Integration System*: Focused on seamless integration and accessibility.
- 4° Component, *Enhanced Inclusivity and Spatial Allocation*: Highlighted inclusivity and optimized spatial allocation.

4.3. Solution Selection: Complete Linkage 4 Clusters



Graphic 2 - Complete Linkage 4 Clusters frequency

Regarding *Complete Linkage 4 Clusters frequency* (Graphic 2), Security-Conscious Commuters comprise 176 respondents, accounting for 12.5% of the total. Critical Commuters represent 348 respondents, making up 24.8% of the total. The cluster of Efficiency-Driven Advocates consists of 795 respondents, which constitutes 56.7% of the total. Inclusive Planners comprise 84 respondents, accounting for 6.0% of the total. These percentages indicate the proportion of respondents in each cluster relative to the overall sample size.

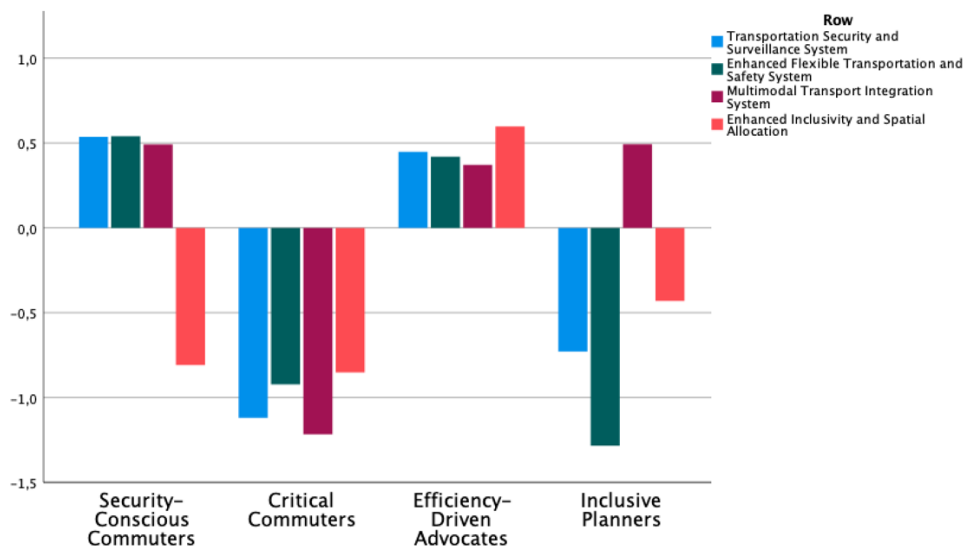


Graphic 3 - In which country do you currently live?

Delving into *In which country do you currently live?* (Graphic 3), for Security-Conscious Commuters, it shows that Portugal and Spain are the most common countries of residence, each comprising around 17-23% of respondents. Greece has the lowest representation, with only 4.5%. As for Critical Commuters, a similar distributions across Portugal, Spain, France, and Italy, ranging from 17-22%. Sweden has a lower representation at around 13-14%, while Greece is again the least represented. Related to Efficiency-Driven Advocates, Portugal, Spain, France, and Italy show relatively similar proportions, ranging from 14-23%. Sweden has a notably lower representation, around 6.5%. Greece is again less represented compared to other countries. Finally, Inclusive Planners shows that Sweden stands out as the most common country of residence, comprising around 33% of respondents. Portugal, Spain, France, and Italy have lower representation, while Greece is the least represented.

In light of this, the solution "Complete Linkage 4 Clusters" met the chosen criteria.

Furthermore, to enhance comprehension and analysis of the respective work, these 4 clusters were named based on the primary segmentation variables, which are the principal components obtained, as depicted in Graphic 2 "*Ratings on various transportation-related factors*":



Graphic 4 - Ratings on various transportation-related factors

- Cluster 1, *Security-Conscious Commuters* (demonstrates a preference for transportation security and surveillance systems, along with an interest in flexible transportation options. However, there is a moderate interest in multimodal transport integration and a negative inclination towards enhanced inclusivity and spatial allocation in transportation planning);
- Cluster 2, *Critical Commuters* (This cluster shows a notable lack of interest in transportation security, flexible transportation options, and multimodal integration. Their preferences suggest a more critical stance towards these aspects of transportation systems);
- Cluster 3, *Efficiency-Driven Advocates* (There is a moderate interest in transportation security and surveillance, flexible transportation options, and multimodal integration. Additionally, there is a positive inclination towards enhanced inclusivity and spatial allocation, indicating a preference for efficient and inclusive transportation solutions);
- Cluster 4, *Inclusive Planners* (exhibits negative inclinations toward transportation security, flexible transportation options, and enhanced inclusivity. However, there is a positive interest in multimodal integration, suggesting an openness to diverse transportation modes among middle-aged individuals prioritizing inclusivity in planning).

4.4. Characteristics and Preferences

	Complete Linkage 4 Clusters			
	Security- Conscious Commuters	Critical Commuters	Efficiency -Driven Advocates	Inclusive Planners
	Mean	Mean	Mean	Mean
Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night	4,21	2,61	3,96	2,42
Have more stops closer to my residence for my daily activities	4,01	2,72	3,96	2,55
Availability of a smartphone application for a more personalised contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations	4,23	2,59	4,07	2,33
Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police	4,18	2,57	4,06	2,24
Conductor selling tickets on-board at night	3,78	2,55	3,82	1,90
Parking dedicated to women	3,95	2,59	4,08	3,47

Table 7 - *Safety and Security*

In terms of *Safety and Security* (Table 7), it is revealed that The Security-Conscious Commuters cluster demonstrates a strong preference for safety and convenience in transportation services, showing high interest in features such as flexible stops, smartphone applications for contact, and clearer advertisement of contact numbers. In contrast, the Critical Commuters cluster exhibits a moderate preference for transportation services, with some interest in flexible stops and smartphone applications. The Efficiency-Driven Advocates cluster displays a strong interest in efficient transportation services, particularly favoring features like flexible stops, smartphone applications, and clearer advertisement of contact numbers. Lastly, the Inclusive Planners prioritize inclusivity and accessibility in transportation, showing high interest in features such as flexible stops, smartphone applications, clearer advertisement of contact numbers, and parking dedicated to women.

	Complete Linkage 4 Clusters			
	Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners
	Mean	Mean	Mean	Mean
Increase of dedicated space for children in public transports	2,15	2,30	3,88	2,76
Increase of dedicated space for people travelling with trolleys/ wheelchairs in public transport	2,85	2,39	4,10	3,14
Transport service that adjusts the routes according to passenger needs	3,57	2,50	3,97	3,63
Availability of schedule information and integration with multiples modes of transport in a smartphone application	4,27	2,52	4,13	4,15
Availability of schedule information and integration with multiples modes of transport in bus stops and stations	4,33	2,45	4,10	4,26
Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process	3,94	2,48	4,10	3,73
Provision of panic/alarm buttons at bus stops/ stations	4,04	2,42	4,14	2,76
Provision of panic/alarm buttons inside vehicles	3,99	2,45	4,14	2,71
Provision of a reliable camera surveillance system at bus stops/ stations	4,53	2,56	4,24	3,17
Provision of a reliable camera surveillance system inside vehicles	4,52	2,58	4,13	3,35
Provision of emergency telephones at bus stops/ stations	4,17	2,42	4,09	2,87
Special fares for people who have multiple tasks per day	4,16	2,57	4,22	3,98
I will never use public transport in my city	2,09	2,57	2,78	2,38

Table 8 - Mobility

Related to *Mobility* (Table 8), the Security-Conscious Commuters cluster prioritizes safety features such as surveillance systems and panic buttons, indicating a strong concern for personal security during travel. Additionally, they show moderate interest in features aimed at accommodating diverse passenger needs, such as increasing dedicated space for children and individuals with special requirements. The Critical Commuters cluster exhibits a generally lower level of interest across all features compared to other clusters, suggesting a more neutral stance towards enhancements in public transportation infrastructure and services. The Efficiency-Driven Advocates cluster demonstrates a strong preference for efficiency and convenience, prioritizing features that streamline the travel experience such as enhanced schedule information integration and provision of suitable connections between sidewalk and public transport. While safety features are of interest, they are not as heavily emphasized as efficiency-related aspects. The Inclusive Planners cluster places a significant emphasis on accessibility and inclusivity in public transportation, showing strong interest in features such as

dedicated space for children and individuals with special needs, as well as special fares for those with multiple tasks per day. This cluster also values safety features but to a lesser extent compared to accessibility-related enhancements.

	Complete Linkage 4 Clusters			
	Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners
	Mean	Mean	Mean	Mean
I rarely worry about the effects of pollution on myself and my family	2,22	2,58	2,57	2,27
I do what I can to contribute to reducing global climate changes, even if it costs more and takes time	3,55	3,22	3,86	3,69
I choose the modes of transport considering the impact on the environment	2,98	2,85	3,43	3,31

Table 9 - Sustainability

Exploring *Sustainability* (Table 9), the Security-Conscious Commuters and Critical Commuters clusters show lower levels of concern about pollution and climate change compared to the Efficiency-Driven Advocates and Inclusive Planners clusters. The Efficiency-Driven Advocates cluster displays a moderate level of concern and a notable willingness to contribute to reducing global climate changes and consider environmental impact when choosing transportation modes. The Inclusive Planners cluster shows the highest level of concern and strong willingness to contribute to reducing global climate changes and consider environmental impact when choosing transportation modes.

The shift from using mean-based analyses to percentage-based analyses post-Table 13 reflects a methodological adjustment aimed at gaining a more nuanced understanding of participant responses, particularly considering the Likert-scale nature of the variables. By employing percentage-based analyses, it's possible to get a deeper understanding of the distribution of responses across various categories within each variable. This approach allows for a more comprehensive exploration of participant perspectives and preferences, offering insights into the prevalence of specific attitudes or behaviors within the sample. Given the uniform Likert scale measurement across variables, the transition to percentage-based analyses aligns to capture the proportional representation of responses within each category, thereby enriching the interpretative depth of the statistical analyses conducted using SPSS.

		Complete Linkage 4 Clusters			
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners
The public transport options suit my travel needs	Completely agree	7,3%	12,6%	6,4%	21,4%
	Agree	9,1%	15,3%	7,3%	7,1%
	Neutral / Neither Agree nor Disagree	20,9%	29,5%	21,2%	11,9%
	Disagree	34,5%	23,5%	29,4%	42,9%
	Completely disagree	23,6%	8,7%	17,9%	9,5%
Total		110	183	452	42

Table 10 - The public transport options suit my travel needs

Highlighted within *The public transport options suit my travel needs* (Table 10), the Security-Conscious Commuters and Critical Commuters clusters generally disagree that public transport options suit their travel needs. The Efficiency-Driven Advocates cluster shows a more balanced distribution of responses, with a notable portion expressing a neutral stance. The Inclusive Planners cluster has the highest percentage of respondents who agree that public transport options suit their travel needs.

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
I can rely on service predictability (namely time of arrival, frequency of delays, concurrence between actual planned travel time, etc.)	Completely agree	18,1%	17,1%	10,4%	23,1%	13,9%
	Agree	13,3%	23,2%	15,8%	15,4%	17,2%
	Neutral / Neither Agree nor Disagree	24,8%	32,9%	26,2%	17,9%	27,1%
	Disagree	33,3%	19,5%	31,3%	33,3%	28,9%
	Completely disagree	10,5%	6,7%	15,5%	10,3%	12,3%
Total		105	164	374	39	682

Table 11 - *I can rely on service predictability (namely time of arrival, frequency of delays, concurrence between actual planned travel time, etc.)*

For *I can rely on service predictability (namely time of arrival, frequency of delays, concurrence between actual planned travel time, etc.)* (Table 11), it shows that the Security-Conscious Commuters and Efficiency-Driven Advocates clusters generally express a lack of confidence in service predictability, with a high percentage of respondents disagreeing or completely disagreeing. The Critical Commuters cluster shows a more balanced distribution of responses, with a significant portion expressing a neutral stance. The Inclusive Planners cluster has the highest percentage of respondents who agree or completely agree that they can rely on service predictability.

As for *I am satisfied with the frequency of service per weekdays* (Table 29 – Appendix 8.5), the Security-Conscious Commuters and Efficiency-Driven Advocates clusters generally express dissatisfaction with the frequency of service per weekdays, with a high percentage of respondents disagreeing or completely disagreeing. The Critical Commuters cluster shows a more balanced distribution of responses, with a significant portion expressing a neutral stance. The Inclusive Planners cluster has the highest percentage of respondents who agree or completely agree that they are satisfied with the frequency of service per weekdays.

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
I am satisfied with the price I pay to use this service	Completely agree	15,2%	18,3%	12,1%	25,6%	14,9%
	Agree	27,6%	22,6%	18,5%	23,1%	21,2%
	Neutral / Neither Agree nor Disagree	26,7%	32,3%	23,9%	30,8%	26,8%
	Disagree	24,8%	20,1%	28,5%	12,8%	25,0%
	Completely disagree	5,7%	6,7%	16,1%	7,7%	11,8%
Total		105	164	372	39	680

Table 12 - *I am satisfied with the price I pay to use this service*

For *I am satisfied with the price I pay to use this service* (Table 12), the Efficiency-Driven Advocates cluster generally expresses the highest satisfaction with the price they pay to use the

service, with the highest percentage of respondents agreeing or completely agreeing. The Critical Commuters and Inclusive Planners clusters also show relatively high satisfaction levels with the price they pay, with significant portions of respondents agreeing or completely agreeing. The Security-Conscious Commuters cluster exhibits a more varied distribution of responses, with a notable portion expressing dissatisfaction with the price they pay.

As depicted in *The connections with other modes of transport are adequate* (Table 30 – Appendix 8.5), the Security-Conscious Commuters and Inclusive Planners clusters generally express dissatisfaction with the adequacy of connections with other modes of transport. The Critical Commuters cluster also shows relatively high levels of dissatisfaction with connection adequacy. The Efficiency-Driven Advocates cluster exhibits a more varied distribution of responses.

		Complete Linkage 4 Clusters			
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners
Use Walk	No	53,4%	54,9%	58,4%	61,9%
	Yes	46,6%	45,1%	41,6%	38,1%
Use Owned Bicycle, Cargo bike	No	97,2%	90,2%	91,7%	75,0%
	Yes	2,8%	9,8%	8,3%	25,0%
Use Owned motorbike, scooter	No	96,6%	96,3%	96,6%	98,8%
	Yes	3,4%	3,7%	3,4%	1,2%
Use Private car as a driver	No	57,4%	53,4%	43,9%	41,7%
	Yes	42,6%	46,6%	56,1%	58,3%
Use Private car as a passenger	No	94,3%	89,4%	87,4%	94,0%
	Yes	5,7%	10,6%	12,6%	6,0%
Use Car sharing (e.g. zipcar, drivenow, car2go)	No	100,0%	99,7%	99,4%	98,8%
	Yes	0,0%	0,3%	0,6%	1,2%
Use Uber/Cabify/Kapten/Bolt and similars	No	98,9%	98,6%	98,4%	98,8%
	Yes	1,1%	1,4%	1,6%	1,2%
Use Taxi	No	99,4%	98,0%	98,2%	98,8%
	Yes	0,6%	2,0%	1,8%	1,2%
Use Bus, electric bus, and similar	No	78,4%	81,3%	85,9%	81,0%
	Yes	21,6%	18,7%	14,1%	19,0%
Use Train	No	90,3%	90,8%	91,1%	86,9%
	Yes	9,7%	9,2%	8,9%	13,1%
Use Tram	No	94,9%	96,8%	95,2%	96,4%
	Yes	5,1%	3,2%	4,8%	3,6%
Use Metro	No	81,8%	88,8%	88,8%	91,7%
	Yes	18,2%	11,2%	11,2%	8,3%

Table 13 - Transportation Modes

Noteworthy in *Transportation Modes* (Table 13), Security-Conscious Commuters prefer walking and using private cars as drivers, showing a reluctance to rely on public transportation such as buses, trains, trams, and metros. Additionally, they rarely use car-sharing, taxis, or ride-hailing apps, and have negligible usage of such services. Critical Commuters, akin to Security-Conscious Commuters, exhibit a preference for walking and driving, with slightly higher openness to public transportation but still lower usage compared to other clusters. They also demonstrate higher usage of owned bicycles, motorbikes, and scooters compared to Security-Conscious Commuters. Efficiency-Driven Advocates display the highest usage of public

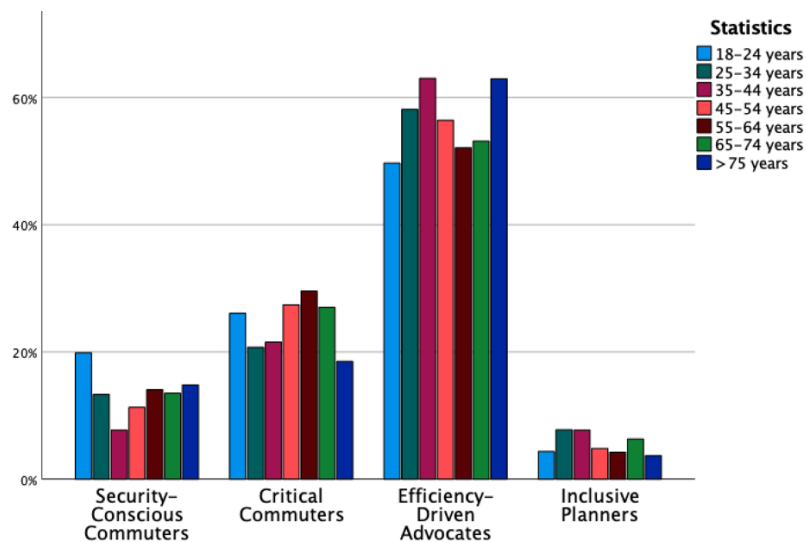
transportation, particularly buses, and are less reliant on private cars, both as drivers and passengers. Moreover, they show very low usage of car-sharing, taxis, and ride-hailing apps. Inclusive Planners, much like Efficiency-Driven Advocates, exhibit higher usage of public transportation and the lowest usage of private cars among the clusters. They also show relatively low usage of owned bicycles, motorbikes, and scooters.

4.5. Demographics

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planning Middle-Agers	Total
What is your gender?	Man	44,9%	53,4%	46,8%	59,5%	49,0%
	Woman	55,1%	46,6%	53,2%	40,5%	51,0%
Total		176	348	795	84	1403

Table 14 - What is your gender?

Exploring *What is your gender?* (Table 14), Among Security-Conscious Commuters, 44.9% are men, while 55.1% are women. For Critical Commuters, the majority are men, accounting for 53.4%, while 46.6% are women. In the Efficiency-Driven Advocates cluster, 46.8% are men, and 53.2% are women. Regarding Inclusive Planners, 59.5% are men, with women comprising 40.5% of the respondents.



Graphic 5 - What age bracket are you in?

Notably *What age bracket are you in?* (Graphic 5), Security-Conscious Commuters are dominated by individuals aged 25-54, with fewer younger adults. Reflects a mature adult demographic. As for Critical Commuters, it shows a diverse age distribution, slightly higher proportion of middle-aged individuals (35-54 years). Related to Efficiency-Driven Advocates, it exhibits an higher representation of middle-aged individuals (25-54 years), reflective of a

working-age demographic. Lastly, Inclusive Planners are predominantly composed of middle-aged and older individuals (35-64 years), reflecting an older demographic profile.

In *What is your average monthly income? Consider the average salary in your country* (Table 43 - Appendix 8.5) it demonstrates that, Security-Conscious Commuters are about one-third of respondents in this cluster report below-average income, suggesting potential financial constraints. Critical Commuters are similar to Security-Conscious Commuters, a significant portion of individuals in this cluster reports below-average income. As for Efficiency-Driven Advocates, while notable respondents in this cluster report below-average income, a higher proportion have average income compared to other clusters. Conversely, Inclusive Planners reveals the highest percentage of respondents in this cluster report below-average income.

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
In your family unit, do you live with any dependent person?	No	22,7%	29,3%	39,7%	32,1%	485
	Yes	77,3%	70,7%	60,3%	67,9%	918
Dependents – Preschool age children (under 5 years)	No	96,6%	94,3%	85,8%	91,7%	1257
	Yes	3,4%	5,7%	14,2%	8,3%	146
Dependents – School age children (5–10 years)	No	95,5%	89,9%	87,8%	86,9%	1252
	Yes	4,5%	10,1%	12,2%	13,1%	151
Dependents – School age children (10–16 years)	No	88,6%	89,1%	82,4%	85,7%	1193
	Yes	11,4%	10,9%	17,6%	14,3%	210
Dependents – Elderly relative	No	96,6%	95,1%	96,0%	97,6%	1346
	Yes	3,4%	4,9%	4,0%	2,4%	57
Physically or mentally impaired young, adult or elder	No	96,6%	96,0%	96,4%	96,4%	1351
	Yes	3,4%	4,0%	3,6%	3,6%	52

Table 15 - Dependent persons

As depicted in *Dependent persons* (Table 15), Security-Conscious Commuters shows the majority living with dependents, ranging from 70.7% to 77.3%. A smaller proportion live with physically or mentally impaired individuals (3.4%). Critical Commuters displays a similar trend, with a majority living with dependents (60.3% to 70.7%). A slightly higher proportion live with physically or mentally impaired individuals (4.0%). Accordangly to Efficiency-Driven Advocates, the majority live with dependents, but at relatively lower rates (39.7% to 60.3%). Fewer live with physically or mentally impaired individuals (3.6%). Lastly, Inclusive Planners exhibit a majority living with dependents (32.1% to 67.9%). Similar to other clusters, a small percentage live with physically or mentally impaired individuals (3.6%).

Turning to *What is the highest level of education you have achieved?* (Table 44 - Appendix 8.5), Security-Conscious Commuters are characterized by a notable percentage holding a bachelor's degree, while fewer individuals have achieved post-secondary or higher education levels compared to other clusters. Critical Commuters exhibit individuals with upper secondary and post-secondary education levels being well represented, with a relatively lower

representation of those with master's or PhD degrees compared to other clusters. Efficiency-Driven Advocates show a significant portion of individuals with bachelor's or master's degrees, along with a substantial representation of those with short-cycle tertiary education. Inclusive Planners feature a considerable percentage holding a master's degree, indicating a relatively higher level of education, with the representation of individuals with PhD degrees notably higher compared to other clusters.

		Complete Linkage 4 Clusters				
		Security- Conscious Commuters	Critical Commuters	Efficiency- Driven Advocates	Inclusive Planning Middle- Agers	Total
Do you consider yourself to live in a:	Rural environment	5,7%	11,5%	8,8%	14,3%	9,4%
	Urban environment	73,3%	69,3%	74,3%	60,7%	72,1%
	Suburban environment	21,0%	19,3%	16,9%	25,0%	18,5%
Total		176	348	795	84	1403

Table 16 - Do you consider yourself to live in a?

As for *Do you consider yourself to live in a?* (Table 16), Security-Conscious Commuters the majority consider themselves to live in urban environments, with a significant portion also residing in suburban areas. Critical Commuters are similar to Security-Conscious Commuters, most respondents perceive themselves as residents of urban areas, with a notable percentage also residing in suburban areas. Related to Efficiency-Driven Advocates, the majority identify with urban living environments, followed by suburban areas. As for Inclusive Planners, although urban areas are predominant, there is a relatively higher proportion of respondents considering themselves to live in suburban environments compared to other clusters. The percentage of individuals living in rural areas is notably higher than in other clusters.

CHAPTER 5

Discussion

5.1. Interpretation of Findings

The examination of distinct clusters within transportation preferences offers valuable insights and is essential for developing tailored transportation solutions that address the varied needs of communities.

5.1.1. Security-Conscious Commuters

The Security-Conscious Commuters cluster comprises individuals who prioritize safety and security in their transportation preferences. It demonstrates a strong interest in transportation security and surveillance systems, indicating a significant concern for personal safety during travel. Additionally, they show a preference for flexible transportation options, suggesting a desire for convenience and adaptability in their travel choices (McFadden, 2001).

Despite their emphasis on safety, the cluster exhibits a moderate interest in multimodal transport integration, indicating openness to diverse transportation modes. However, there is a notable negative inclination towards enhanced inclusivity and spatial allocation in transportation planning, suggesting a reluctance to embrace broader social and environmental considerations in transportation decisions among Security-Conscious Commuters (Geurs & Ritsema van Eck, 2001).

Additionally, Security-Conscious Commuters members exhibit specific preferences and behaviors related to their transportation choices. They often exhibit a preference for personal vehicles, including private cars, and show reluctance to rely on public transportation such as buses, trains, trams, and metros. Members of this cluster also rarely use car-sharing, taxis, or ride-hailing apps, suggesting a preference for independent and controlled transportation options over shared mobility services (Hafezi & Ismail, 2011b).

The strong preference for safety features such as surveillance systems and panic buttons highlights a significant concern for personal safety. They also prioritize transportation modes and services that offer visible security measures to mitigate perceived risks.

While Security-Conscious Commuters prioritize personal safety and convenience in transportation choices, they demonstrate a lower level of concern about pollution and climate change compared to other clusters, indicating a potential trade-off between environmental

considerations and individual safety preferences among cluster members (Smith & Clark, 2000; Hafezi & Ismail, 2011a).

Despite potential environmental and economic benefits, Security-Conscious Commuters express dissatisfaction with the adequacy of connections with other modes of transport and their ability to rely on travel information available in web pages/apps, suggesting a lack of trust in public transportation systems and a preference for more predictable and controlled travel experiences (Miranda et al., 2018). For other travelers, satisfaction may stem from a combination of real-time information availability and punctuality in departure and arrival times.

Demographically, the cluster is dominated by individuals aged 25-54. There is a relatively equal distribution of men and women within the cluster, with a majority living with dependents. The most common countries of residence among Security-Conscious Commuters are Portugal and Spain, with a smaller representation from Greece (Velaga et al., 2012).

The majority of Security-Conscious Commuters perceive themselves as residents of urban environments, with a significant portion also residing in suburban areas. This preference may stem from a desire for proximity to essential services and amenities while maintaining a sense of safety and security in familiar surroundings (Smith et al., 2012).

5.1.2. Critical Commuters

The Critical Commuters cluster displays a distinct lack of interest in various aspects of transportation systems compared to other clusters, reflecting a critical stance towards transportation security, flexible options, and multimodal integration (McFadden, 2001).

While showing moderate interest in features like flexible stops and smartphone applications, their overall engagement remains relatively low, suggesting a neutral or critical attitude towards transportation offerings (Papadima et al, 2020). This nuanced satisfaction pattern also extends to accessibility features, where Critical Commuters express higher satisfaction compared to Efficiency-Driven Advocates but lower than Security-Conscious Commuters and Inclusive Planners.

Confidence in real-time transport information is notably lower among Critical Commuters, potentially influencing perceptions of reliability and convenience (Davison et al., 2012).

Moreover, they demonstrate lower environmental concerns compared to other clusters, indicating a potential lack of prioritization of environmental factors in transportation choices (Kwan & Hashima, 2016).

Demographically, the cluster comprises a diverse age distribution, with a slightly higher proportion of middle-aged individuals (35-54 years), suggesting a group established in commuting patterns but possibly less open to transportation innovations (Gray et al., 2006).

The gender distribution leans towards men, potentially influencing transportation preferences, while a significant portion reports below-average income, indicating financial constraints influencing commuting decisions (McFadden, 2001).

Dominantly living with dependents, their commuting needs extend beyond individual considerations, potentially impacting transportation preferences and priorities (Gray et al., 2006).

Education-wise, while well-represented in upper secondary and post-secondary levels, there's a relatively lower presence of those with master's or PhD degrees compared to other clusters, suggesting a critical evaluation of transportation systems without prioritizing innovations (Smith et al., 2012; Geurs & Ritsema van Eck, 2001).

5.1.3. Efficiency-Driven Advocates

The Efficiency-Driven Advocates cluster prioritizes efficient and convenient transportation solutions with a moderate interest in security, flexible options, and multimodal integration (Geurs & Ritsema van Eck, 2001). They favor features like flexible stops and smartphone applications to streamline travel. While safety is considered, efficiency-related aspects take precedence (Geurs & Ritsema van Eck, 2001).

Concerning environmental concerns, they display a moderate level of worry about pollution and climate change, showing a willingness to contribute to sustainability (Kwan & Hashima, 2016). However, they express dissatisfaction with service predictability and frequency, desiring more reliable options (McFadden, 2001; Geurs & Ritsema van Eck, 2001).

Despite this, they are generally satisfied with the price of transportation services, indicating a balance between efficiency and cost-effectiveness (Kim et al., 2011). They heavily use public transportation, particularly buses, and have a lower reliance on private cars, aligning with their preference for efficient modes (Kwan & Hashima, 2016).

Demographically, they consist mainly of middle-aged individuals between 25 and 54, with a relatively even gender distribution (Geurs & Ritsema van Eck, 2001). They are distributed across countries like Portugal, Spain, France, Italy, and Sweden, suggesting diverse influences on their preferences (Velaga et al., 2012).

Financially, they vary, with some reporting below-average income but a higher proportion with average income (Geurs & Ritsema van Eck, 2001). They often live with dependents, indicating broader transportation needs beyond individual considerations (Smith et al., 2012).

Educationally, they have bachelor's or master's degrees, allowing them to prioritize efficiency and convenience (Smith et al., 2012; Geurs & Ritsema van Eck, 2001). Most identify with urban living environments, suggesting access to various transportation options (Gray et al., 2006).

5.1.4. Inclusive Planners

The Inclusive Planners cluster prioritizes accessibility and inclusivity in public transportation, showing a positive interest in multimodal integration (Geurs & Ritsema van Eck, 2001). They emphasize features like dedicated space for children and individuals with special needs, as well as special fares for those with multiple tasks per day, indicating a commitment to inclusivity (Smith et al., 2012; Geurs & Ritsema van Eck, 2001).

In terms of satisfaction with transportation services, they exhibit the highest disagreement rate regarding the adequacy of connections with other modes of transport and their ability to rely on travel information available in web pages/apps (Davison et al., 2012; Beirão & Cabral, 2007; Hafezi & Ismail, 2011b). They also express the highest rate of disagreement regarding overall satisfaction with the safety aspects of public transport, reflecting their concern for passenger safety (Smith & Clark, 2000; Hafezi & Ismail, 2011b).

Despite these concerns, they show a higher willingness to contribute to reducing global climate changes and consider environmental impact when choosing transportation modes, aligning with their values of inclusivity and sustainability (Geurs & Ritsema van Eck, 2001; Wang et al., 2012; Bryson et al., 2007).

Demographically, they predominantly comprise middle-aged and older individuals, with below-average income, suggesting potential financial constraints influencing their transportation choices (Geurs & Ritsema van Eck, 2001).

Education-wise, they have a considerable percentage holding a master's degree, indicating a higher level of education and awareness (Smith et al., 2012).

5.2. Comparison with Previous Studies

The dissertation's exploration of commuter clusters provides a valuable framework for understanding transportation preferences and behaviors. By comparing these findings with

previous studies, we can gain deeper insights into the factors shaping commuter experiences and decision-making processes.

Security-Conscious Commuters, align closely with findings from Gatersleben and Uzzell (2007), who highlighted the significance of safety concerns in both car and public transport commutes. Similarly, Friman et al. (2001) emphasized the importance of safety features and service reliability in influencing customer satisfaction, reflecting the preferences of this cluster for transportation modes with visible security measures.

Critical Commuters, exhibit similarities with studies by Van Vugt et al. (1996) and Papadima et al. (2020), showcasing a critical stance towards transportation offerings and a lower confidence in real-time information reliability. This echoes their moderate interest in transportation features and their dissatisfaction with service predictability, as highlighted in previous research.

Efficiency-Driven Advocates, share similarities with studies by Parker et al. (2011) and Wang et al. (2015), emphasizing efficiency and convenience in transportation preferences. Their high satisfaction with pricing aligns with findings by Friman et al. (2001), indicating a balanced approach towards cost-effectiveness and service quality in transportation choices.

Inclusive Planners, reflect concerns highlighted in studies by Shergold & Parkhurst (2012) regarding accessibility and inclusivity in transportation planning. Their focus on safety and environmental sustainability resonates in shaping passenger perceptions and satisfaction.

By juxtaposing the findings of this study with previous research, it becomes evident how the identified commuter clusters provide nuanced insights into transportation preferences and behaviors. This alignment underscores the relevance and applicability of the current study in informing the development of tailored and effective transportation policies and services that precisely address the diverse needs of commuters.

5.3. Limitations of the Study

The study acknowledges several limitations that may impact the interpretation and generalizability of its findings. Firstly, the use of convenience sampling introduces potential bias as participants who voluntarily engage may not represent the broader population of public transportation users accurately.

Additionally, the study's cross-sectional design offers a snapshot of transportation preferences at a specific time, potentially overlooking longitudinal trends.

Lastly, the findings might not directly apply to transportation systems outside the European Union or regions with different socio-economic conditions.

Addressing these limitations in future research endeavors is essential to enhance the reliability and applicability of insights for transportation planning and policy development.

CHAPTER 6

Conclusion

6.1. Summary of Key Findings

This dissertation embarks on a journey to decipher the intricacies of public transportation preferences and behaviors across diverse demographic clusters. Through meticulous analysis and interpretation, the study aimed to address three pivotal research questions, each intricately linked to the unique characteristics and priorities of distinct commuter clusters.

1. *Understanding Diverse Priorities:* The research delved into the perceived importance individuals attribute to potential changes in public transportation, unveiling a tapestry of varied priorities across different demographic clusters. Security-Conscious Commuters, for instance, underscored the paramount importance of safety and security measures, while Efficiency-Driven Advocates emphasized efficiency and convenience. Critical Commuters, on the other hand, exhibited a nuanced approach, showcasing moderate interest across various transportation aspects. This exploration sheds light on the diverse spectrum of values and preferences driving commuter choices.
2. *Impact on User Satisfaction:* A crucial aspect of the study revolved around investigating how the perceived importance of potential changes in public transportation influences user satisfaction within distinct clusters. The findings revealed intriguing insights into the intricate relationship between perceived importance and satisfaction levels. Efficiency-Driven Advocates, characterized by their emphasis on efficiency and convenience, exhibited higher levels of satisfaction with pricing and expressed a willingness to contribute to reducing environmental impact. Conversely, Inclusive Planners voiced dissatisfaction with safety aspects and connectivity, underscoring the need for more inclusive and accessible transportation solutions tailored to their unique needs.
3. *Variations Across Geographic Regions:* In addition to understanding individual priorities, the research aimed to identify variations in the importance attributed to potential changes across six European Union countries. By examining geographic, cultural, and infrastructural factors, the study uncovered nuanced differences in

transportation preferences. Critical Commuters in Portugal, for instance, displayed a higher level of satisfaction with accessibility compared to counterparts in Italy, highlighting the influence of regional contexts on commuter perceptions. This comparative analysis offers valuable insights for policymakers and transportation authorities in crafting targeted interventions to address region-specific needs and challenges.

In essence, this dissertation serves as a compass, navigating through the labyrinth of public transportation preferences and behaviors across diverse demographic clusters. By unraveling the complex interplay between individual priorities, satisfaction levels, and regional variations, it provides a roadmap for developing tailored transportation solutions that resonate with the unique needs of communities, ultimately paving the way for more effective, inclusive, and user-centric public transportation systems.

In order for public transport to play a significant role in sustainable transportation, it is crucial to focus on maintaining and attracting more passengers. This can be achieved by ensuring high service quality that satisfies a wide range of customer needs (Oliver, 1980). Understanding the factors that drive customer satisfaction and dissatisfaction with public transport is essential in designing an appealing and marketable public transport system. By identifying these drivers, efforts can be directed towards enhancing the overall customer experience and creating an attractive public transport option (Oliver, 1980).

The insights garnered offer valuable guidance for policymakers and transportation planners in crafting strategies that enhance commuter experiences, address safety and security concerns, improve efficiency, and promote environmental sustainability, thus fostering a more connected and equitable transportation landscape.

6.2. Contributions and Implications

The exploration of distinct clusters within transportation preferences yields invaluable contributions and implications for shaping future transportation policies and practices. By dissecting the characteristics and preferences of Security-Conscious Commuters, Critical Commuters, Efficiency-Driven Advocates, and Inclusive Planners, this study elucidates key insights into commuter behaviors and priorities, offering actionable implications for transportation stakeholders.

As for *Tailored Transportation Solutions*, the understanding the nuanced preferences of each cluster unveils the necessity for tailored transportation solutions that cater to diverse needs and priorities. Security-Conscious Commuters prioritize safety and security measures, emphasizing the importance of robust surveillance systems and personalized safety features. Critical Commuters, while exhibiting a more neutral stance, underscore specific aspects of transportation services that resonate strongly with them, highlighting the need for targeted improvements. Efficiency-Driven Advocates prioritize efficiency and convenience, advocating for streamlined travel experiences and cost-effective solutions. Inclusive Planners prioritize accessibility and inclusivity, emphasizing the importance of accommodating all passengers, including those with special needs. By recognizing and addressing these distinct preferences, transportation authorities can enhance the overall commuter experience and foster greater satisfaction among diverse user groups.

Regarding *Policy Implications for Enhanced Service Delivery*, the findings of this study hold significant implications for policymakers and transportation authorities in formulating policies and strategies to meet the evolving needs of commuters. By aligning transportation initiatives with the priorities of different clusters, policymakers can ensure the effective allocation of resources and the implementation of targeted interventions. For instance, initiatives aimed at enhancing transportation security and inclusivity can be tailored to meet the specific requirements of Security-Conscious Commuters and Inclusive Planners, respectively. Similarly, efforts to improve service efficiency and reliability can be directed towards addressing the preferences of Efficiency-Driven Advocates. By adopting a cluster-centric approach to policy formulation, policymakers can maximize the impact of interventions and deliver more responsive and inclusive transportation services.

Lastly, *Regional Considerations and Cross-Cultural Insights* demonstrates how the relationship between the geographic distribution of commuter clusters across different countries underscores the importance of considering regional factors and cross-cultural insights in transportation planning and decision-making. Variations in transportation preferences and behaviors observed among clusters from diverse geographical regions highlight the influence of local infrastructural, cultural, and socio-economic factors. Policymakers and transportation authorities must take into account these regional nuances when designing transportation interventions to ensure their relevance and effectiveness across different contexts. By leveraging cross-cultural insights, policymakers can identify best practices, exchange knowledge, and foster collaboration to address common transportation challenges and promote sustainable mobility solutions.

6.3. Suggestions for Future Research

The insights gleaned from this study lay the groundwork for future research endeavors aimed at delving deeper into transportation preferences, behaviors, and the underlying dynamics shaping commuter experiences. Building upon the findings of this dissertation, several avenues for further exploration emerge, each offering opportunities to explore new dimensions and address lingering questions in the field of transportation studies.

Longitudinal Studies represent a promising approach to understanding how transportation preferences and behaviors evolve over time. By tracking commuter patterns and attitudes longitudinally, researchers can discern trends, identify key determinants of change, and assess the long-term effectiveness of transportation interventions.

Complementing quantitative analyses with Qualitative Investigations could provide a more nuanced understanding of commuter experiences. Methods such as interviews, focus groups, and ethnographic studies can capture rich, contextual data, shedding light on the underlying motivations, perceptions, and lived realities of commuters.

Exploring the Impact of Emerging Technologies on transportation systems and user experiences represents another promising avenue for future research. Investigating the adoption of innovations such as autonomous vehicles, mobility-as-a-service platforms, and smart infrastructure could provide valuable insights into their implications for commuter behavior, safety, and sustainability.

Designing and evaluating Behavioral Interventions aimed at promoting sustainable transportation choices warrant further investigation. Research focused on understanding the efficacy of nudges, incentives, and information campaigns in influencing commuter behavior could inform the development of evidence-based strategies for encouraging modal shifts towards more eco-friendly and efficient transportation modes.

Evaluating the effectiveness of transportation policies and interventions in achieving their intended goals is crucial for evidence-based policymaking. Future research could employ rigorous evaluation methods, such as randomized controlled trials and quasi-experimental designs, to assess the impact of policy interventions on commuter behavior, satisfaction, and overall transportation system performance.

Embracing Interdisciplinary Approaches that draw upon insights from fields such as urban planning, psychology, sociology, and environmental science can enrich our understanding of transportation phenomena. Future research should encourage interdisciplinary collaboration to

tackle complex transportation issues from multiple perspectives and generate innovative solutions.

By embarking on these avenues of future research, scholars and practitioners can contribute to advancing knowledge, informing policy, and shaping the future of transportation in ways that promote sustainability, equity, and well-being for all.

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Appendices

7.1. Appendix A - Questionnaire

1. *What age bracket are you in?*

- a) 18-24 years
- b) 25-34 years
- c) 35-44 years
- d) 45-54 years
- e) 55-64 years
- f) 65-74 years
- g) >75 years
- h) Prefer not to answer

2. *What is your gender?*

- a) Men
- b) Women
- c) Non-binary
- d) Transexual
- e) Prefer not to answer
- f) Other
- g) Other text

3. *How many people, including yourself, live in your household?*

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5 or more

4. *Do you have children living in your household?*

- a) No
- b) 1
- c) 2
- d) 3
- e) 4 or more

5. *In your family unit, do you live with any dependent person?*

- a) No
- b) Preschool age children (under 5 years)
- c) School age children (5-10 years)
- d) School age children (10-16 years)
- e) Elderly relative
- f) Physically or mentally impaired young, adult or elder

6. *How many people have a driving license in your household?*

- a) None
- b) 1
- c) 2
- d) 3 or more

7. *How many cars are available at your household?*

a) N
o
n
e

- a) 1
- b) 2
- c) 3 or more

8. *Which, if any, of the following disabilities do you have?*

- a) None
- b) Mobility impairment
- c) Hearing impairment
- d) Visual impairment
- e) Speech and communication impairment
- f) Learning disability
- g) Serious long term illness

9. *Do you consider yourself to live in a:*

- a) Rural environment
- b) Urban environment
- c) Suburban environment

10. *In which country do you currently live?*

- a) Portugal
- b) Spain
- c) France
- d) Italy
- e) United Kingdom
- f) Germany
- g) Sweden
- h) Denmark
- i) Norway
- j) Romania
- k) Greece
- l) Lithuania
- m) Latvia
- n) Estonia
- o) Other

- p) Other text

11. What is your professional status?

- a) Paid employment – Working in an office/plant
- b) Paid employment – Working remotely
- c) Paid employment – Parental leave
- d) Paid employment – Lay off
- e) Self-employed
- f) Non-paid work
- g) Student
- h) Homemaker
- i) Retired
- j) Unemployed (health reason)
- k) Unemployed (other reason)
- l) Prefer not to answer

12. Mode of transport used for job/university commute:

- a) Private car/private motorcycle
- b) Shared bikes /bicycle, cargo bike)
- c) Owned bicycle/cargo bike
- d) Public transport (tram, train, bus, van)
- e) Shared modes (car, scooter, electric scooter)
- f) Walking
- g) I stopped making this trip

13. Visiting a close relative / friend / relative / family in another town?

- a) Private car/private motorcycle
- b) Shared bikes /bicycle, cargo bike)
- c) Owned bicycle/cargo bike
- d) Public transport (tram, train, bus, van)
- e) Shared modes (car, scooter, electric scooter)
- f) Walking
- g) I stopped making this trip

14. Running an errand?

- a) Private car/private motorcycle
- b) Shared bikes /bicycle, cargo bike)
- c) Owned bicycle/cargo bike
- d) Public transport (tram, train, bus, van)
- e) Shared modes (car, scooter, electric scooter)
- f) Walking
- g) I stopped making this trip

15. Going out for dinner?

- a) Private car/private motorcycle
- b) Shared bikes /bicycle, cargo bike)
- c) Owned bicycle/cargo bike
- d) Public transport (tram, train, bus, van)
- e) Shared modes (car, scooter, electric scooter)
- f) Walking
- g) I stopped making this trip

16. Shopping for groceries?

- a) Private car/private motorcycle
- b) Shared bikes /bicycle, cargo bike)
- c) Owned bicycle/cargo bike
- d) Public transport (tram, train, bus, van)
- e) Shared modes (car, scooter, electric scooter)
- f) Walking
- g) I stopped making this trip

17. Visiting a shopping center?

- a) Private car/private motorcycle
- b) Shared bikes /bicycle, cargo bike)
- c) Owned bicycle/cargo bike
- d) Public transport (tram, train, bus, van)
- e) Shared modes (car, scooter, electric scooter)
- f) Walking
- g) I stopped making this trip

18. To which of the following transport modes do you have access, even if you never use them? Please tick all that apply.

- ☐ Walk
- ☐ Owned bicycle, cargo bike
- ☐ Shared bicycle, cargo bike
- ☐ Owned motorbike, scooter
- ☐ Owned electric scooter
- ☐ Shared electric scooter
- ☐ Private car as driver
- ☐ Private car as a passenger
- ☐ Carpooling (e.g. BlaBlacar)
- ☐ Car sharing (e.g. zipcar, drivenow, car2go)
- ☐ Uber/Cabify/Kapten/Bolt and similars
- ☐ Taxi
- ☐ Bus, electric bus and similar
- ☐ Train
- ☐ Tram
- ☐ Metro

19. *Think about the trips you make in a typical week for you (e.g. commuting to work, related to your training or education, escorting and caregiving, going on errands). Which travel modes do you use?*

- ☐ Walk
- ☐ Owned bicycle, cargo bike
- ☐ Shared bicycle, cargo bike
- ☐ Owned motorbike, scooter
- ☐ Owned electric scooter
- ☐ Shared electric scooter
- ☐ Private car as driver
- ☐ Private car as a passenger
- ☐ Carpooling (e.g. BlaBlaCar)
- ☐ Car sharing (e.g. zipcar, drivenow, car2go)
- ☐ Uber/Cabify/Kapten/Bolt and similars
- ☐ Taxi
- ☐ Bus, electric bus and similar
- ☐ Train
- ☐ Tram
- ☐ Metro

20. *Origin of your most frequent?*

A: _____

21. *Destination of your most frequent trip?*

A: _____

22. *What is the duration of the trip?*

A: _____

23. *What method of payment do you use on your trip?*

- a) Single-use ticket
- b) Monthly pass
- c) Pre-charged card
- d) Family pass
- e) Credit or debit card
- f) Money
- g) Don't Know /Not Answering

24. *Do you usually travel with a dependent person in this trip? (children, elderly, caring for disabled people).*

- a) Yes
- b) No

c) Prefer not to answer

25. *Do you usually stop regularly on this journey?*

- a) Yes
- b) No

26. *What are the reasons for these stops?*

- ☐ Leisure
- ☐ Work related
- ☐ Education
- ☐ Shopping
- ☐ Medical/social care appointments
- ☐ Escorting dependents (school, daycare, etc.)
- ☐ Visiting the city for tourism
- ☐ Don't Know /Not Answering

27. *Have you ever had any threats of harassment or violence while travelling in the city you live in?*

- a) Yes
- b) No

28. *Think about the most relevant/ serious incident to you. If the incident happened while you were stopped, please describe the location. For example at a bus stop, in a parking lot, in a train station, in the street, etc.*

A: _____

29. *Think about the most relevant/ serious incident to you. If the incident occurred on a journey, please describe the origin and destination of the trip (origin stop and destination stop). For example, on the bus, in the metro, on the train, in the car, etc.*

A: _____

30. *If yes, did you report it?*

- a) Yes
- b) No
- c) Don't Know /Not Answering

31. *If no, why didn't you? Please tick all that apply.*

- ☐ Afraid
- ☐ Didn't know how to proceed
- ☐ Didn't want to waste time
- ☐ Didn't think it was a big deal
- ☐ Didn't think the police was taking it seriously

- ☐ Didn't think that the responsibility of reporting is yours
- ☐ Don't Know /Not Answering

32. *Safety and Security, considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night
- b) Availability of a smartphone application for a more personalised contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations
- c) Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police
- d) Conductor selling tickets on-board at night
- e) Parking dedicated to women

33. *Mobility – Public transport considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) Increase of dedicated space for children in public transports
- b) Increase of dedicated space for people travelling with trolleys/ wheelchairs in public transport
- c) Transport service that adjusts the routes according to passenger needs
- d) Availability of schedule information and integration with multiples modes of transport in a smartphone application
- e) Availability of schedule information and integration with multiples modes of transport in bus stops and stations
- f) Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process
- g) Provision of panic/alarm buttons at bus stops/ stations
- h) Provision of panic/alarm buttons inside vehicles
- i) Provision of a reliable camera surveillance system at bus stops/ stations
- j) Provision of a reliable camera surveillance system inside vehicles
- k) Provision of emergency telephones at bus stops/ stations
- l) Special fares for people who have multiple tasks per day
- m) I will never use public transport in my city

34. *Sustainability – Public transport, considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) I rarely worry about the effects of pollution on myself and my family
- b) I do what I can to contribute to reducing global climate changes, even if it costs more and takes time
- c) I choose the modes of transport considering the impact on the environment

35. *Mobility restrictions (How much do you agree with the following statements?), considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) I am satisfied with the ability to crossroads in safety
- b) I am satisfied with the accessibility of station facilities

- c) I am satisfied with the accessibility of ticket offices for those with communication/language problems
- d) I am satisfied with the adequacy of space for mobility vehicles on public transport vehicles
- e) I am satisfied with the announcements of transport stop names or use of recorded announcements
- f) I am satisfied with the availability of ramps/dropped kerbs
- g) I am satisfied with the availability and suitability of priority seating
- h) I am satisfied with the cleanliness of pavements
- i) I am satisfied with the clearness which the routes are marked
- j) I am satisfied with the gradient of the pathways and ramps
- k) I am satisfied with the number of disabled-friendly facilities on vehicles
- l) I am satisfied with the level of awareness of public transport staff to the needs of disabled passengers
- m) I am satisfied with the location of information
- n) I am satisfied with the overall accessibility for those with sensory impairments
- o) I am satisfied with the pre-trip information on accessibility in the route and at destination
- p) I am satisfied with the provision of dedicated parking
- q) I am satisfied with the quality and maintenance of pavements
- r) I am satisfied with the safety and security of streets

36. *Service indicators (How much do you agree with the following statements?), considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) The public transport options suit my travel needs
- b) I can rely on service predictability (namely time of arrival, frequency of delays, concurrence between actual planned travel time, etc.)
- c) I am satisfied with the frequency of service per weekdays
- d) I am satisfied with the price I pay to use this service
- e) The connections with other modes of transport are adequate
- f) I can rely on travel information available in web pages/apps
- g) I can rely on real time information about the location of public transport vehicles available on stops/ apps
- h) The public transport is the best option I have available

37. *Safety indicators (How much do you agree with the following statements?), considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) I feel safe waiting for the public transport vehicle to arrive
- b) I feel safe on board of public transport vehicles
- c) I can see the improvements made by operators in reaction to safety incidents (Measures being taken for handling safety incidents)
- d) The incidents in public transport stops are dealt in the moment
- e) The incidents in public transport vehicles are dealt in the moment
- f) I believe that drivers are willing deal with incidents
- g) I feel safe parking my car in stations/ bus stops surrounding areas
- h) Overall, I am satisfied with the safety aspects of public transport in my city

38. *Security indicators (How much do you agree with the following statements?), considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) I am satisfied with the number of security staff visible when waiting for public transport
- b) I am satisfied with the level of crowding levels in public transport vehicles or in waiting areas
- c) I feel safe with the level of crowding in public transport vehicles or waiting areas
- d) I am comfortable with the existing security cameras in waiting areas
- e) I am comfortable with the existing security cameras inside public transport vehicles
- f) I feel secure from harassment or other tips of violence at stations
- g) I feel secure from harassment or other tips of violence inside vehicles
- h) Overall, I am satisfied with the security aspects of public transport in my city

39. *Infrastructure indicators(How much do you agree with the following statements?), considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) I am happy with the provision of panic buttons in stations/ bus stops
- b) I am satisfied with the existing lighting in stops/ stations/ terminals and surrounding areas
- c) I am satisfied with the passenger's respect for dedicated space baby trolleys
- d) I am satisfied with passenger's respect for dedicated space for wheelchairs/trolleys
- e) I am satisfied with the shelter provided in stops
- f) I am satisfied with the location of PT stops (regarding isolation, ...)
- g) I am satisfied with the easiness of connection between different modes of transport
- h) I am satisfied with the level of comfort travelling with dependents (availability of seats, priority seats,...)
- i) I am satisfied with the information available about the conditions of accessibility along the route and at destination
- j) I am satisfied with the conditions of accessibility for people with disabilities or baby trolleys (space inside vehicles, priority seats, existing lifts and escalators, etc.)

40. *Walk (How much do you agree with the following statements?), considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) I am satisfied with the access to public transport stops (stations, bus stops, ...)
- b) I am satisfied with the coverage of pedestrian routes
- c) I am satisfied with the security offered by pedestrian walkways (for example: offer a clear passage)
- d) I am satisfied with the easiness and security of connections between different modes of transport
- e) I am satisfied with the level of safety walking on the streets
- f) I am satisfied with the information for pedestrians on signposts and maps (for example: remaining waiting time on crosswalks)
- g) I am satisfied with the location of subways and overhead walkways
- h) I am satisfied with the maintenance and quality of pavement

41. *What is the highest level of education you have achieved?*

- a) No formal education
- b) Primary education

- c) Lower secondary education
- d) Upper secondary education
- e) Post-secondary education
- f) Short-cycle tertiary education
- g) Degree
- h) Master
- i) Doctorate
- j) Prefer not to answer

42. *What is your average monthly income? Consider the average salary in your country.*

- a) Bellow average
- b) Average
- c) Above average
- d) Prefer not to answer

43. *Please select all that apply. This is not a mandatory question, feel free to leave it unanswered if you don't want to answer.*

- ☐ Born in the country you currently live
- ☐ Parents born in the country you currently live in
- ☐ Citizen of the country you currently live
- ☐ None of the above
- ☐ Prefer not to answer

44. *Do you consider yourself to be:*

- a) Heterosexual
- b) Homosexual
- c) Bisexual
- d) Prefer not to answer
- e) Other

Other text: _____

45. *Feelings in public transport, considering: 1 (completely agreed) - 5 (completely disagree); 0 (NA/NS)*

- a) People stare at me in public transport because of my appearance
- b) I have heard other people commenting on my appearance while using public transport.
- c) I have been verbally attacked in public transport by other passengers.
- d) I feel comfortable with other people when I use public transport
- e) Other people/s behaviour affects my mode choice.

46. *Which ethnic group do you belong to? This is not a mandatory question, feel free to leave it unanswered if you don't want to answer.*

- a) White
- b) Black

- c) South and South-East Asian
 - d) East Asian
 - e) Latin American
 - f) Mixed ethnicity
 - g) Prefer not to answer
 - h) other
- Other text: _____

7.2. Appendix B - Sample Characterization

		Frequency	Percent
Valid	Portugal	297	21,2
	Spain	290	20,7
	France	270	19,2
	Italy	239	17,0
	Sweden	151	10,8
	Greece	156	11,1
	Total	1403	100,0

Table 17 - Sample Frequency

		Frequency	Percent
Valid	Man	687	49,0
	Woman	716	51,0
	Total	1403	100,0

Table 18 - Sample What is your gender?

		Frequency	Percent
Valid	Below average	409	29,2
	Average	436	31,1
	Above average	368	26,2
	no answer	88	6,3
	Not Disclosed	95	6,8
Total		1396	99,5
Missing	System	7	,5
Total		1403	100,0

Table 19 - Sample What is your average monthly income? Consider the average salary in your country

		In which country do you currently live?						Total
		Portugal	Spain	France	Italy	Sweden	Greece	
What is your gender?	Man	47,5%	49,7%	50,7%	50,2%	53,0%	41,7%	49,0%
	Woman	52,5%	50,3%	49,3%	49,8%	47,0%	58,3%	51,0%
Total		297	290	270	239	151	156	1403

Table 20 - Cross-country What is your gender?

		In which country do you currently live?						Total
		Portugal	Spain	France	Italy	Sweden	Greece	
What is your average monthly income? Consider the average salary in your country.	Below average	28,9%	25,8%	14,8%	48,1%	34,4%	27,7%	29,3%
	Average	49,7%	40,4%	6,3%	28,9%	22,5%	34,8%	31,2%
	Above average	14,6%	21,6%	53,3%	15,1%	31,1%	23,2%	26,4%
	no answer	0,0%	0,0%	25,6%	7,9%	0,0%	0,0%	6,3%
	Not Disclosed	6,8%	12,2%	0,0%	0,0%	11,9%	14,2%	6,8%
Total		294	287	270	239	151	155	1396

Table 21 - Cross-country What is your average monthly income? Consider the average salary in your country

7.3. Appendix C - PCA

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			,944
Bartlett's Test of Sphericity	Approx. Chi-Square	17823,208	
	df	120	
	Sig.		,000

Table 22 - KMO and Bartlett's Test

Communalities		
	Initial	Extraction
q31.1 3.1_1_Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night	1,000	,738
q31.2 3.1_2_Have more stops closer to my residence for my daily activities	1,000	,691
q31.3 3.1_3_Availability of a smartphone application for a more personalised contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations	1,000	,722
q31.4 3.1_4_Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police	1,000	,717
q31.5 3.1_5_Conductor selling tickets on-board at night	1,000	,611
q32.1 3.2_1_Increase of dedicated space for children in public transports	1,000	,878
q32.2 3.2_2_Increase of dedicated space for people travelling with trolleys/ wheelchairs in public transport	1,000	,820
q32.4 3.2_4_Availability of schedule information and integration with multiples modes of transport in a smartphone application	1,000	,832
q32.5 3.2_5_Availability of schedule information and integration with multiples modes of transport in bus stops and stations	1,000	,829
q32.6 3.2_6_Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process	1,000	,744
q32.7 3.2_7_Provision of panic/alarm buttons at bus stops/ stations	1,000	,816
q32.8 3.2_8_Provision of panic/alarm buttons inside vehicles	1,000	,806
q32.9 3.2_9_Provision of a reliable camera surveillance system at bus stops/ stations	1,000	,807
q32.10 3.2_10_Provision of a reliable camera surveillance system inside vehicles	1,000	,786
q32.11 3.2_11_Provision of emergency telephones at bus stops/ stations	1,000	,774
q32.12 3.2_12_Special fares for people who have multiple tasks per day	1,000	,682

Extraction Method: Principal Component Analysis.

Table 23 - Communalities

Total Variance Explained							
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	9,166	57,289	57,289	9,166	57,289	57,289	7,796
2	1,425	8,905	66,194	1,425	8,905	66,194	6,452
3	,947	5,921	72,115	,947	5,921	72,115	6,968
4	,715	4,469	76,584	,715	4,469	76,584	5,392
5	,553	3,459	80,043				
6	,494	3,089	83,132				
7	,424	2,652	85,784				
8	,379	2,369	88,152				
9	,336	2,100	90,253				
10	,292	1,828	92,080				
11	,270	1,689	93,769				
12	,268	1,673	95,442				
13	,235	1,468	96,910				
14	,191	1,194	98,104				
15	,159	,995	99,099				
16	,144	,901	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 24 - Total Variance Explained

Component Matrix ^a				
	Component			
	1	2	3	4
q32.7 3.2_7_Provision of panic/alarm buttons at bus stops/ stations	,848	-,171	-,167	,200
q32.8 3.2_8_Provision of panic/alarm buttons inside vehicles	,827	-,179	-,177	,242
q32.11 3.2_11_Provision of emergency telephones at bus stops/ stations	,817	-,207	-,193	,162
q32.9 3.2_9_Provision of a reliable camera surveillance system at bus stops/ stations	,815	-,178	-,329	
q32.6 3.2_6_Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process	,806	-,184	,158	-,191
q32.5 3.2_5_Availability of schedule information and integration with multiples modes of transport in bus stops and stations	,797	-,226	,107	-,363
q32.4 3.2_4_Availability of schedule information and integration with multiples modes of transport in a smartphone application	,793	-,176	,150	-,388
q32.10 3.2_10_Provision of a reliable camera surveillance system inside vehicles	,784	-,229	-,344	
q32.12 3.2_12_Special fares for people who have multiple tasks per day	,768	-,234		-,176
q31.3 3.1_3_Availability of a smartphone application for a more personalised contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations	,748	,395		
q31.4 3.1_4_Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police	,747	,388		
q32.2 3.2_2_Increase of dedicated space for people travelling with trolleys/ wheelchairs in public transport	,746		,454	,218
q31.1 3.1_1_Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night	,663	,531		-,126
q32.1 3.2_1_Increase of dedicated space for children in public transports	,649		,577	,349
q31.2 3.1_2_Have more stops closer to my residence for my daily activities	,630	,535		
q31.5 3.1_5_Conductor selling tickets on-board at night	,620	,424	-,105	,190

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Table 25- Component Matrix

Pattern Matrix ^a				
	Component			
	1	2	3	4
q32.10 3.2_10_Provision of a reliable camera surveillance system inside vehicles	,886			
q32.9 3.2_9_Provision of a reliable camera surveillance system at bus stops/ stations	,877			
q32.8 3.2_8_Provision of panic/alarm buttons inside vehicles	,850			
q32.11 3.2_11_Provision of emergency telephones at bus stops/ stations	,819			
q32.7 3.2_7_Provision of panic/alarm buttons at bus stops/ stations	,810			
q31.1 3.1_1_Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night		,890		
q31.2 3.1_2_Have more stops closer to my residence for my daily activities		,881		
q31.3 3.1_3_Availability of a smartphone application for a more personalised contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations		,740		
q31.4 3.1_4_Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police		,724		
q31.5 3.1_5_Conductor selling tickets on-board at night	,271	,706	-,308	
q32.4 3.2_4_Availability of schedule information and integration with multiples modes of transport in a smartphone application			,896	
q32.5 3.2_5_Availability of schedule information and integration with multiples modes of transport in bus stops and stations			,870	
q32.6 3.2_6_Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process			,643	
q32.12 3.2_12_Special fares for people who have multiple tasks per day	,250		,604	
q32.1 3.2_1_Increase of dedicated space for children in public transports				,986
q32.2 3.2_2_Increase of dedicated space for people travelling with trolleys/ wheelchairs in public transport				,773

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.^a
a. Rotation converged in 6 iterations.

Table 26 - Pattern Matrix

Structure Matrix				
	Component			
	1	2	3	4
q32.7 3.2_7_Provision of panic/alarm buttons at bus stops/ stations	,897	,581	,654	,616
q32.8 3.2_8_Provision of panic/alarm buttons inside vehicles	,891	,558	,619	,611
q32.9 3.2_9_Provision of a reliable camera surveillance system at bus stops/ stations	,889	,561	,659	,449
q32.11 3.2_11_Provision of emergency telephones at bus stops/ stations	,877	,538	,648	,568
q32.10 3.2_10_Provision of a reliable camera surveillance system inside vehicles	,870	,508	,657	,410
q31.1 3.1_1_Flexible stop service that allows me to stop closer to my destination and reduce walking distances at night	,458	,851	,500	,421
q31.3 3.1_3_Availability of a smartphone application for a more personalised contact of the public transportation users and the public transport provider and/or police to alert to potential danger situations	,587	,839	,578	,480
q31.4 3.1_4_Availability and clearer advertisement of contact numbers in the stations, to contact the public transportation provider and/or the police	,626	,834	,527	,477
q31.2 3.1_2_Have more stops closer to my residence for my daily activities	,439	,826	,450	,399
q31.5 3.1_5_Conductor selling tickets on-board at night	,540	,747	,332	,435
q32.4 3.2_4_Availability of schedule information and integration with multiples modes of transport in a smartphone application	,643	,543	,911	,542
q32.5 3.2_5_Availability of schedule information and integration with multiples modes of transport in bus stops and stations	,675	,518	,909	,533
q32.6 3.2_6_Provision of suitable connections between sidewalk and bus/train/metro to facilitate the boarding process	,692	,542	,842	,628
q32.12 3.2_12_Special fares for people who have multiple tasks per day	,694	,484	,802	,566
q32.1 3.2_1_Increase of dedicated space for children in public transports	,498	,463	,518	,935
q32.2 3.2_2_Increase of dedicated space for people travelling with trolleys/ wheelchairs in public transport	,609	,520	,648	,893

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

Table 27 - Structure Matrix

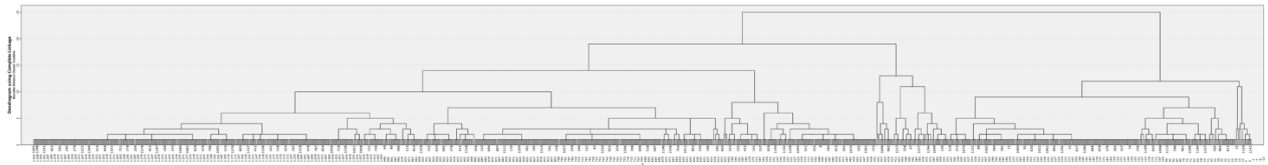
Component Correlation Matrix				
Component	1	2	3	4
1	1,000	,611	,703	,591
2	,611	1,000	,559	,519
3	,703	,559	1,000	,594
4	,591	,519	,594	1,000

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

Table 28 - Component Correlation Matrix

7.4. Appendix D – Dendrogram: Complete Linkage



Graphic 6 - Dendrogram Complete Linkage

7.5. Appendix E - Solution: Complete Linkage 4 Clusters

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
I am satisfied with the frequency of service per weekdays	Completely agree	14,3%	14,0%	8,9%	20,5%	11,6%
	Agree	15,2%	26,8%	18,3%	15,4%	19,7%
	Neutral / Neither Agree nor Disagree	21,0%	31,1%	23,9%	17,9%	24,9%
	Disagree	39,0%	22,6%	33,3%	33,3%	31,6%
	Completely disagree	10,5%	4,9%	14,8%	12,8%	11,6%
Total		105	164	372	39	680

Table 29 - I am satisfied with the frequency of service per weekdays

		Complete Linkage 4 Clusters				
		Security- Conscious Commuters	Critical Commuters	Efficiency -Driven Advocates	Inclusive Planners	Total
The connections with other modes of transport are adequate	Completely agree	7,8%	12,3%	9,4%	15,8%	10,2%
	Agree	8,7%	20,9%	15,3%	13,2%	15,5%
	Neutral / Neither Agree nor Disagree	38,8%	35,6%	24,7%	36,8%	30,1%
	Disagree	29,1%	25,2%	34,3%	21,1%	30,6%
	Completely disagree	15,5%	5,5%	15,8%	13,2%	13,1%
Total		103	163	373	38	677

Table 30 - The connections with other modes of transport are adequate

		Complete Linkage 4 Clusters				
		Security- Conscious Commuters	Critical Commuters	Efficiency- Driven Advocates	Inclusive Planners	Total
I can rely on travel information available in web pages/apps	Completely agree	10,6%	12,9%	7,0%	15,4%	9,4%
	Agree	18,3%	20,2%	10,2%	15,4%	14,2%
	Neutral / Neither Agree nor Disagree	17,3%	41,7%	28,5%	15,4%	29,2%
	Disagree	36,5%	17,2%	37,1%	35,9%	32,2%
	Completely disagree	17,3%	8,0%	16,1%	15,4%	14,3%
Total		104	163	372	39	678

Table 31 - I can rely on travel information available in web pages/apps

		Complete Linkage 4 Clusters				
		Security- Conscious Commuters	Critical Commuters	Efficiency- Driven Advocates	Inclusive Planners	Total
I can rely on real time information about the location of public transport vehicles available on stops/ apps	Completely agree	5,9%	15,3%	8,9%	15,4%	10,4%
	Agree	17,6%	22,1%	12,7%	23,1%	16,3%
	Neutral / Neither Agree nor Disagree	26,5%	38,7%	24,0%	28,2%	28,1%
	Disagree	33,3%	16,6%	36,9%	17,9%	30,4%
	Completely disagree	14,7%	6,1%	16,2%	12,8%	13,3%
Total		102	163	371	39	675

Table 32 - I can rely on real time information about the location of public transport vehicles available on stops/ apps

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
The public transport is the best option I have available	Completely agree	12,5%	13,4%	12,0%	28,2%	13,4%
	Agree	12,5%	20,1%	9,9%	10,3%	12,8%
	Neutral / Neither Agree nor Disagree	23,1%	33,5%	24,3%	17,9%	26,0%
	Disagree	27,9%	20,7%	31,3%	30,8%	28,2%
	Completely disagree	24,0%	11,6%	21,7%	10,3%	18,9%
Total		104	164	374	39	681

Table 33 - The public transport is the best option I have available

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
I am satisfied with the level of crowding levels in public transport vehicles or in waiting areas	Completely agree	30,8%	31,5%	20,4%	43,6%	26,0%
	Agree	29,8%	26,7%	21,8%	20,5%	24,1%
	Neutral / Neither Agree nor Disagree	20,2%	31,5%	23,4%	33,3%	25,4%
	Disagree	17,3%	8,5%	23,7%	2,6%	17,8%
	Completely disagree	1,9%	1,8%	9,4%	0,0%	5,9%
Total		104	165	372	39	680

Table 34 - I am satisfied with the level of crowding levels in public transport vehicles or in waiting areas

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
I am satisfied with the conditions of accessibility for people with disabilities or baby trolleys (space inside vehicles, priority seats, existing lifts and escalators, etc.)	Completely agree	10,2%	18,2%	15,8%	13,5%	15,4%
	Agree	27,6%	25,5%	16,1%	21,6%	20,4%
	Neutral / Neither Agree nor Disagree	29,6%	39,4%	27,4%	35,1%	31,2%
	Disagree	21,4%	12,7%	30,2%	16,2%	23,8%
	Completely disagree	10,2%	1,8%	8,9%	0,0%	6,8%
Total		98	165	361	37	661

Table 35 - I am satisfied with the conditions of accessibility for people with disabilities or baby trolleys (space inside vehicles, priority seats, existing lifts and escalators, etc.)

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
I am satisfied with the location of PT stops (regarding isolation, ...)	Completely agree	8,9%	18,9%	10,6%	16,2%	12,7%
	Agree	18,8%	23,8%	17,6%	10,8%	18,9%
	Neutral / Neither Agree nor Disagree	31,7%	39,6%	28,5%	32,4%	31,9%
	Disagree	33,7%	12,8%	30,9%	32,4%	27,0%
	Completely disagree	4,0%	4,3%	11,7%	5,4%	8,3%
Total		101	164	369	37	671

Table 36 - I am satisfied with the location of PT stops (regarding isolation, ...)

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
Overall, I am satisfied with the safety aspects of public transport in my city	Completely agree	8,7%	15,2%	6,6%	15,8%	9,5%
	Agree	13,5%	20,7%	10,9%	13,2%	13,8%
	Neutral / Neither Agree nor Disagree	29,8%	35,4%	27,6%	15,8%	29,2%
	Disagree	32,7%	22,0%	37,2%	47,4%	33,3%
	Completely disagree	15,4%	6,7%	16,7%	7,9%	13,5%
Total		104	164	366	38	672

Table 37 - Overall, I am satisfied with the safety aspects of public transport in my city

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
People stare at me in public transport because of my appearance	Completely agree	54,5%	39,4%	43,7%	62,9%	45,6%
	Agreed	14,8%	19,0%	14,2%	17,1%	15,7%
	Neutral / Neither Agree nor Disagree	18,2%	27,7%	15,9%	8,6%	18,7%
	Disagree	9,1%	8,8%	14,2%	8,6%	11,7%
	Completely disagree	3,4%	2,2%	9,5%	0,0%	6,1%
Total		88	137	295	35	555

Table 38 - People stare at me in public transport because of my appearance

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
I have been verbally attacked in public transport by other passengers.	Completely agree	58,0%	39,0%	51,0%	62,9%	49,9%
	Agreed	18,2%	18,4%	11,3%	14,3%	14,3%
	Neutral / Neither Agree nor Disagree	6,8%	28,7%	11,9%	8,6%	15,0%
	Disagree	8,0%	8,1%	11,3%	8,6%	9,8%
	Completely disagree	9,1%	4,4%	10,6%	2,9%	8,4%
Total		88	136	302	35	561

Table 39 - I have been verbally attacked in public transport by other passengers.

		Frequency	Percent
Valid	Security-Conscious Commuters	176	12,5
	Critical Commuters	348	24,8
	Efficiency-Driven Advocates	795	56,7
	Inclusive Planners	84	6,0
	Total	1403	100,0

Table 40 - Complete Linkage 4 Clusters frequency

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
What age bracket are you in?	18-24 years	18,2%	12,1%	10,1%	8,3%	11,5%
	25-34 years	20,5%	16,1%	19,7%	25,0%	19,2%
	35-44 years	13,6%	19,3%	24,7%	28,6%	22,2%
	45-54 years	19,9%	24,4%	22,0%	17,9%	22,1%
	55-64 years	17,0%	18,1%	14,0%	10,7%	15,2%
	65-74 years	8,5%	8,6%	7,4%	8,3%	7,9%
	> 75 years	2,3%	1,4%	2,1%	1,2%	1,9%
Total		176	348	795	84	1403

Table 41 - What age bracket are you in?

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
In which country do you currently live?	Portugal	17,6%	17,5%	23,8%	19,0%	21,2%
	Spain	22,2%	21,3%	20,5%	16,7%	20,7%
	France	19,3%	19,0%	20,4%	9,5%	19,2%
	Italy	23,3%	20,7%	14,1%	16,7%	17,0%
	Sweden	13,1%	13,8%	6,5%	33,3%	10,8%
	Greece	4,5%	7,8%	14,7%	4,8%	11,1%
Total		176	348	795	84	1403

Table 42 - In which country do you currently live?

		Complete Linkage 4 Clusters				
		Security-Conscious Commuters	Critical Commuters	Efficiency-Driven Advocates	Inclusive Planners	Total
What is your average monthly income? Consider the average salary in your country.	Below average	30,9%	28,0%	27,8%		45,2%
	Average	27,4%	31,1%	33,0%		22,6%
	Above average	25,7%	24,5%	27,8%		21,4%
	no answer	8,0%	9,2%	4,9%		3,6%
	Not Disclosed	8,0%	7,2%	6,3%		7,1%
Total		175	347	790		84

Table 43 - What is your average monthly income? Consider the average salary in your country.

		Complete Linkage 4 Clusters			
		Security- Conscious Commuters	Critical Commuters	Efficiency- Driven Advocates	Inclusive Planners
What is your average monthly income? Consider the average salary in your country.	Below average	30,9%	28,0%	27,8%	45,2%
	Average	27,4%	31,1%	33,0%	22,6%
	Above average	25,7%	24,5%	27,8%	21,4%
	no answer	8,0%	9,2%	4,9%	3,6%
	Not Disclosed	8,0%	7,2%	6,3%	7,1%
Total		175	347	790	84

Table 44 - What is the highest level of education you have achieved?