

Yasmine Bounouara

**DRIVERS AND BARRIERS OF EARLY-  
CAREER ACADEMICS TO REDUCE THEIR  
BUSINESS AIR TRAVEL**

A case study of Tampere University

Faculty of Management and Business  
Master's Thesis  
Supervisors: Malla Mattila, Hanne Tiikkaja  
May 2024

# ABSTRACT

Yasmine Bounouara: Drivers and barriers of early-career academics to reduce their business air travel, a case study of Tampere University  
Master's Thesis  
Tampere University  
Master's Degree Programme in Leadership for Change, Sustainable Business Management  
April 2024

---

Business air travel represents a significant share of the carbon footprint of the academia. While universities are engaged in sustainability issues and aim at carbon neutrality, they have not extensively addressed the reduction of academic flying. This can be explained by their internationalization strategies, which create expectations of frequent mobility and dissonances between environmental aspirations and flights emissions. While international networks are necessary for research excellence, the reduction of academic flying to a certain extent appears inevitable for carbon neutrality. Since early-career academics (ECAs) are to travel and establish networks to develop their careers, reduced flying would affect academics of diverse career stages in different ways. Consequently, research was needed to explore their drivers and barriers to reduce flying.

The effect of reduced flying on ECAs has not been extensively studied by the literature. Hence, the study aimed to explore and identify the drivers and barriers of ECAs to reduce their business air travel. The thesis formulated the following research question: at Tampere University, Finland, what are the drivers and barriers of early-career academics to reduce their business air travel?

The thesis utilized an existing theoretical model on the influential factors affecting the air travel behavior of academics. A literature review on academic flying was conducted, and numerous articles were reviewed to identify the characteristics of ECAs. The findings from the literature review were integrated to the existing model, which provided the theoretical framework of the reduction of academic flying amongst ECAs.

A case study of Tampere University, instrumental in its nature, was conducted. The dataset consisted of five institutional documents, and 12 semi-structured interviews of six ECAs and six academics with more mature career stages working at the university. The data provided rich information on the context and experiences of academics regarding academic flying. The dataset was analyzed through thematic analysis with an abduction logic. The approach involved identifying factors previously established in the theoretical framework, while identifying emerging elements from the data. The empirical analysis resulted in five themes.

The analysis revealed that factors operated at different levels, that is, structural, institutional, community, and individual levels. Structural barriers involved the difficult access to alternative transport infrastructures and poor networking culture of online events. A potential institutional driver was the sustainability framework of the university. Institutional barriers involved the cost-efficiency obligation of the travel policy, as well as the internationalization strategies of higher education. Furthermore, barriers operating at the community level involved the encouragements of the supervisor to travel. The values and practices of research groups had a dual role on the reduction of academic flying for individuals. Individual level drivers involved personal beliefs and positive views on alternative transport modes. The enjoyability of academic travel and necessity to network were barriers, while caring duties of young children had a dual effect on the reduction of flying.

The thesis provides both theoretical and practical contributions. First, it addresses the research gap of the influential factors of the reduction of academic flying for ECAs. The analysis finds that the few differences in the drivers and barriers of ECAs and other academics mainly concern doctoral researchers. For instance, the encouragements of their supervisor to travel is a barrier to the reduction of flying, and the networking imperative is more important for doctoral researchers. Additionally, the thesis contributes to existing knowledge, for instance by confirming that internationalization strategies are a barrier to the reduction of academic flying. The analysis also provides novel elements to the existing literature. The travel policy of the university plays a significant role in the reduction of flying, while academic communities also exercise an influence. Finally, the study tested an existing model and provides a revised framework on the reduction of academic flying amongst ECAs. Practical suggestions justified by the analysis mostly involve considering the effect of measures on doctoral researchers and investing time and financial resources to facilitate the reduction of business air travel.

While academic travel is necessary for research quality, the resulting benefits could be achieved while decreasing flying. Future research could investigate new approaches to networking in online events. Developing novel ways to collaborate appears essential for the long-term reduction of flying in the academia.

**Keywords:** academic flying, business air travel, early-career academics, sustainable universities, case study

The originality of this thesis has been checked using the Turnitin Originality Check service.

# USE OF AI-BASED APPLICATIONS

The AI tools used in my thesis and the purpose of their use has been described below:

## **AI tool: ChatGPT 3.5.**

The tool has been utilized mostly for grammar purposes and to find academic synonyms. Furthermore, the tool would provide recommendations to improve the clarity and structures of certain paragraphs. Additionally, AI was utilized to enhance my understanding of certain complex academic articles. Nevertheless, I confirm that the content of the thesis is original and not withdrawn from AI tools.

I am aware that I am totally responsible for the entire content of the thesis, including the parts generated by AI, and accept the responsibility for any violations of the ethical standards of publications.

## ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to all the persons who have accompanied me on this research project and thesis. First, I am deeply grateful for the continuous support and comments provided by my thesis supervisors, University Lecturer Malla Mattila and University Instructor Hanne Tiikkaja. This research would not have been possible without their encouragements and help. I feel privileged to have been supported by them in their willingness to share their research knowledge with me.

Furthermore, I am thankful for the Sustainable Tampere Universities' Network, especially Eeva-Liisa Viskari and Matias Nurminen, for providing this research opportunity and enabling me to study such an interesting topic. Their support was essential in the completion of this study and to develop my own research skills and critical thinking. I extend my gratitude to Tampere University for commissioning this thesis to develop further sustainable internal practices within the academia.

Additionally, I want to express my appreciation to all the members of the Transport Research Centre Verne who welcomed me as a research assistant for this project. I thank Heikki Liimatainen for supervising me and providing encouragement in this research.

Moreover, I express my sincere gratitude to the participants who volunteered and agreed to participate in this study and for the time they took for the interviews. Their answers and thoughts enabled me to understand this topic on a deeper level while allowing the development of a fruitful analysis.

Finally, I warmly thank my family and friends for encouraging me in the thesis process. Their advice and ongoing support enabled me to develop my research in a productive way.

## TABLE OF CONTENTS

<b>1. Introduction</b> .....	1
1.1. Background of the study .....	1
1.2. Research aim and questions .....	2
1.3. Definitions of key concepts .....	4
1.3.1. Business air travel .....	4
1.3.2. Early-career academics (ECAs) .....	4
1.3.3. Drivers, barriers, and levels of application .....	5
1.4. Structure of the thesis .....	7
<b>2. Conceptualizing the Reduction of Academic Air Travel Among Early-Career Academics</b> .....	8
2.1. Conducting the literature review .....	8
2.2. The practice-based academic flying framework .....	9
2.2.1. Overview of the framework .....	9
2.2.2. Moderators .....	11
2.2.3. Relevance of the framework for the research .....	12
2.3. The role of institutions .....	14
2.3.1. Academic travel as an institutional norm .....	14
2.3.2. The approach of universities to the reduction of academic air travel .....	15
2.3.3. The need for a systemic and culture change .....	16
2.4. Drivers to the reduction of academic flying .....	17
2.4.1. Transport infrastructures .....	17
2.4.2. Environmental values .....	18
2.5. Barriers to the reduction of academic flying .....	18
2.5.1. Networking and career progression .....	18
2.5.2. The believed link between flying and academic productivity .....	19

2.5.3.	Travelling in the “publish or perish” culture .....	20
2.5.4.	A perk of being an academic .....	21
2.6.	Characteristics of ECAs .....	22
2.6.1.	Differences in the business travel behavior .....	22
2.6.2.	Family commitments .....	22
2.6.3.	Precarious conditions .....	23
2.6.4.	Academic supervisors .....	24
2.7.	Summary: theoretical framework.....	27
<b>3.</b>	<b>Methodology</b> .....	<b>30</b>
3.1.	Research philosophy.....	30
3.1.1.	Critical Realism .....	30
3.1.2.	Reasoning logic.....	34
3.2.	Case study method .....	34
3.2.1.	Single case study .....	34
3.2.2.	Short case description .....	35
3.3.	Data collection.....	37
3.3.1.	Institutional documents.....	37
3.3.2.	Semi-structured interviews .....	39
3.4.	Thematic analysis .....	44
3.4.1.	Relevance .....	44
3.4.2.	Steps of the analysis process.....	45
<b>4.</b>	<b>Findings</b> .....	<b>51</b>
4.1.	Infrastructures and their influence on academic flying .....	51
4.1.1.	Networking in online events as a barrier to the reduction of academic flying.....	51
4.1.2.	Access to alternative transport infrastructures.....	53
4.2.	Moderators at the institutional level.....	54
4.2.1.	The sustainability framework of the university as a potential driver.....	54

4.2.2.	The travel policy and cost-efficiency rule.....	55
4.2.3.	Internationalization requirements .....	56
4.3.	Academic communities and their effects on academic flying .....	58
4.3.1.	The encouragements of the supervisor .....	59
4.3.2.	Academic peers.....	60
4.3.3.	The influence of the research group on the reduction of academic flying.....	60
4.4.	Individual level moderators .....	62
4.4.1.	Enjoyability of academic travel as a barrier .....	62
4.4.2.	Strong environmental values and personal beliefs .....	63
4.4.3.	Views on alternative transport modes .....	65
4.4.4.	The complex role of caring duties.....	65
4.5.	Academic flying and networking cultures .....	67
4.5.1.	The networking need as the main barrier to the reduction of flying .....	67
4.5.2.	The future culture of academic networking and flying .....	69
4.6.	Summary of the empirical analysis.....	71
<b>5.</b>	<b>Discussion and Conclusion .....</b>	<b>75</b>
5.1.	Summary of the study .....	75
5.2.	Theoretical contributions .....	79
5.3.	Practical implications for Tampere University .....	83
5.4.	Assessing the quality of the study .....	86
5.5.	Limitations and suggestions for future research.....	88
<b>References</b>	.....	<b>92</b>
<b>Appendices</b>	.....	<b>102</b>

## LIST OF TABLES

Table 1 : Characteristics of ECAs and their potential impact on the travel behavior .....	26
Table 2 : Research philosophies and their characteristics (Simplified from Saunders et al., 2019, Table 4.3, p. 144).....	30
Table 3 : Emissions from business air travel and their relative share at Tampere University .....	36
Table 4 : Institutional documents collected for analysis.....	38
Table 5: Interviews participants .....	40
Table 6 : The four steps of thematic analysis.....	45
Table 7 : Codebook of the thematic analysis .....	48
Table 8 : Current drivers and barriers to the reduction of academic flying and the affected groups of academics.....	72
Table 9 : Practical implications addressed to Tampere University.....	83

## LIST OF FIGURES

Figure 1 : Levels of drivers and barriers to the reduction of academic flying .....	6
Figure 2: The practice-based academic flying framework (figure adapted by the author, based on Figure 1 with integrated findings from Table 1 from Tseng, Lee, et al., 2022, Copyright © 2024 Elsevier B.V. adapted with permission).....	10
Figure 3 : The concept of moderators and its relation to drivers and barriers .....	12
Figure 4 : Main themes covered by the literature on academic flying .....	13
Figure 5 : The theoretical practice-based academic flying framework of early-career academics of Tampere University (figure adapted by the author, based on Figure 1 from Tseng, Lee, et al., 2022, Copyright © 2024 Elsevier B.V., adapted with permission) .....	28
Figure 6: Methodology of the thesis .....	33
Figure 7: Drivers and barriers of ECAs revealed by the analysis.....	78
Figure 8 : The revised practice-based academic flying framework of early-career academics of Tampere University (figure adapted by the author, based on Figure 1 from Tseng, Lee, et al., 2022, Copyright © 2024 Elsevier B.V., adapted with permission) .....	82



# 1. INTRODUCTION

## 1.1. Background of the study

Global air travel is estimated to cause up to 4.9% of greenhouse gases emissions responsible for climate change (Lee et al., 2009, p. 3534). Air travel emits more carbon dioxide (CO<sub>2</sub>) per passenger than any other mode of transport, and those emissions are expected to continuously grow. Emissions related to aviation could account for up to a quarter of total CO<sub>2</sub> emissions by 2050, as demand and usage of air travel increases (Owen et al., 2010, as cited in Whitmarsh et al., 2020). Air travel is therefore becoming more and more democratized and even encouraged, especially through business travel. Frequent business air travel is common in several sectors, including the academia (Whitmarsh et al., 2020). Business air travel thus contributes to climate change, and reducing flying behaviors could help mitigate the environmental impact of mankind.

Academics, especially those involved in research (Le Quéré et al., 2015), fly to both long and short-distance destinations for various work-related reasons. Emissions for only one conference travel can amount to 7% of the yearly total emissions of a researcher. (Spinellis & Louridas, 2013, p. 1). Regular air travel for work purposes is common in academic settings, and higher education researchers are ones of the highest emitters (Le Quéré et al., 2015). Research found that in a Swiss university, professors take almost four flights per year, which is more than double the average number of flights taken per person in the country (Ciers et al., 2018, as cited in Kreil, 2021). To contrast with current sustainability objectives, the average yearly carbon budget per person should not exceed 1.5 tons of CO<sub>2</sub> if humanity is to respect the Paris Agreement and stay below 1.5 degrees of global warming compared to pre-industrial levels (Atmosfair, n.d.) Air travel is one of the most carbon-emitting activities an individual can engage in, as some flights can emit three or four times more CO<sub>2</sub> than the ideal annual carbon budget per individual (Kreil, 2021).

Many universities around the globe have started to acknowledge their role in the sustainability transition (UN environment program, 2021). To illustrate this point within a local setting, Ahonen et al. (2021) found that nine out of fourteen Finnish universities studied aim to be carbon neutral by 2035 at the latest. If universities are to achieve such objective, addressing business (air) travel emissions appears essential, as those can often represent

a third of their total emissions (Schmidt, 2022). While academic travel, most often operated by flying, is essential in higher education for collaborations and research excellence, this study assumes and starts with the postulate that such benefits could still be achieved while decreasing flying. Furthermore, reduced air travel seems essential to maintain academic credibility on climate change warnings and would be consistent with current sustainability research trends. At Tampere University, which is the context of this study, the emissions generated by business air travel in 2022 constituted 15% of the total emissions of the institution (Viskari et al., n.d.) and about 20% in 2023 (preliminary results, E.-L. Viskari, personal communication, 15 April 2024). Additionally, the university aims at reaching carbon neutrality by 2030 (O'Hern & Sjögren, 2023). Academic air travel thus represents a significant part of the emissions of universities and could be reduced for higher education to achieve carbon neutrality.

The reduction of academic air travel is a complex topic to approach, and researchers, despite being environmentally conscious of the impact of air travel (Schrems & Upham, 2020; Strengers, 2014), encounter structural, institutional, and individual barriers to change their travel behavior. Academics in their early career especially are incentivized to fly to build networks and gain international visibility. Flying is therefore perceived as necessary to develop one's academic career (Nursey-Bray et al., 2019; Schreuer et al., 2023; Whitmarsh et al., 2020). Surprisingly, no extensive attention has been brought to the drivers and barriers that early-career academics, hereafter ECAs, may face when reducing their air travel. The study identifies relevant considerations to develop measures to reduce air travel while accounting for career differences. Fulfilling this research gap is beneficial both for theoretical and practical contributions.

## **1.2. Research aim and questions**

The research aim of this study is to explore and identify the drivers and barriers of ECAs to reduce their business air travel. Fulfilling the research aim will lead to a deeper understanding of the perspective of ECAs over this subject to help universities reach carbon neutrality. Such focus on this group of academics is relevant, as their career are to be affected by the reduction of air travel. Moreover, the motivations of air travel are variable based on the university location, and researchers working in remote areas, for instance in Australia, may have specific drivers and barriers (Nursey-Bray et al., 2019). Consequently, it is necessary to explicitly include the location of the case study in the main research

question for the results of the thesis to be applicable in the local context. The study overall seeks to answer the following research question:

*At Tampere University, Finland, what are the drivers and barriers of early-career academics to reduce their business air travel?*

To answer this main research question, interest is brought to the environment in which ECAs evolve and, especially, the structural, institutional, and individual factors, which favor or not the reduction of their air travel. Furthermore, to distinguish the specific characteristics of ECAs over this subject, a comparison is drawn other academics, such as professors. To provide an answer to the main research question, this thesis addresses the following sub-questions:

**Sub-question 1:** *What structural and institutional factors facilitate or hinder the reduction of business air travel for early-career academics?*

**Sub-question 2:** *What individual factors facilitate or hinder the reduction of business air travel for early-career academics?*

**Sub-question 3:** *How do the drivers and barriers of early-career academics differ from those with more mature careers?*

Answers to the research questions are provided by conducting an exploratory case study of Tampere University. A literature review is conducted to develop an initial theoretical framework, followed by a thematic analysis of relevant institutional documents and semi-structured interviews to provide an empirical analysis. Including policy documents from academic institutions is particularly relevant to address the first sub-question. Additionally, the answers from the interviews provide meaningful insights on structural and institutional components influencing the reduction of academic flying. Furthermore, the personal experiences of the academics interviewed shed light on the individual components which facilitate or hinder the reduction of flying to answer the second sub-question. Finally, academics from several career stages are interviewed to understand the possible specificities of ECAs, which is relevant to address the third sub-question.

In answering the research questions, the study contributes to the literature of academic air travel by addressing a research gap. While previous studies have argued the need to decrease academic flying (Pargman et al., 2022; Poggioli & Hoffman, 2022) and investigated ways to lower the associated emissions (Ahonen et al., 2021; Bousema et al., 2020), none has provided extensive attention regarding the perspective of ECAs over the matter. Furthermore, the thesis provides practical recommendations for universities to consider when developing measures to address the reduction of academic flying.

### **1.3. Definitions of key concepts**

#### *1.3.1. Business air travel*

The key term of “business air travel”, alternatively referred to as “academic flying” (Bjørkdahl & Franco Duharte, 2022) or “academic air travel” (Glover et al., 2018), is understood as the behavior of utilizing air transport to perform academic work and fulfill one’s professional duties. Such travels can be undertaken for various purposes, for instance to conduct field work, give lectures at other universities, or undertake longer stays at foreign universities. Academic flying is most commonly undertaken to attend conferences (Whitmarsh et al., 2020). Although other administrative staff from the university may engage in air travel for work reasons, this thesis focuses on the research body of the academia. Researchers commonly account for most flights and corresponding emissions (Pargman et al., 2022; van de Glind & Gomez-Baggethun, 2023).

Regarding Tampere University, the institution similarly considers business travel as journeys permitted by supervisors and undertaken by academics to fulfill their work duties outside of the regular job location (Tampere Universities, 2022). Although the travel policy of the institution guides the decisions of the employees, academics of Tampere University design their own travel plan through a travel agency and receive reimbursements for travel fees. The travel plan must be accepted by the supervisor, and the policy emphasizes that the journey should be cost efficient (Tampere Universities, 2022). Furthermore, business air travel can also be financed by funding bodies when allocating research grants.

Similarly to the study of Tseng, Lee, et al. (2022), the thesis considers the reduction of academic flying as behaviors adopted by academics to lower their business air travel and overall number of flights.

#### *1.3.2. Early-career academics (ECAs)*

In the literature, there is no common definition on what the term “early-career academics” exactly refers to (Hemmings, 2012). Some studies have defined the term based on the number of years of experience, while others may define it based on the position of the individuals. On the one hand, Schaer et al. (2017, p.1295) define ECAs as “scholars who have obtained their PhD within the past 10 years and who hold an academic position ranging from a postdoctoral position to a tenured professorship“. On the other hand, Taşçı (2022, p. 162) defines early-career researchers as “academicians who completed their PhD in the last

five years“. Since the thesis established that flying is important for career progression, positions are utilized as a criterion rather than the years of experience.

By combining and crossing sources (Academic Positions, 2018; European University Institute, 2018), the curriculum of research academic careers in Finland can be simplified and presented as follow:

- Research assistant
- Doctoral researcher
- Postdoctoral researcher
- Assistant professor
- Associate professor
- Full professor

While formulating their own definition for this study, the author defines ECAs as doctoral researchers and postdoctoral researchers currently working in higher education. The definition does not encompass research assistants, as their position does not necessarily indicate an interest in pursuing a career in higher academia, while this is more likely for doctoral and postdoctoral researchers. Additionally, this is consistent with the literature which does not typically include research assistants in the definition of ECAs. Assistant professors, associate professors and full professors are commonly referred to throughout the thesis as “academics with more mature careers”.

### *1.3.3. Drivers, barriers, and levels of application*

The terms “drivers” and “barriers” refer to any factor influencing the reduction of academic air travel. In this thesis, they differ from the reasons for flying. Reasons are the concrete actions which air travelling enables. For example, academics may fly for various reasons: conducting research; give lectures or presentations in a foreign university, participate in conferences (Poggioli & Hoffman, 2022), and in some cases access specific archives or objects (Tseng, Lee, et al., 2023). However, academic air travel is driven or hindered by deeper factors, such as fulfilling the expectations of the university, or maintaining a network to develop research collaborations.

The term “drivers” represents structural, institutional, and individual components encouraging the performance of the behavior. The term “drivers” has been employed previously by van de Glind and Gomez-Baggethun, (2023, p. 301) in a similar manner to highlight the “underlying causes” of academic flying. Drivers thus involve a deeper meaning

than sole reasons and fit into broader academic objectives. For example, strong environmental values could act as a driver and stimulate academics into reducing their flying.

The term “barriers” on the other hand refers to factors influencing the non-performance of a given behavior. The need to develop an international network could represent a barrier to the reduction of academic flying. On the one hand, structural and institutional barriers could be such as a lack of available railway infrastructures or internationalization strategies. On the other hand, individual barriers could be such as family commitments.

Certain components can act both a drivers and barriers depending on the context, which creates complexity in given explanations. Thus, attention and nuance need to be brought to the different effects of those factors on flying. Despite their simplistic nature, those terms are deemed suitable to simplify and address this complex subject, while providing an easy reading grid for the reader. Finally, it is understood that a current barrier to the reduction of academic flying could become a driver if actions are undertaken to transform this dynamic.

Drivers and barriers can function at different levels. The levels at which drivers and barriers operate are visualized in Figure 1.

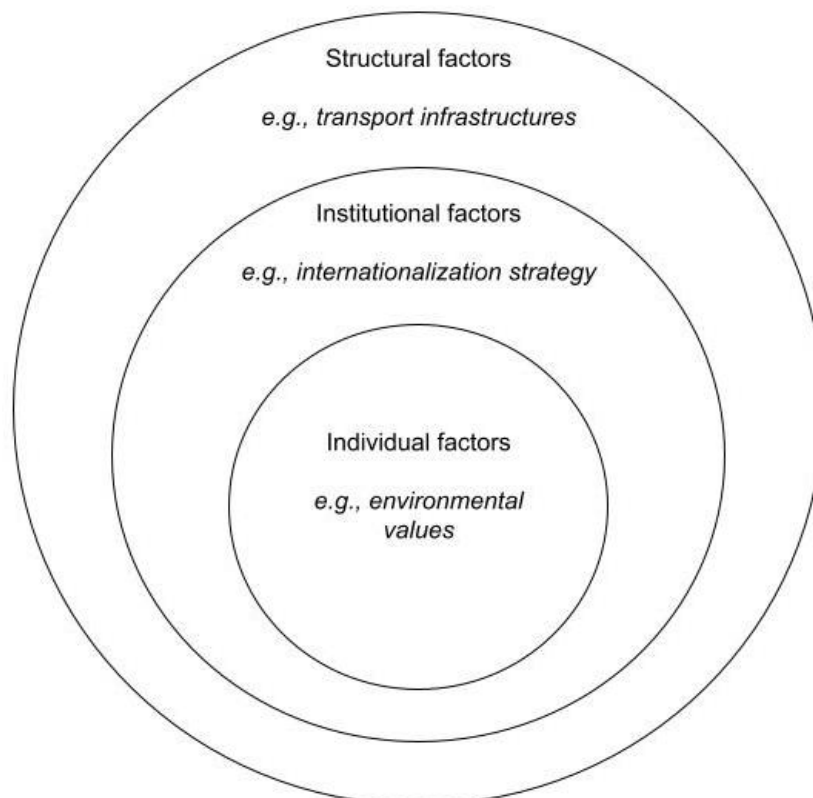


Figure 1 : Levels of drivers and barriers to the reduction of academic flying

As illustrated in Figure 1, structural factors relate to a larger structure which affect the business travel behavior of academics. It involves elements on which the academia cannot directly act upon. Institutional factors reflect drivers and barriers emerging from higher education and its institutions, namely universities and funding bodies. Finally, individual factors are specific to the academics themselves.

#### **1.4. Structure of the thesis**

The thesis is structured into five chapters. First, the topic of academic flying was introduced. The background provided demonstrated the relevance of the study, notably within the context of universities and their commitment towards achieving carbon neutrality. Additionally, the research aim, and questions were formulated, and the key concepts of the thesis defined. The second chapter provides a theoretical framework for the reader. The practice-based academic flying framework, initially created by Tseng, Higham et al. (2022) and later developed by Tseng, Lee, et al., (2022), is first presented. Furthermore, a literature review is conducted and specificities of ECAs identified to complete the proposed model. The section provides a theoretical background to guide the analysis. The methodology utilized for this research is then presented and justified in the third chapter. Attention is brought to the research design, which involves a critical realist perspective and conducting an exploratory case study of Tampere University with an abduction reasoning logic. Furthermore, the section details and argues the data collection process which involves five institutional documents and 12 semi-structured interviews. Finally, the data analysis, which is thematic, and its steps are presented and justified as a relevant method for the research. The fourth chapter presents the findings from the thematic analysis. Five themes are presented and developed in relation to the research questions. Finally, the last chapter concludes the thesis, discusses the results, and presents their theoretical and practical implications. Additionally, the credibility and limitations of the research are presented, along with suggestions for future research.

## 2. CONCEPTUALIZING THE REDUCTION OF ACADEMIC AIR TRAVEL AMONG EARLY-CAREER ACADEMICS

This chapter establishes the theoretical foundation of this thesis. First, steps undertaken to conduct the literature review are briefly addressed in the interest of transparency. Second, the practice-based academic flying framework, initially developed by Tseng, Higham et al. (2022) and further enhanced by Tseng, Lee et al. (2022) is presented. The applicability of the framework for the study is argued. To complete the model, a standard literature review is conducted. The main themes identified in the literature of academic air travel are presented and developed in relation to the research aim. Furthermore, the specificities of ECAs identified in the literature are also highlighted. Finally, the findings from the literature are integrated to the practice-based academic flying framework to provide the final theoretical model which is utilized in this study.

### 2.1. Conducting the literature review

The initial step of this study involved conducting a literature review. The first aim was to identify existing theories on the research of academic flying. Furthermore, a second objective was to provide a broad but accurate picture of existing knowledge over the subject. Finally, the literature review aimed to identify the main characteristics of ECAs.

Developing the literature review involved two approaches. The first one was a pearl growing method (Breda University of Applied Sciences, n.d.) simply by searching key words on research databases, Andor and Google Scholar. Some of the key words were such as: “academic flying”; “academic emissions”, “academic air travel\*”, “academic travel\*”, “early-career academic\*”, “early-career academic\* mobility”. Furthermore, as academic flying is a topic which is rapidly evolving, a filter was applied to only display literature published within the last 10 years. Additionally, search results were filtered to access peer-reviewed articles and ensure the high quality of the references. The searches typically provided about fifteen thousand results. After each search, the first five pages of the results were inspected to identify relevant sources. Other key words were then be searched, and the process was repeated.

The second data collection method of the literature review consisted of a snowballing technique by accessing the references of pivotal research in the literature of academic flying (Breda University of Applied Sciences, n.d.). The literature review comprises



over 50 academic sources, mostly collected between May and December 2023. The literature review is conducted in adequation with non-plagiarism principles.

## **2.2. The practice-based academic flying framework**

### *2.2.1. Overview of the framework*

Given the specific and recent topic of academic air travel behavior and ways to reduce it, the literature has not yet developed a strong theory on this precise subject. However, in the book “Academic Flying and the Means of Communication”, Tseng, Higham et al. (2022) developed a first version of a conceptual framework to build the bridge between empirical findings and theory and provide a tool to comprehend the complex topic of academic flying. Such model provided a theoretical background to understand both individual and broader factors influencing the reduction of academic air travel. The authors also included experiences of reduced academic (air) travel during the Covid-19 pandemic (Tseng, Higham, et al., 2022). The practice-based academic flying framework, illustrated in Figure 2, highlights the factors influencing the reduction of academic flying (Tseng, Higham, et al., 2022; Tseng, Lee, et al., 2022).

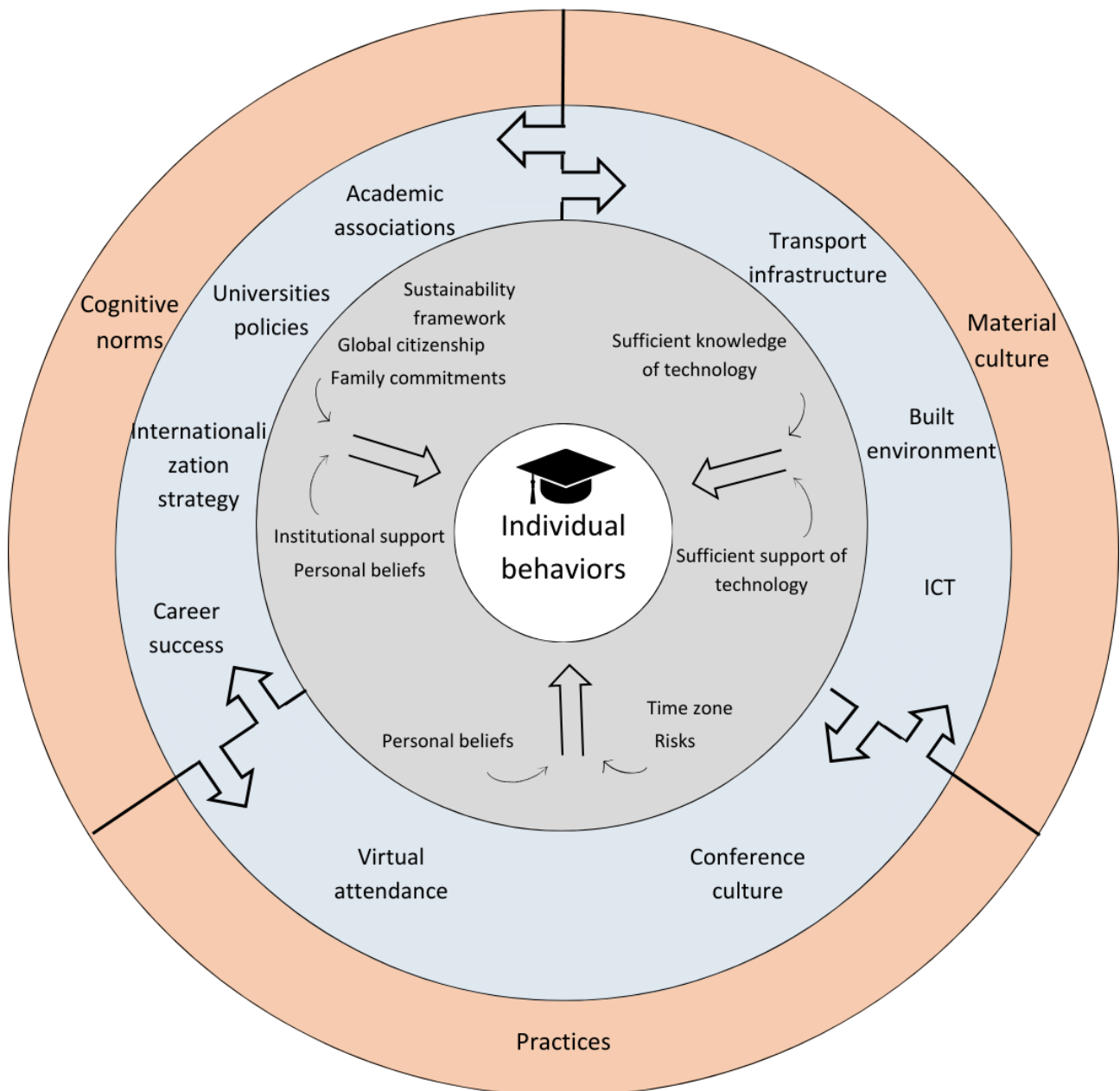


Figure 2: The practice-based academic flying framework (figure adapted by the author, based on Figure 1 with integrated findings from Table 1 from Tseng, Lee, et al., 2022, Copyright © 2024 Elsevier B.V. adapted with permission)

Next, the main components of the framework illustrated in Figure 2 are briefly presented. A summary of the key terms of the practice-based academic flying framework can be found in Appendix A. The three main elements are “cognitive norms”, “material culture”, and “practices” and appear in the pink sphere of Figure 2. First, the cognitive norms element represents the aspirations and expectations of academics and shapes the choices of the technologies utilized and the practices. The cognitive norms reflect how the

institutional expectations, and the career achievement means affect the flying behavior. For instance, the internationalization strategy of the university may implicitly or explicitly encourage flying by setting mobility expectations on its staff members (Tseng, Lee, et al., 2022). Cognitive norms, through expectations and aspirations, thus encourage academics to adopt specific behaviors.

The second element, material culture, reflects the technologies and infrastructures which may substitute or reduce the need for air travel. This also includes information and communication technologies, hereafter ICT, which played a key role in replacing face-to-face interactions during Covid-19. The pandemic and its re-organizational implications are particularly relevant regarding academic flying. Travelling itself had become restricted and hyper-mobility norms in academia were questioned while online attendance was thriving. The ICT construct of the material culture element is therefore particularly notable, and several universities rely on those new technologies to reduce academic flying. (Tseng, Higham, et al., 2022)

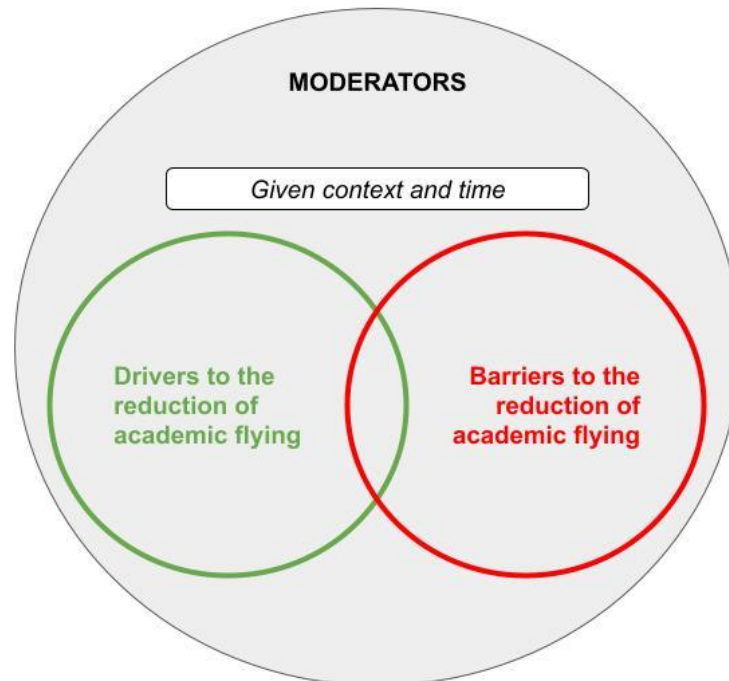
The third element refers to “practices” or everyday activities in which the technologies are utilized. They can also be less frequent activities, but nonetheless occur relatively commonly (Stephenson et al., 2015). Practices are the actions which shape the attitude towards the behavior. Each element of the framework is mutually enforcing of others (Tseng, Lee, et al., 2022). For example, access to train infrastructures (material culture) can considerably influence the attendance of an individual to conferences (practices), shape their view of academic excellence (cognitive norms), and form a positive view towards the reduction of academic flying.

The blue inner sphere reflects the “constructs” and “dimensions”. On the one hand, constructs categorize the main concepts of the elements. For instance, career success is an aspiration of academics and a key concept in the element of cognitive norms. On the other hand, dimensions are the detailed actions of the constructs. For instance, one dimension of career success is professional network. Dimensions detail with concrete components of the blue sphere. Due to space reasons, the dimensions are not represented in Figure 2. (Tseng, Lee, et al., 2022)

### *2.2.2. Moderators*

This separate section emphasizes the importance of the concept of moderators, which is represented in the grey sphere of Figure 2. Moderators represent the factors which shape the relationship between the elements and the individual behavior (Tseng, Higham, et al.,

2022). They are the drivers and barriers which influence the reduction of academic flying. The Figure 3 below visualizes the concept of moderators and its relation to drivers and barriers.



*Figure 3 : The concept of moderators and its relation to drivers and barriers*

Figure 3 highlights how the concept of moderators, employed in the framework by Tseng, Lee et al. (2022), encompasses both drivers and barriers. Depending on the given context and time, a moderator can either be a driver, barrier, or have a dual effect. For example, the moderator “institutional support” could be a driver to the reduction of academic flying if the university encourages researchers to travel with alternative transport modes. While the term “moderator” refers to the influential component itself, the terms drivers and barriers highlight the effect of such moderator on the reduction of flying. Consequently, moderators influence the perception and behavior of academics towards the reduction of academic flying. (Tseng, Lee, et al., 2022).

### *2.2.3. Relevance of the framework for the research*

Although the practice-based academic flying framework is recent and has not been widely applied in the literature (Tseng, Lee, et al., 2022), this model is relevant for this thesis. First, it is created to better understand the drivers of and barriers of the reduction of academic

flying (Tseng, Higham, et al., 2022), which precisely corresponds to the research aim of this study. Second, the application of the framework can enrich the model and provide corrective suggestions based on the empirical context. In fact, the creators of the framework (Tseng, Higham, et al., 2022; Tseng, Lee, et al., 2022) have encouraged future research to test and apply it to different contexts, location, and career stages, to enrich its contextual contribution. It can therefore be applied to the context of ECAs in Finland, as it was made to accommodate with different situations. Finally, the framework offers a reading grid regarding influential factors already identified and enables comparison with empirical findings from the thesis.

Despite its established relevance, the initial framework presented above is still novel and not specific to ECAs. For this reason, a literature review is conducted to address the potential gaps of the framework. Figure 4 below illustrates the key points identified in the literature on academic flying.

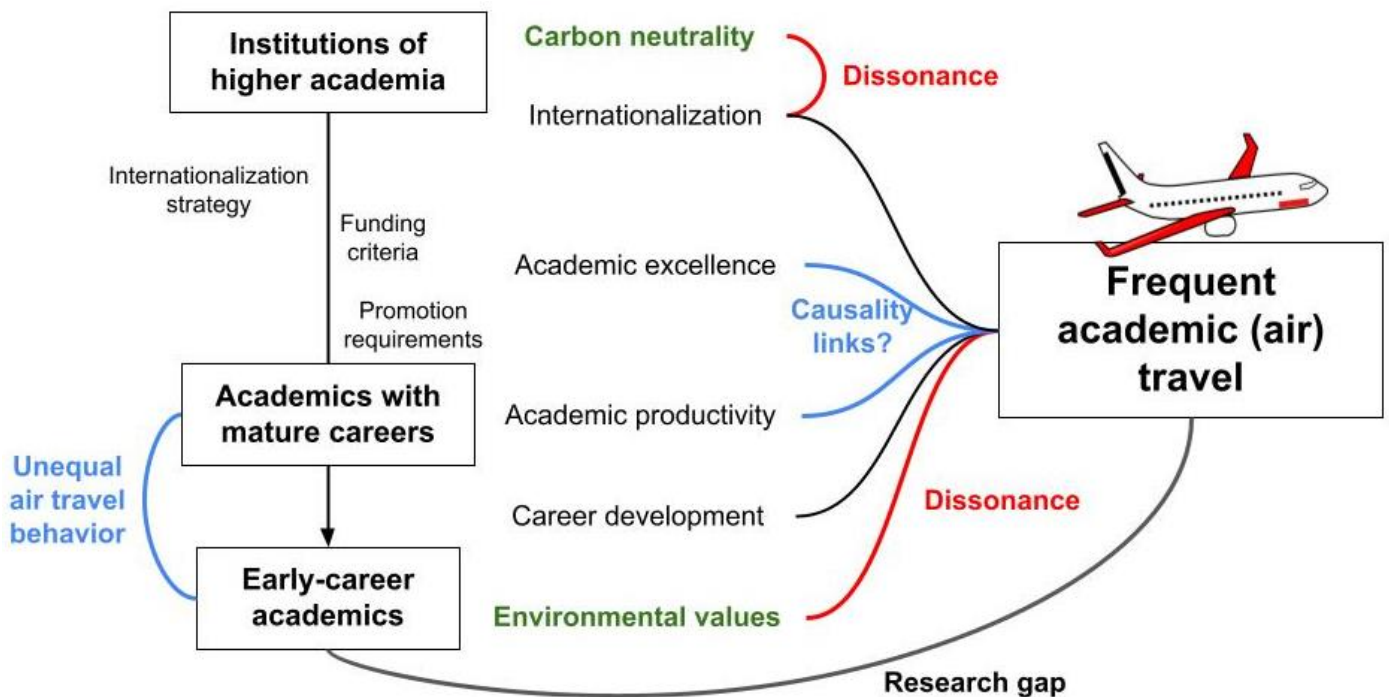


Figure 4 : Main themes covered by the literature on academic flying

Figure 4 illustrates the complex topic of business air travel in the academia. The literature identifies both structural, institutional, and individual factors to academic flying. The elements presented in Figure 4 are further developed in the following sections.

The next part of this chapter addresses the pivotal roles of institutions in the reduction of academic flying. Additionally, the influential factors identified in the literature of academic flying are mapped as drivers and barriers. Furthermore, the specificities of ECAs addressed in the literature are identified. Highlighting the characteristics of ECAs enables the development of a theoretical framework which combines Figure 2 presented earlier and findings from the literature review, which can then be utilized in the analysis as guidance. The theoretical framework is presented as the final part of this chapter.

## **2.3. The role of institutions**

### *2.3.1. Academic travel as an institutional norm*

Universities compete for talented students, academics, and research funding. Their capability to attract such assets therefore depends on their international reputation (Aprile et al., 2021; Kreil, 2021; Schreuer et al., 2023). Such situation created a need to acquire the best elements to produce excellent research outcomes. As a result, internationalization strategies in academia have been growing more and more and are a key pillar in higher education. This is a global strategy trend within higher education, and over 90% of universities refer to internationalization in their strategy (Marinoni, n.d., p. 25).

A key aspect of the internationalization of universities touches upon the expected mobility of the staff members, and particularly of the research body (Radloff, 2016, as cited in Taşçı, 2022). Academics are expected to implement the strategy of the university by travelling frequently and enhancing the reputation of the institution abroad (van de Glind & Gomez-Baggethun, 2023). Moreover, academics commonly need to display international research experiences and participations to events to meet promotion requirements (Zhao et al., 2021). Consequently, internationalization strategies result in frequent business air travel.

The requirement for mobility in a competitive environment renders it difficult for a single university to reduce its air travel emissions on its own. This difficulty results in global inaction or insufficient efforts from universities to drastically reduce their air travel emissions (Nurse-Bray et al., 2019). This creates a complex dissonance for those institutions, as they often wish to reduce their emissions while developing their internationalization strategy, which generates air travel and emissions (Glover et al., 2018).

Additionally, air travel is implicitly encouraged by other institutions such as funding bodies. Grant providers tend to gratify with resources those with international experiences (van de Glind & Gomez-Baggethun, 2023). Furthermore, the emissions

generated by research projects are rarely considered by grant providers when allocating resources. Although some funding authorities have started to consider the environmental impact of projects upon approval, this dimension is not yet a key criterion for final decisions (van de Glind & Gomez-Baggethun, 2023). This is similar for universities themselves, as their travel policies often require academics to favor low-cost and time-efficient transport modes, excluding the environmental perspective and therefore facilitating flying (Hopkins et al., 2016).

Air travel is therefore an integral aspect and almost a requirement for both universities and academics. The expectation of mobility emanates both from the internal and external environment. Academics are expected to fly not only to implement the internationalization strategy of the university but also to increase their chances of employment, funding, and progress in their own career (Glover et al., 2018).

### *2.3.2. The approach of universities to the reduction of academic air travel*

The business travel emissions of universities, mainly resulting from flying, can account for an important share (Schreuer et al., 2023), around 30%, of their total emissions (Schmidt, 2022). While universities have started to acknowledge their role in the sustainability transition, few have set targets and show a strong commitment to reduce business air travel emissions. For instance, Hoolohan et al. (2021) found that out of 66 British universities studied, less than half recognized the importance of air travel in their emissions, and only 18% had set quantitative targets to reduce air travel emissions. Glover et al. (2018) found similar results with Australian universities, therefore showing that those institutions do not extensively consider the reduction of air travel as a mean to achieve carbon neutrality, which paradoxically contributes significantly to their emissions. On the contrary, some staff members have sometimes pointed out that their university encourages air travel by developing internationalization strategies which commonly require flying (Schrems & Upham, 2020).

Offsetting has been mentioned numerous times as compromise to continue flying while mitigating the climate impact. While this is a popular measure for universities to adopt, the literature argues that offsetting is not a permanent solution neither, as offsets are sometimes even described as “imaginary commodities” (Schmidt, 2022, p. 1436) and do not appear as a long-term solution to decarbonize the aviation sector. While offsetting could be a way to achieve carbon neutrality in universities, higher education should not solely rely on

this mean but should also actively to reduce flights emissions. Furthermore, sole offsetting continues the development and growth of the aviation sector, which is inconsistent with urgent reduction targets to tackle climate change (Le Quéré et al., 2015). Respondents of studies on academic flying argued that offsetting was a way to ease the conscience of the traveler and favor the continuation of air travel rather than a true solution (Le Quéré et al., 2015; Schreuer et al., 2023). Therefore, it must be acknowledged that currently, the only way to reduce air travel emissions significantly and surely in the academic setting is to reduce the usage of such transport mode. The failure of universities and academics to realize and address this could create negative consequences, not only for the environment, but also for their institutions through a loss of credibility, income, and reputation (Hoolohan et al., 2021).

### *2.3.3. The need for a systemic and culture change*

Air travel being an academic norm, Glover et al. (2018) along with many others (Nursey-Bray et al., 2019; Schmidt, 2022; Schreuer et al., 2023; Whitmarsh et al., 2020) concluded that there is little sense for universities to demand from their academics to reduce their flying if they keep developing internationalization strategies that require mobility and long-distance travel. Although this has not been favored by universities, literature has emphasized the need for a deep systemic change in the role of air travel and mobility in university settings to truly reduce emissions (Glover et al., 2018; Hoolohan et al., 2021; Schreuer et al., 2023). It is argued that only policies designed at the institutional level would truly enable academics to reduce their air travel emissions (Schreuer et al., 2023). The reconfiguration of mobility practices are needed to allow academics to fly less (Hoolohan et al., 2021; Schreuer et al., 2023). Such institutional change would involve valuing other forms of collaboration in the academia and redefining funding and promotion requirements (Strengers, 2014).

Additionally, restricted travel experiences during the Covid-19 pandemic opened a path for more responsible academic work both from universities and staff members (Tseng, Higham, et al., 2023). Indeed, the lockdowns experienced due to the pandemic constrained academics to perform their duties and responsibilities without flying. As almost no travel was authorized, this enabled the higher education sector to rethink the necessity of flying (Tseng, Higham, et al., 2023). This has created a double effect regarding academic air travel. On the one hand, it has questioned the need for air travel to develop research and opened the path to other means of collaborations, for instance virtual ones. On the other hand, the reopening of borders and recrudescence of air travel may incentivize academics to travel



more to compensate for experiences and events missed during the lockdowns (Tseng, Higham, et al., 2023). Nevertheless, such experience certainly questioned the necessity of frequent flying for academic excellence.

This section highlighted the essential role of academic institutions in addressing business air travel. It established that internationalization strategies result in expectations of mobility and flying. International collaborations and networks are important to generate ideas and share research (Le Quéré et al., 2015). Nevertheless, several scholars have questioned the negative environmental impact that those institutional expectations generate and advocated for a systematic change (Glover et al., 2018; Hoolohan et al., 2021; Schreuer et al., 2023; Strengers, 2014). Institutional factors render the reduction of air travel a challenging process for individual academics, as travelling is perceived as a mean for career progression and flying less may signify a slower, less successful career.

## **2.4. Drivers to the reduction of academic flying**

### *2.4.1. Transport infrastructures*

An essential factor commonly addressed in the literature relates to suitable transport infrastructures to replace air travel. Indeed, easy access to alternative transport modes enables the reduction of air travel. This is especially relevant in a European context in which train infrastructures are relatively well-developed. Additionally, Ahonen et al. (2021) note that the European flights destinations of Finnish universities represent up to 85% of total flights, thus indicating a potential to switch to alternative transport modes.

However, the access to alternative transport infrastructures as a driver to the reduction of academic flying is limited. First, studies suggest that academics are willing to use alternative transport for trips lasting maximum four times the equivalent flight time (Whitmarsh et al., 2020, as cited in Ahonen et al., 2021). Additionally, access to alternative transport modes is almost non-existent for universities located in remote locations. Indeed, academics working in countries like Australia and New Zealand are much more dependent to air travel to reach popular destinations in North America or Europe (Nurse-Bray et al., 2019; Tseng, Lee, et al., 2022). In such cases, not flying would translate into weeks if not months of travelling for a one-way trip, which is unrealistic. Therefore, access to alternative transport infrastructures may facilitate the reduction of air travel, but only for short to medium-distances destinations.

### *2.4.2. Environmental values*

Academics are often conscious of climate change and hold strong environmental values (Schrems & Upham, 2020). Moreover, they usually are aware of the emissions of air travel and understand the differences between the impact of flying, utilizing alternative transport modes, and virtual attendance (Le Quéré et al., 2015). A recent study by Tseng, Higham, et al. (2023) concluded that most academics support and try to travel more responsibly. Thus, strong environmental values of academics appear as an element driving the reduction of air travel.

Additionally, there has been several calls launched by academics to advocate for a reduction of business air travel (Jacobson, 2022; Quinton, 2020; Sheller, 2022; Strengers, 2014). Some academics acknowledge the uncomfortable dissonance between their awareness of the impact of flying, the expectations of the academia, and their career aspirations (Schrems & Upham, 2020). When sharing their personal experience on the matter, Strengers (2014, para. 3) states how “we know full well the environmental damage of our flying, but for the time being, this remains an uncomfortable fact of successful academic life”.

However, the reduction of air travel is often the least chosen strategy to reduce one’s carbon footprint, even amongst environmentally conscious individuals (Whitmarsh et al., 2020). Even academics specialized in climate change commonly have similar, if not higher, air travel emissions (Whitmarsh et al., 2020). Values and positive attitudes towards environmentally friendly behaviors are not sufficient to modify such practices (Whitmarsh et al., 2020). Schreuer et al. (2023) and Schrems and Upham (2020) therefore point to a value-action gap between environmental aspirations and academic air travel.

Nevertheless, the reduction of flying in higher education is essential to maintain credibility for those who raise awareness on climate change. Furthermore, the behavior of researchers may inspire others to act similarly and reduce their flying (Kreil, 2021; Schrems & Upham, 2020). Environmental values could thus be a key driver to the reduction of academic flying, although there seems to be a dissonance between the values of the academics and the need for academic air travel.

## **2.5. Barriers to the reduction of academic flying**

### *2.5.1. Networking and career progression*

Academic business air travel is mainly motivated by the necessity to establish or maintain a network. Networking can be defined by Wolff and Moser (2009, p. 1) as “building, maintaining, and using relationships”. Ansmann et al. (2014) formulate that academic networks are composed of national and international peers outside of the university of the focal academic.

Networks are an effective way to develop one’s career. For example, meeting peers in face-to-face events, such as conferences and workshops, enable stronger relationships and possible future collaborations (Strengers, 2014). Additionally, interacting with research peers leads to fruitful conversations and creative ideas. Collaboration and peer feedback are beneficial to develop research ideas and quality, as opposed to solely relying on self-reflections (Le Quéré et al., 2015; Ylijoki & Henriksson, 2018). Networking typically occurs in informal interactions in conferences, such as during coffee breaks or lunches. For this reason, attendance to virtual events is commonly considered of poor quality, as the networking possibilities are not well developed if not completely absent (Sheller, 2022; van de Glind & Gomez-Baggethun, 2023). Networking in face-to-face events is thus recognized as a key criterion to develop or maintain a successful academic career. Respondents to a study by Le Quéré et al. (2015) perceived that reduced air travel would hinder their career progression.

The necessity to network is further emphasized for ECAs, as academic networks help them develop their reputation and credibility in their field. Furthermore, physical attendance to events enables the acquisition of informal contacts for future career opportunities (Gewinner, 2017). ECAs respondents to a study by Geschwind et al. (2022) identified networking as essential to enhance chances of promotion and academic success. Consequently, business air travel appears most crucial for ECAs to establish a “scientific capital” which will enable career development (Berné et al., 2022, p. 8).

### *2.5.2. The believed link between flying and academic productivity*

Business air travel is perceived as necessary for academic performance. However, several scholars have argued that flying is not most crucial to intellectual productivity. Schmidt (2022) argues that travelling to be academically successful is a self-fulfillment belief. The author formulates that the obligation of international presence is perceived and perpetuated by the travelling itself. Therefore, if academics believe that air travel will give them opportunities, although that might not be the case, they will engage in this behavior. Along with other research, Glover et al. (2018) question this alleged condition of academic success

and that of high mobility in academia. The factors underlying career success and air travel as a requirement for academic productivity can be put into perspective and interrogated.

Several studies have investigated the alleged link between air travel and academic productivity (Berné et al., 2022; Kreil, 2021; Wynes et al., 2019), presumed link which commonly motivates and justifies business air travel. The results of those studies differ. For instance, Wynes et al. (2019) point out that some research found mobile scholars to display higher citation rates than non-mobile academics. However, in their own study, the authors did not find a strong correlation between flying emissions and the number of authors per published paper. Their research indicated that academics with high air travel emissions did not necessarily collaborate more than others. Moreover, they also did not find the amount of carbon emissions to be related to academic productivity (Wynes et al., 2019). Additionally, Schmidt (2022) also highlights research indicating no significant correlation between a high number of citations and the distance travelled. In some cases, collaborative publications are even negatively associated with the distance travelled. Furthermore, some individual experiences narrated that reduced flying did not impact their career (Jacobson, 2022) but even increased the number of published academic paper (Sheller, 2022).

However, a study from Storme et al. (2013) concluded that a minimum amount of travel is needed for academics to achieve a successful career. Similarly, Price and Beaver (2016, as cited in Zhao et al., 2021) argue that productive researchers also tend to be more collaborative with international peers. Finally, recent research by Berné et al., (2022) found that researchers conducting frequent business air travel had significantly higher signs of academic productivity, such as publication rates and citations. Nevertheless, the authors acknowledge the limitations of their research by raising questions of causality: “is it that scientists who travel more obtain more scientific visibility and hence get more citations, collaborations, and papers (exposure effect), or is it instead that scientists who are more visible because of their work get to travel more (reputation effect)?” (Berné et al., 2022, p. 8).

Several studies have investigated the link between academic productivity and air travel emissions (Schmidt, 2022). The contradictory findings neither establish nor contest the link between flying and academic productivity. Nevertheless, there is no doubt that travelling is perceived by academics as a necessary step to achieve a successful career.

### 2.5.3. Travelling in the “publish or perish” culture

The productivity pressure is often referred to as the “publish or perish” academic culture. It refers to the need for academics to be highly productive in their research, especially at the beginning of the career. The term “perish” refers to the failure of maintaining high academic productivity. This productivity pressure is most commonly directed towards ECAs (Zhao et al., 2021), as they are still in the process of building their reputation, getting their first articles published, and meeting promotion requirements to tenure positions (Aprile et al., 2021). ECAs respondents from a study by Matthews et al. (2014) indicated that they perceived research and publications to be the most important metrics for career progression. Similarly, when providing advice to become a successful academic, Peters (2014) emphasizes on demonstrating one’s productivity by writing numerous papers.

Furthermore, the “publish or perish” culture is institutionally driven. Hollywood et al. (2020) note that in the UK, appointment of ECAs to higher positions are conditional to the achievement of targets, such as publishing a certain number of papers. The situation is similar in Finnish universities, which commonly utilize performative metrics and measurements on individuals (Ylijoki & Henriksson, 2018). The “publish or perish” culture compels a high workload on ECAs (Bosanquet, 2017). Moreover, travelling for those specific purposes is supported institutionally through grants (Strengers, 2014).

Such culture incentivizes ECAs to attend certain events from their discipline (Schrems & Upham, 2020) but also from other fields to broaden their research interests (Peters, 2014). Attendance to events and the development of a network are perceived as essential to build experience (Geschwind et al., 2022) and meet performance productivity pressure. For example, invitations to provide an international keynote speech are regarded as valuable, proving that one’s work is relevant and reaches an international audience (Strengers, 2014). Academic travel is thus deemed important for ECAs to achieve career progression in the “publish or perish” culture.

#### *2.5.4. A perk of being an academic*

Academic business travel can sometimes be perceived as a perk for researchers. The enjoyability of some travels can counterbalance other unpleasant sides of working in academia, such as important workloads. Travelling is enjoyed by most people, and academics enjoy the interactions and friendships with their peers (Le Quéré et al., 2015). Some respondents from a study by Schrems and Upham (2020, p. 7) have stated that “travelling makes them a happier person”. When sharing their personal experience on business travelling regularly as an academic, Sheller (2022) notes that the possibility to

travel was an advantage of the job, which allowed them to discover new cultures, visit new places, and meet people from multiple countries. The enjoyability of academic travel renders the reduction of flying more difficult for academics.

## **2.6. Characteristics of ECAs**

### *2.6.1. Differences in the business travel behavior*

Like most individual behaviors that are highly carbon emitting, the usage of air travel is unequally distributed. Indeed, 1% of the population contributes to 50% of the emissions related to this sector (Hoolohan et al., 2021; Schmidt, 2022). Similarly, established researchers contribute more to academic air travel emissions than ECAs (Hoolohan et al., 2021). Although research from Le Quéré et al. (2015) has not established a clear link between experience and high air travel, academic flying is generally found to increase with seniority (Schrems & Upham, 2020; Whitmarsh et al., 2020). For instance, a study by Schrems and Upham (2020) found that professors took in average over 12 individual flights in the year. Postdoctoral researchers and PhD students took respectively around nine and seven flights per year in turn.

One could argue that the correlation between academic flying and seniority is positive, and that a higher rank and salary are indirectly achieved by flying. However, Wynes et al. (2019) argue that it is seniority and salary which may cause frequent air travel, due for instance to an established international network leading to more international requests (e.g., keynote speaker opportunities at conferences). The authors suggest that senior academics could fly less without hindering their career and offer international opportunities to more junior researchers. Regarding those (in)equality matters, the opinions of early-career researchers could be particularly interesting to gather, as they are to be impacted by the reduction of academic flying. This angle also represents a gap in the literature, as there seems to be no studies that focus extensively on the drivers and barriers shaping the attitude of ECAs towards the reduction of air travel. (Wynes et al., 2019)

### *2.6.2. Family commitments*

An important characteristic of ECAs which may affect their travel behavior is increased family commitments. The age at which one professionally enters higher education often concurs with the age at which one starts a family, whether that is getting married, having a child, or both (Peters, 2014). For instance, in the study by Matthews et al. (2014) about ECAs in

Australia, a quarter of the respondents were women with parenting duties. Such changes in the personal life may challenge the balance between home and professional lives (Hemmings, 2012). Indeed, family commitments intensify the complexity to accomplish the high workload required from ECAs and the regular business travel needed to establish a network (Peters, 2014). When sharing their personal experience on the subject, Strengers (2014) points out the stress that regular travelling can infer when one is spending time away from their family. This may be especially true for ECAs who recently started a family of their own with young children. ECAs respondents to a study by Matthews et al. (2014) explained that pursuing academic opportunities to achieve their career goals would require sacrificing time with family. Similarly, more than half of the respondents in the study by Zhao et al (2021) felt that having children negatively influenced their academic productivity.

Female ECAs are even more impacted by those arising family commitments, especially when they have just entered motherhood (Bosanquet, 2017). Caring duties are more commonly provided by the mother, especially during the first years of parenting (Schaer et al., 2017). Thus, family commitments seem to impact more the career of women ECAs than that of men. It can be nearly impossible for young mothers working in academia to fully reconcile their childcare responsibilities and the high workloads and associated travel required to achieve their career goals. For similar parenting matters, women ECAs seem to be less mobile than their masculine counter parts (Schaer et al., 2017).

Increased family commitments are therefore a key characteristic of ECAs which can affect their travel behavior. On the one hand, it could incentivize them to utilize air travel over other means of transport to decrease time spent away from home. On the other hand, it may hinder them from (air) travelling but encourage them to join local or virtual events to reconcile academic duties and parenting responsibilities. Finally, gender appears to be an important influence on the travel behavior of ECAs, especially in regard to caring duties.

### *2.6.3. Precarious conditions*

ECAs are often considered as the most vulnerable group of staff members in higher education (Laudel & Gläser, 2008, as cited in Hemmings, 2012; Ylijoki & Henriksson, 2018). An important share of academics enter the academia job market with fixed-term employment contracts and a high competition to access full-time positions with greater job security (Kaplan, 2010, Powell, 2015, as cited in Hollywood et al., 2020). In their study on the experience of ECAs, Capwell (2016, p. 207) found that 84% of respondents had unstable careers with short-term contracts. ECAs navigate long periods of insecure employment in a

competitive environment (Geschwind et al., 2022). When conducting a focus group composed exclusively of junior academics employed by a Finnish university, Ylijoki & Henriksson, (2018) note that all the participants worked on short-term contracts, ranging from two months to four years at most.

Furthermore, the precarious conditions of ECAs are enhanced by a lack of funding and other resources. Positions of ECAs often include low pay (Deem, 2022) and a lack of funding to finance one's research (Gewinner, 2017). Gewinner (2017) therefore points out that travelling abroad for ECAs sometimes signifies spending one's personal resources. Evolving in precarious conditions and a competitive environment can lead to high levels of stress, anxiety (Hollywood et al., 2020), and loneliness (Ylijoki & Henriksson, 2018). The latter may render the reduction of air travel as less important compared to other matters at this stage of their career. Additionally, precarious conditions may favor travelling to gain experience and access more secure positions.

#### *2.6.4. Academic supervisors*

A final characteristic of ECAs identified in the literature is the presence of an academic supervisor and mentor. A mentor is another academic, commonly of higher rank, which will supervise the ECA for their research. Those mentors may fulfill several roles, they may sometimes help the supervisee develop specific skills, provide feedback, and emotional support (Ansmann et al., 2014). Additionally, the mentor will introduce ECAs to the culture, values and norms of the local and global academic culture (Aprile et al., 2021; Zhao et al., 2021).

The mentor may also represent a symbol of academic success, as they are often more senior researchers who are important figures in their field. Kalfa et al. (2018, as cited in Aprile et al., 2021) note that ECAs commonly wish to align their behaviors with more senior academics to achieve career success. Similarly, Peters (2014) encourages ECAs to follow a similar path as senior academics they might admire. Regarding the topic of academic flying, this may hinder the reduction of air travel. As previously discussed, senior researchers travel frequently to fulfill their mandatory duties and maintain their network. However, unlike nowadays ECAs, they developed their career during a period in which the emissions caused by air travel were not fully acknowledged or deemed as essential to reduce. Therefore, ECAs might not be able to follow similar paths due to the increased recognition of the impact of flying. The role of the mentor highlights the influence of senior academics on the reduction



of academic flying, as they are seen as a symbol of success and ECAs may wish to replicate their behavior.

Furthermore, one of the key role of the mentor is helping their supervisees access and develop academic networks, which as previously discussed are perceived essential to developed a successful career (Ansmann et al., 2014). Mentoring provides young academics with professional contacts held by the more senior researcher, which is thought to enable research collaborations (Zhao et al., 2021). The study by Zhao et al. (2021) finds that mentoring facilitates the construction of academic networks for ECAs. Mentors tend to explicitly stress the importance of networking to their supervisees, and senior academics may thus encourage attendance to certain events (Deem, 2022).

Consequently, academic supervisors play an important role by initiating their supervisees to the academic culture and implicitly or explicitly encouraging ECAs to travel. Table 1 highlights the main characteristics of ECAs identified in the literature and their potential impact on air travel behavior.

Table 1 : Characteristics of ECAs and their potential impact on the travel behavior

ECAs Characteristics	Papers addressing those characteristics	Level	Possible effect on the travel behavior
“Publish or perish” culture	(Aprile et al., 2021; Bosanquet, 2017; Geschwind et al., 2022; Hemmings, 2012; Hollywood et al., 2020; Le Quéré et al., 2015; Peters, 2014; Schrems & Upham, 2020; Ylijoki & Henriksson, 2018; Zhao et al., 2021)	Institutional	Absolute necessity to travel to develop a network and research collaborations.
Increased family commitments, especially for women ECAs	(Bosanquet, 2017; Hemmings, 2012; Peters, 2014; Schaer et al., 2017; Strengers, 2014)	Individual	Necessity to fly to spend less time away from the family rather than utilizing alternative transport modes. May favor attendance to online events to reconcile family commitments and academic work.
Precarious employment conditions	(Capwell, 2016; Deem, 2022; Geschwind et al., 2022; Gewinner, 2017; Hemmings, 2012; Hollywood et al., 2020; Ylijoki & Henriksson, 2018)	Institutional	Necessity to develop a network to access more secure positions. Limited financial resources to travel.
Academic supervisors	(Ansmann et al., 2014; Aprile et al., 2021; Deem, 2022; Geschwind et al., 2022; Peters, 2014; Zhao et al., 2021)	Community	Mentor initiating the ECA to the academic flying culture. Mentor sharing their international network with their ECA. Admiration and wish to adopt similar behavior as their mentor (potentially frequent travelling).

As Table 1 demonstrates, four characteristics of ECAs were identified as influential factors to the reduction of flying. First, the “publish or perish” culture may enhance the imperative of academic productivity and the necessity to travel for networking and gaining experience. Second, ECAs may be concerned by increased family commitments, especially for women. Those duties possibly have dual effects on the reduction of business air travel. Third, precarious employment conditions render travelling for research necessary to achieve career progression. Finally, academic supervisors hold a significant influence on ECAs and potentially on their travel behavior.

## **2.7. Summary: theoretical framework**

By integrating the findings from the literature review to the practice-based academic flying framework developed by Tseng, Lee et al., (2022), the theoretical framework of this study is presented in Figure 5.

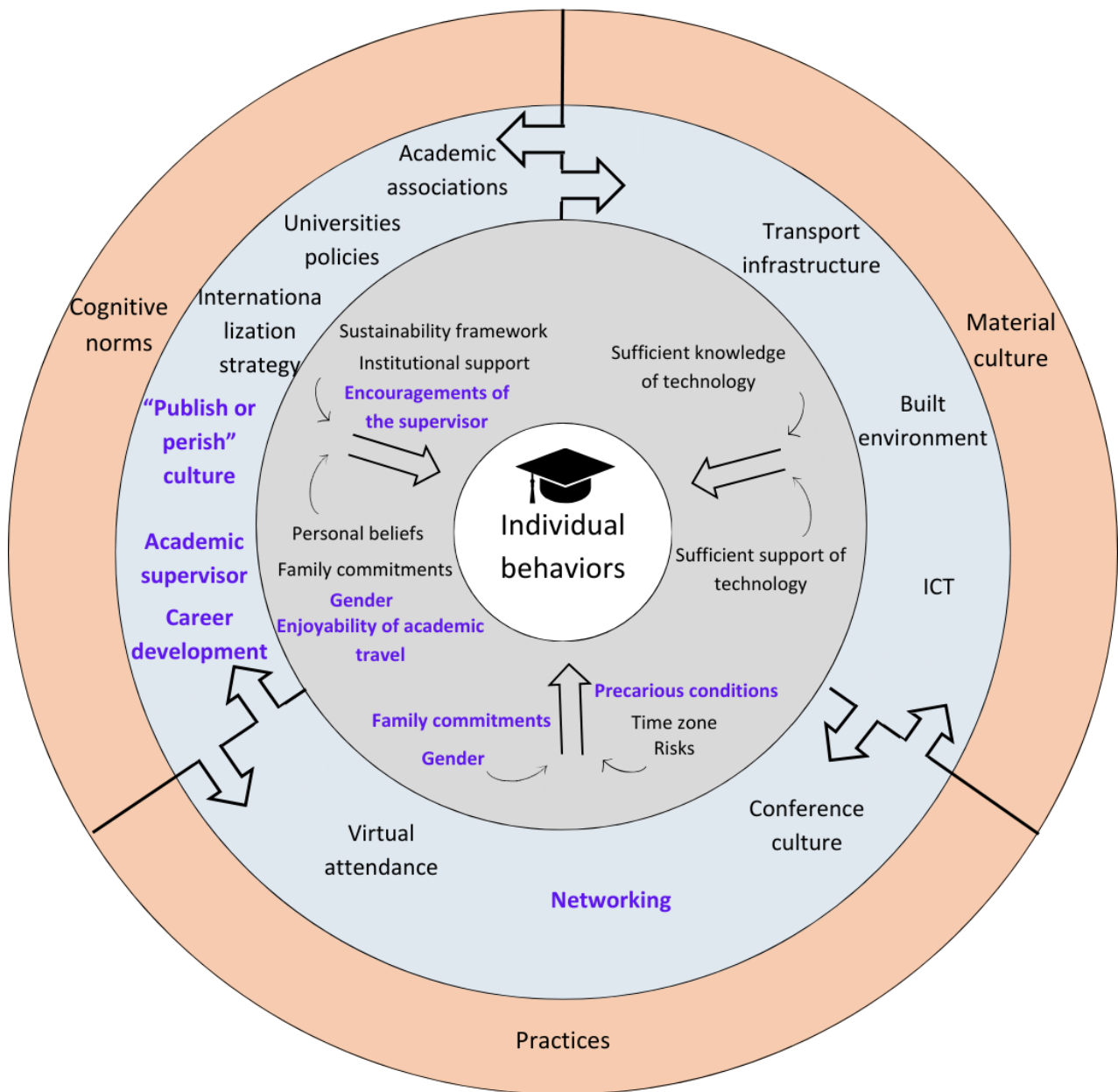


Figure 5: The theoretical practice-based academic flying framework of early-career academics of Tampere University (figure adapted by the author, based on Figure 1 from Tseng, Lee, et al., 2022, Copyright © 2024 Elsevier B.V., adapted with permission)

The theoretical framework presented in Figure 5 above maps the findings from the literature on the practice-based academic flying framework developed by Tseng, Lee, et al., (2022). The novel influential factors identified and specific to ECAs are marked in blue in Figure 5.

The literature review highlighted academic supervisors, the “publish or perish” culture, and career development as significant aspirations and expectations of ECAs. Furthermore, networking was integrated as a construct affecting the travel behavior.

Additionally, novel moderators were identified. Those influential factors were added to the model and are expected to influence the travel behavior of ECAs: the enjoyability of academic travel; gender, precarious conditions, encouragements of the supervisor.

This framework theoretically represents the main structural, institutional, and individual factors shaping the reduction of academic flying for ECAs of Tampere University. The model provides a theoretical basis for the study and a reading grid to interpret and organize the results in the data analysis phase.

### 3. METHODOLOGY

This chapter presents the research methodology of the study. First, the research philosophy of critical realism and underlying assumptions of the thesis are introduced. Second, the case study method is presented and justified, and a brief description of the case organization is provided. Third, the data collection process of gathering institutional documents and conducting semi-structured interviews is explained. Lastly, the chapter argues and presents thematic analysis as a relevant method for this research.

#### 3.1. Research philosophy

##### 3.1.1. Critical Realism

The thesis and underlying methodological choices derive from the critical realism research philosophy. This philosophy aligns best with the beliefs and views of the world of the author. Critical realism was developed in the twentieth century by Roy Bhaskar to provide a bridge between the classical research philosophies approaches: positivism and interpretivism (Saunders et al., 2019). In doing so, critical realism distances itself from classical research philosophies. Table 2 demonstrates the characteristics of critical realism in comparison to classical research philosophies.

*Table 2 : Research philosophies and their characteristics (Simplified from Saunders et al., 2019, Table 4.3, p. 144)*

Research philosophies	Ontology (Nature of reality)	Epistemology (Nature of knowledge)	Axiology (Role of values)	Common research design
<b>Positivism</b>	The reality is objective and independent. There is just one reality to be observed.	Measurable data is to be trusted.	The researcher is completely neutral.	Quantitative with a deductive logic approach.
<b>Interpretivism</b>	The reality is socially constructed, a	Interpretations and narratives are valued.	The researcher cannot be neutral but is subjective	Qualitative with an inductive logic approach.

	pure reality does not exist. Multiple interpretations are possible for the same phenomena.		and part of the research process.	
<b><i>Critical realism</i></b>	There is an independent reality which cannot be accessed, but only be described by biased individuals.	Knowledge is socially and historically constructed.	The researcher is subjective, they should acknowledge it and try to minimize biases during the research.	No typical method associated. But commonly an abductive logic is applied.

As illustrated in Table 2, the ontology of critical realism differs from classical research philosophies. Critical realism places ontology at its core, and postulates that both a social and objective realities exist in the world. Ontology relates to the assumptions of the researcher regarding the nature of reality. Such assumptions shape how one approaches their research (Saunders et al., 2019). Critical realists suggest that an objective reality exists independently of our interpretations (intransitive reality), but that this world is imperfectly described due to the socially constructed views of the researcher (transitive reality) (Bhaskar & Hartwig, 2016; Edwards et al., 2014). Nevertheless, the philosophy acknowledges that some interpretations are less imperfect than others, and thus values explanatory critiques to improve the subjective perception of the objective reality (Bhaskar & Hartwig, 2016; Edwards et al., 2014).

Epistemology relates to the assumptions of the research, specifically regarding the nature of knowledge and how it is communicated (Burrell & Morgan, 2016, as cited in Saunders et al., 2019). The epistemology of critical realism acknowledges two dimensions of science. The first one is social, in the way that findings from science are a product of socially constructed, and thus biased, beings. The second dimension is objective, and comprises real, objective, objects which are studied by science (Khanna, 2019).

Finally, axiology interrogates the values and ethics of the author and their role in the research. It positions one's own values and stipulates how and to which extent they impact the research project (Saunders et al., 2019). Additionally, the critical realism philosophy recognizes the subjective role of the researcher regarding the axiology of the study. In this thesis, the subject is driven by the own interests and beliefs of the author (Espedal et al., 2022). The author has strong environmental values which initially motivated the research. The study is therefore value-driven, with the assumption that the reduction of academic flying is a positive action to aim for and to accomplish, notably regarding environmental efforts against climate change. Additionally, the author believes that the social dimension and uneven distribution of emissions between groups of individuals are essential elements to address to develop sustainable solutions. However, the author emphasizes that the objective of the study is not to oppose ECAs and academics with more mature careers. The uneven distribution of flights emissions between different career stages is expectable and understandable, as mandatory duties and opportunities evolve along with career progression. Instead, the research strives to explore the perspectives of ECAs over the matter and how the reduction of academic flying may affect them.

Another value guiding the study is the belief that individuals have, to a certain extent, a role in adopting pro-environmental behaviors. However, focusing on individual behaviors has political implications which can be contested, especially in the pro-environmental literature. Indeed, it implicitly postulates that non-environmentally friendly behaviors, such as flying, are a consequence of individual actions and choices (Shove, 2010). Some scholars have argued that focusing on individual behavior, instead of more global systems in which those behaviors are embedded in, does not solve the broader issue of climate change (Uzzell, 2008, as cited in Shove, 2010). The level at which one decides to address environmental issues is thus consciously or unconsciously political, and focusing on individuals places the responsibility of environmentally damaging actions on them. While the author believes that, to a certain extent, individuals have a role in adopting pro-environmental behavior, they also believe that a transition towards pro-environmental behaviors cannot be solely achieved through individual actions. On the contrary, the thesis develops the context guiding the behavior and larger structures within which academic flying occurs and interrogates structural, institutional, and individual perspectives equally. As critical realism recognizes, no researcher is neutral towards their chosen subjects. As an effort towards transparency, the key is to explicitly recognize one's own values and position regarding the study (Saunders et al., 2019).



Critical realism holds numerous advantages for this research. First, it is inclusive of several research designs (Edwards et al., 2014). Second, the goal of critical realism is to emphasize the processes and factors which lead to the studied phenomenon, which corresponds to the research aim and questions of the study. Critical realists aim to discover and identify the characteristics of the context and factors which cause a given outcome (Bhaskar & Hartwig, 2016). This interest in explanations renders critical realism relevant to analyze social problems and propose solutions to overcome them (Fletcher, 2017). The critical realism approach directed the methodological choices of this study. The methodology of the thesis and techniques applied are illustrated in Figure 6 below.

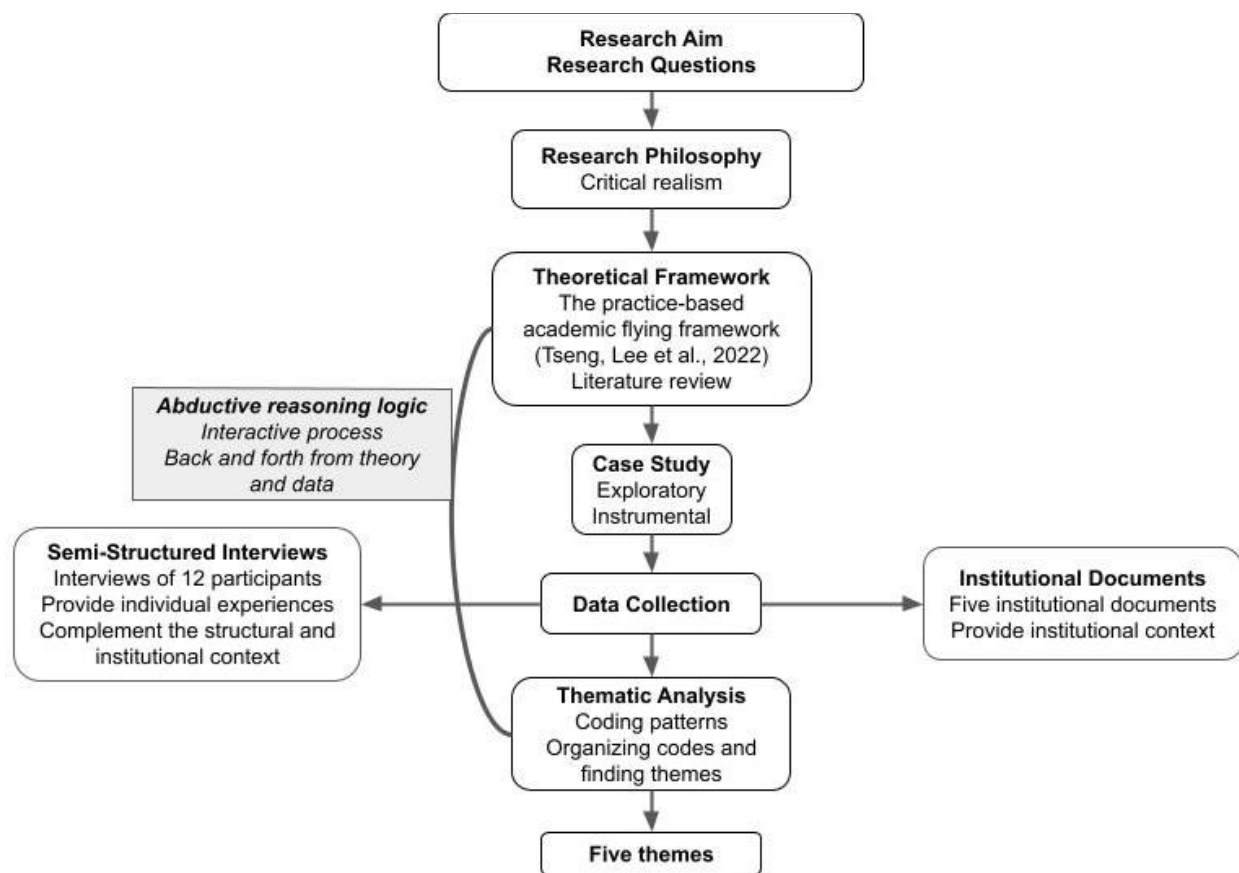


Figure 6: Methodology of the thesis

The methodology of the study, as illustrated in Figure 6, was guided by the critical realism research philosophy. For instance, the theoretical framework presented an existing theory on the influential factors of the reduction of academic flying. While the usage of theories is consistent within critical realism, the philosophy acknowledges that theories have limitations (Edwards et al., 2014). This motivated the selection of high-quality research to conduct the literature review and complete the possible gaps of the initial model. Additionally, critical realism places significant importance on the context of a phenomenon (Bhaskar &

Hartwig, 2016). Consequently, the data collection process involved documents to provide a rich understanding of institutional characteristics.

### *3.1.2. Reasoning logic*

An abductive reasoning logic, which involves both inductive and deductive approaches, is applied in this study. According to Willig and Rogers (2017), inductive coding refers to a “bottom up” approach of the data. The data serves as a basis to identify and interpret patterns and meanings. It is not suitable for this research, as an existing framework could be utilized to build on prior knowledge. Deductive approach on the other hand first develops the codes from a theory and then searches for the codes within the data (Willig & Rogers, 2017). It is not judged suitable neither for this thesis, due to the nascent nature of the topic. Indeed, exclusively mapping the findings with existing theory would hinder the possibilities of identifying emerging drivers and barriers.

Consequently, an abduction reasoning logic is applied instead, which is commonly utilized in critical realism research (Saunders et al., 2019). Additionally, such approach focuses on explanations and identifies the contextual elements shaping a phenomenon or behavior (Fletcher, 2017). By helping the researcher identify causal mechanisms and factors, abduction is a suitable logic to fulfill the research aim of the study. Abduction combines elements of deduction and induction through an interactive process (Suddaby, 2006, as cited in Saunders et al., 2019). Such approach enables the researcher to explore a phenomenon while building up on existing theories (Saunders et al., 2019). This interactive process is applied in this study by searching for data items anticipated by the theoretical framework (deduction) while still accounting for new patterns potentially emerging from the data (induction).

## **3.2. Case study method**

### *3.2.1. Single case study*

The research questions are answered through a single case study of Tampere University, which is the commissioner of this thesis. To narrow the scope of the study and considering the limited amount of time available for its completion, the case study only encompasses Tampere University and not Tampere University of Applied Sciences. Including both institutions would increase the amount of data to be collected, rendering the thesis unfeasible considering the additional work load this would involve. Additionally, flights

emissions are mostly generated by staff members working at Tampere University. Indeed, in 2019, flights emissions of Tampere University represented 82% of the business travel emissions generated by both institutions (Tolvanen, 2021).

A case study gathers empirical data to address a contemporary phenomenon and understand it (Remenyi, 2022). It enables the researcher to identify important factors influencing a given behavior (Rashid et al., 2019). A case study approach also covers contextual elements when they are relevant (Yin, 2007), which is the case for this research. Additionally, case studies can be utilized to generate hypotheses and address gaps as a preliminary step (Flyvbjerg, 2006). Thus, this case study could be the first step to addressing the gap of ECAs in the academic flying literature. Finally, case studies have been commonly utilized regarding the topic of academic flying, rendering the research design consistent with the existing literature (Kreil, 2021; Nursey-Bray et al., 2019; Reyes-García et al., 2022; Schreuer et al., 2023).

The case study conducted is exploratory in its nature. Exploratory case studies help to answer open questions and further discover a given topic (Saunders et al., 2019). This is consistent with the research aim of this thesis, which is exploratory as well. Furthermore, the case study undertaken is of instrumental use. Instrumental case studies focus on non-exceptional situations, or organizations, to illustrate a broader phenomenon and generalize to findings to other similar entities (Baxter & Jack, 2008). The characteristics of Tampere University are rather similar to those of other institutions studied in previous literature, such as the important share of business air travel emissions in the carbon footprint of universities (Schmidt, 2022; Schrems & Upham, 2020; Schreuer et al., 2023). At Tampere University, preliminary results indicate that emissions related to air travel constituted about 20% of the total emissions in 2023 (E.-L. Viskari, personal communication, 15 April 2024). Moreover, the university aims to reach carbon neutrality by 2030 (O'Hern & Sjögren, 2023). In addition, ECAs represent an important share of the staff members of the university, presumably almost a third.

### *3.2.2. Short case description*

This section briefly presents the case of Tampere University and the ECAs working there. The overview of the case helps the reader understand the structural and institutional context. Tampere University is located in Finland, North East Europe. As Ahonen et al. (2021) points out, the location of Finland and its borders with the Baltic Sea renders direct rail connections impossible with other countries. Thus, reaching a European destination without flying, such

as Paris, typically requires several days of travel. Consequently, Finland is isolated and rather dependent on flying to reach international destinations. In 2022, the top five cities reached by flying at Tampere University were all situated in Europe. Excluding Helsinki and Tampere, they were respectively: Copenhagen; Paris, London, Stockholm, and Brussels (Bounouara, 2024).

Flights emissions constitute an important share of the total carbon footprint of Tampere University. Table 3 below highlights the flights emissions at Tampere University over the past years and their relative share.

*Table 3 : Emissions from business air travel and their relative share at Tampere University*

Year	Flights emissions in tons of CO <sub>2</sub> e <sup>1</sup>	Total emissions in tons of CO <sub>2</sub> e	Share of flights emissions	Source
2019	9 758	25 000	39%	Carbon report 2019 (Tolvanen, 2021)
2022	2 371	15 500	15%	Tampereen korkeakoulu - yhteisön hiilijalanjälki 2022 (Viskari et al., n.d.)
2023	3 600	18 200	20%	Preliminary results (E.-L. Viskari, personal communication, 15 April 2024)

As demonstrated in Table 3, emissions from flying represented 39% of total Tampere University emissions in 2019 (Tolvanen, 2021). In 2022, the flights emissions had decreased compared to 2019. Academic air travel emissions represented 15% of the total emissions in 2022. The decrease in flights emissions is partly explained by travelling restrictions still in place in 2022 during the Covid-19 pandemic. Thus, it was expected that flights emissions would increase after the relaxation of travel restrictions (Viskari et al., n.d.). Preliminary results confirmed the increase in emissions, presumably representing 3 600 tons of CO<sub>2</sub>e in 2023, and 20% of the total emissions (E.-L. Viskari, personal communication, 15 April 2024).

<sup>1</sup> CO<sub>2</sub>e refers to carbon dioxide equivalent, which includes all the greenhouse gases emissions adjusted based on their global warming potential. This indicator is commonly utilized in carbon footprint calculations.

April 2024). However, the flights emissions still remained significantly lower than what they were in 2019.

Top flyers at Tampere University generated an important share of the emissions in 2022. This aligns with findings from the literature review, which highlighted that academic air travel emissions are commonly unevenly distributed (Ciers et al., 2018; Hoolohan et al., 2021; Schrems & Upham, 2020; Whitmarsh et al., 2020) . It is estimated that in 2022, the top 5% of flyers, 75 individuals, produced over 20% of the air travel emissions. Additionally, the top 20% flyers, or less than 8% of total staff members at Tampere University, produced over half of the flights emissions in 2022 (Bounouara, 2024).

Additionally, the distribution of flights and emissions is unevenly distributed across positions. Growing academic duties, responsibilities, and research opportunities can explain the uneven distribution of flights amongst positions. It is estimated that tenure track or full professor positions took in average about five individual flights per year. Doctoral candidate / university instructor and postdoctoral researcher / university lecturer positions took in average respectively 2.4 and 2.15 flights in 2022 (Bounouara, 2024, tbl. 4). This once more concurs with findings from the literature review. For instance, Ciers et al. (2018) highlighted in their case study that professors who were travelling by plane emitted on average five to ten times more CO<sub>2</sub>e compared to ECAs. However, the differences of carbon footprints between positions are not as strong in the case of Tampere University. Tenure track and full professor positions emitted in average 3.3 tons of CO<sub>2</sub>e in 2022. Flights of doctoral candidate / university instructor in turn emitted 1.1 tons and flights of postdoctoral / university lecturer positions 0.8 tons (Bounouara, 2024).

Doctoral and postdoctoral researchers represent a significant part of the staff members at Tampere University. By searching positions titles on the intranet of the university and filtering results to only display contacts, it is estimated that 842 doctoral researchers and 403 postdoctoral researchers work at Tampere University. There are about 4 000 employees working at the institution (Tampere Universities, n.d.-d). Consequently, it can be estimated that doctoral and postdoctoral researchers represent respectively 21% and 10% of the staff members. ECAs are thus an important group at the university, presumably representing almost a third of the staff members.

### **3.3. Data collection**

#### *3.3.1. Institutional documents*

The first step of the data collection process was to gather secondary raw data in the form of institutional documents. Secondary raw data refers to utilizing the data without modifying it (Saunders et al., 2019). It provides contextual elements within which the main population studied is embedded (Saunders et al., 2019). Consistently with the research philosophy, analyzing the broader context renders the findings about ECAs richer (Baxter & Jack, 2008; Edwards et al., 2014). Moreover, it provides additional data for answering to the first sub-question of the thesis, notably in regard to institutional factors. The author first familiarized themselves with the documents to build the questionnaire guide utilized for the interviews (see Appendix B). Such preparation was necessary to understand the environment of the interviewees, for example regarding the travel policy, and refine questions if necessary.

The sampling method for collecting the documentary data was non-probability purposive sampling. With purposive sampling, the selection of relevant cases is left to the appreciation of the author, and they are selected subjectively based on their ability to answer the research questions (Saunders et al., 2019). Furthermore, it is the responsibility of the author to assure the reliability of the source (Saunders et al., 2019). In this case, the documents were obtained from the websites and intranet of Tampere University itself. Additionally, one document was retrieved from the official website of the Research Council of Finland (Suomen Akatemia in Finnish), a main funding body of Finnish academia. In 2023, the latter allocated over 500 million euros as funds for research (Research Council of Finland, n.d.). The five documents selected amounted to 68 pages of data. The documents collected are presented in Table 4 below, followed by their justification for selection.

*Table 4 : Institutional documents collected for analysis.*

Document number	Document name	Document type	Source Institution	Retrieved from
#1	Tampere University Strategy 2030	PDF document	Tampere University	<a href="#">Website of the university</a>
#2	Tampere Universities: Roadmap to sustainable development	PDF document, roadmap	Tampere Universities	<a href="#">Website of the university</a>
#3	Tampereen korkeakouluyhteisön hiilijalanjälki 2022	PDF document, carbon	Tampere Universities	<a href="#">The university intranet</a>

		footprint report		
#4	Travel Policy (entered into force on 01/11/2022)	PDF document, policy document	Tampere Universities	The university intranet
#5	Call for funding: Academic research fellowship 2024	Webpage, call for funding	Research Council of Finland	<a href="#">Research Council of Finland website</a> <a href="#">/ Call for applications</a>

As illustrated in Table 4, the Tampere University Strategy 2030 was first selected to inform the main strategic directions and the expectations held towards staff members. Second, the travel policy of the university enables an enhanced understanding of the business travel rules. Third, the English content of the latest carbon footprint report was included to understand if and how academic flying is approached. Additionally, the roadmap to sustainable development was selected to inform on sustainability and business air travel topics at the university. Finally, the call for funding application selected was specifically directed towards academics aspiring to pursue a postdoc. The document is relevant to understand the expectations held towards ECAs to access funding for their career and research.

### 3.3.2. Semi-structured interviews

The final data collection step entailed generating data by conducting semi-structured interviews with academics. Semi-structured interviews are commonly utilized in qualitative research and exploratory studies (Saunders et al., 2019). They allow the researcher to address specific themes while keeping flexibility if needed (Galletta, 2013). Moreover, interviews enable the researcher to access the interpretations of the respondents in relation to their context (Edwards et al., 2014). Semi-structured interviews are relevant in regard to the research aim, and the approach is consistent with the exploratory nature of this case study (Saunders et al., 2019). Semi-structured interviews enable the interviewer to ask probing questions, that is, opportunistic questions which differ from the original questionnaire guide. Probing questions allow the respondent to elaborate their answer further (Saunders et al., 2019).

The selection process of the sample aimed to represent different disciplines across the university. Annala (2022) highlighted that different faculties in Finnish universities have different practices. In her study, she stratified the disciplines into two categories, “one representing humanities, arts, and social sciences [...] and the other representing science, technology, engineering, and mathematics” (Annala, 2022, pp. 1085–1086). A similar method was applied for this research, and the different faculties of Tampere University were divided in two categories. The first one is titled “hard disciplines” and encompasses the faculty of built environment, the faculty of engineering and natural sciences, the faculty of information technology and communication sciences, and the faculty of medicine and health technology. The second category is labeled “soft disciplines” and consists of the faculty of education and culture, the faculty of management and business, and the faculty of social sciences (Tampere Universities, n.d.-b). Furthermore, findings from the literature review indicated gender as a relevant characteristic to the reduction of academic air travel, as it may shape its barriers or drivers (e.g., parental responsibilities) (Jäckle, 2022). Therefore, the sample of interviewees involved an equal share of women and men. ECAs being the focus of this study, six of the interviewees were doctoral and postdoctoral researchers, and six were academics with more mature careers. The interviewees and their characteristics are summarized in Table 5.

*Table 5: Interviews participants*

Interviewee	Position	Gender	Discipline	Sampling Method	Interview Channel	Duration of the Interview
#1	Doctoral researcher	Man	Hard discipline	Volunteering	Online	38
#2	Doctoral researcher	Woman	Hard discipline	Opportunistic	Face-to-face	64
#3	Doctoral researcher	Woman	Soft discipline	Random sampling	Face-to-face	46
#4	Postdoctoral researcher	Man	Soft discipline	Volunteering	Online	64
#5	Postdoctoral researcher	Woman	Hard discipline	Random sampling	Online	58



#6	Postdoctoral researcher	Man	Soft discipline	Random sampling	Face-to-face	63
#7	Assistant professor	Man	Soft discipline	Random sampling	Online	66
#8	Associate professor	Woman	Hard discipline	Snowballing	Online	42
#9	Associate professor	Man	Hard discipline	Random sampling	Face-to-face	48
#10	Full professor	Woman	Soft discipline	Volunteering	Face-to-face	42
#11	Full professor	Man	Hard discipline	Volunteering	Face-to-face	58
#12	Full professor	Woman	Soft discipline	Random sampling	Online	35

As demonstrated in Table 5, several sampling methods were employed to gather study participants. The first sampling method was non-probability self-selection sampling, also known as volunteering (Saunders et al., 2019). An intranet post was published to call for volunteers for the study, while sharing the aim of the study. Four participants volunteered to participate in the research.

Second, a probability simple random sampling method was applied to recruit the interviewees remaining (Saunders et al., 2019). The sampling frame for random sampling consisted of the contact database of the university available in the intranet. The key words of the position were searched, and the results were filtered to only display the profile of contacts, which presumably gave a list of all contacts at Tampere University with this position. An online random number generator was utilized to identify potential participants to contact. For instance, the key words “doctoral researcher” were first searched in the intranet, which gave about 800 results. Second, a website generated a number between one and 800. If the displayed number was 213, then the 213<sup>th</sup> contact profile of the results was inspected and identified as suitable or not to interview, based on the planned sampling requirements. If the profile corresponded, then the person was approached by e-mail and invited for an interview. If not, then the process was repeated until a potential participant was found. Over 20 academics were contacted through this technique, and six agreed to participate.

The third sampling method was non-probability snowballing. This sampling method occurs when a respondent or potential respondent directs the researcher towards another suitable case (Saunders et al., 2019). In this study, one person initially contacted through random sampling directed the author towards another academic with a suitable profile.

Finally, one participant was recruited by opportunity. Opportunistic non-probability sampling occurs when potential participants are met on-the-stop and approached for the research spontaneously (Saunders et al., 2019). This was the case for one participant, although no connection or professional link existed between them and the author. Additionally, and consistently with the research philosophy, particular attention was addressed to the objectivity of the author. Thus, the author testifies that they did not include a colleague, supervisor, or acquaintance as a participant to this study.

Therefore, four different sampling methods were utilized to gather participants for the interviews, which included equally probability and non-probability approaches. This is viewed as a strength for the study, mostly as partly relying on probability sampling minimizes the bias that all participants would find the reduction of flying as relevant. Gathering different opinions on the subject enables diverse answers and perspectives.

Once the participant were selected, they were first invited to fill out a short recruitment form. Such form briefly explained the aim of the research and asked academics to display background information such as: e-mail address; faculty, gender, position, available times, and number of academic flights taken in 2022. This allowed a deeper understanding of the flying behavior of the respondent prior to the interview. Participants were selected regardless of their flying behavior, as they may provide specific valuable information on their perception with academic flying whether they fly regularly, rarely, or not at all.

The research process of conducting interviews involved several ethical considerations. As this study gathers and stores personal data of respondents, the potential need to carry out a data protection impact assessment (DPIA) was determined prior to the interviews (see Appendix C). After completing the DPIA pre-assessment (Tampere Universities, n.d.), it was found that the processing of the data would not harm the rights and freedoms of the respondent. Nevertheless, the concise risk assessment (see Appendix D) identified a moderate risk for the study participants. The respondents are employees of the university and may potentially emit critiques towards their organization or colleagues. A breach in the anonymity of the answers of the participants could harm their reputation and

employment relationship. To prevent this from occurring, three measures were undertaken. First, face-to-face interviews were conducted in an appropriate, reserved room, to ensure the privacy of the exchange (Saunders et al., 2019). Second, online files with the answers of the interviewees did not contain any of their names. This precaution ensures that if a file were to unintentionally leak, it would not lead to the recognition of the participant. Finally, the quotes selected to illustrate the findings were slightly modified, if necessary, to ensure the anonymity of the study participants. For example, this involved changing the country name one might have mentioned as a business travel destination.

Once the risk assessment completed, the data privacy notice and consent form for the interviews were created. Participants were required to get familiar with the data privacy notice and fill the consent form if possible before the interviews. To ensure informed decisions, the respondents were advised about the research context and aim prior to granting their consent (Rashid et al., 2019). The consent forms were gathered by e-mail or paper, while two respondents provided their oral, recorded, consent during the interview.

The theoretical framework developed previously informed the questionnaire guide design (see Appendix B). In accordance with semi-structured interviews, the questions were open-ended to focus on the research topic, while enabling respondents to develop their experiences (Galletta, 2013). It was important for the questions to remain neutral and not guide the participants towards certain types of answers. Consistently with critical realism, the researcher must minimize biases and be as objective as possible (Saunders et al., 2019). The interviews started with opening comments to remind the research aim of the study. Additionally, the participants were informed that they would not be judged for their answers and that they are free to share any opinions they may hold over the subject. Such clarifications were important to create a comfortable atmosphere in the interviews, especially when the research topic is sensitive (Saunders et al., 2019). Additionally, the first question involved asking the general approach to sustainability of the interviewees. This opening question allowed the author to understand better the participants and their opinions on environmental sustainability, while creating a comfortable environment for the rest of the interview. Additionally, the interviews process involved asking probing questions. In this research, open probing questions were such as “How does being part of a global community and travelling helps your own research?”. Closed probing questions were also asked, mostly to ensure the good understanding of the answer provided by the interviewee (e.g., “Do you feel that you will have to fly more to achieve your goals?”)

Rich data emerged from the answers of the study participants. While doctoral and postdoctoral researchers provided their current views of academic flying as ECAs, academics with more mature careers also shared their experiences of when they were younger academics. Furthermore, academics with more mature careers would sometimes highlight changes which they had perceived in the academic flying culture throughout their career. This provided diverse perspectives, all valuable for the analysis.

Interviews were conducted in English between November 2023 and January 2024, preferably face-to-face, and online if physical presence was not possible. Consequently, half of the interviews happened in face-to-face private settings and the other half online. The interviews were recorded both on telephone and computer devices. The duration of the interviews lasted from 35 minutes for the shortest to 66 minutes for the longest. In total, over 10 hours of interview data were collected and recorded. The interviews were transcribed automatically from the recorded audio on the online version of Word. Nevertheless, each transcription was manually and thoroughly checked for several hours to ensure accuracy with the audio file. The interviews resulted in 100 pages of transcribed text.

### **3.4. Thematic analysis**

#### *3.4.1. Relevance*

The generated data were analyzed through a thematic analysis technique. Thematic analysis can be utilized to identify the key themes and issues raised in the data. It entails searching for patterns and common meanings which emerge from the dataset (Saunders et al., 2019), in this study composed of documents and interviews. The process involves coding the data according to their meaning regarding the research questions (Saunders et al., 2019).

In this study, thematic analysis is a suitable method for several reasons. First, it is accessible and flexible for those new to qualitative research, which is the case of the author (Braun & Clarke, 2006, as cited in Saunders et al., 2019; Willig & Rogers, 2017). Second, it can be employed for diverse data types like interviews and textual data, which constitute the dataset in this study. Additionally, thematic analysis leads to rich descriptions and explanations of a phenomenon, which matches the exploratory nature of this case study (Saunders et al., 2019).

Thematic analysis was applied along with an abductive approach. Such logic involves an interactive process, by starting the analysis with the theoretically developed

drivers and barriers, while exploring other emerging elements from the data (Saunders et al., 2019). Therefore, themes and their content were compared with the theoretical framework to identify similarities and differences.

### 3.4.2. Steps of the analysis process

Four main steps constitute the process of thematic analysis (Saunders et al., 2019). Those steps are presented in Table 6 below.

*Table 6 : The four steps of thematic analysis*

Steps of thematic analysis (Saunders et al., 2019)	Application in the thesis
Getting familiar with the data	Reading the documents and reviewing the transcription of the interviews.
Developing the codes	Coding the data based on the meaning they convey through Atlas.ti 24, resulting in 22 codes. <i>Example: The quote “people remember you differently when you meet them face-to-face” was interpreted to relate to networking as the main driver of academic flying and was coded as such.</i>
Searching for themes	Grouping codes with connections in relation to the research questions. <i>Example: The codes “conferences practices” and “networking as the main driver of academic flying” both highlighted the importance of face-to-face events in the academia and how it may hinder the reduction of academic flying.</i>
Refining themes	Defining themes and considering explanations and counter arguments. <i>Example: 10 codes were interlinked and formed the theme “academic flying and networking cultures”.</i>

As illustrated in Table 6, the analysis started when reviewing the transcription of the interviews and reading the institutional documents, as the first step of a thematic analysis is to get familiar with the data (Saunders et al., 2019). Consequently, the author spent over

20 hours reading the institutional documents and reviewing the transcription of the interviews.

The second step consisted in developing the codes from systematically working with the data and identifying patterns (Willig & Rogers, 2017). This step was executed manually through Atlas.ti (version 24), a qualitative data analysis software which facilitates this method. The coding process involves labelling the data with codes which convey the meaning of the data item, when they relate to the research questions (Saunders et al., 2019). In this study, particular attention was brought to data items which reflected drivers and barriers of academic flying. The data coded were typically phrases and paragraphs, with multiple codes sometimes attributed to the same unit of data. The coding process enables an enhanced management of the data and its meanings (Saunders et al., 2019). Consistently with an abductive approach, both in vivo codes, labels developed directly from the data, and a priori codes, the latter being drawn from the existing theory, were created during the coding process (Saunders et al., 2019). This enabled a rich analysis, by acknowledging both new and already identified influential factors of academic flying. After the initial coding process, over 1000 data items were coded and a hundred of codes had been created. The codes were then, for some, redefined, merged or suppressed (Saunders et al., 2019). After the revision of the existing codes and their grouping in larger groups, the thematic analysis resulted in 105 sub-codes organized in 22 larger codes.

The third step of the thematic analysis entailed searching for themes. Such process involves identifying patterns and links between the codes in relation to the research questions (Saunders et al., 2019). To have an initial view on possible links between different codes prior to identifying the themes, a co-occurrence analysis was performed through Atlas.ti. A co-occurrence analysis highlights codes which overlap and indicate potential links (Atlas.ti, n.d.). Thus, several codes were found to be fairly strongly connected, such as “limits of virtual attendance” and “conferences practices”. The co-occurrence analysis facilitated the search for themes within the dataset. Groups of codes with similar patterns were identified and derived as five themes.

The final step involved refining themes (Saunders et al., 2019). Definitions were attributed to each theme and their modalities argued and justified. Additionally, quotes from the interviewees were withdrawn to illustrate and deepen the themes identified. The thematic analysis ultimately resulted in the identification of five distinct themes: infrastructures and their influence on academic flying; moderators at the institutional level, academic communities and their effects on academic flying, individual level moderators, academic

flying and networking cultures. The themes comprise between seven codes and 13 codes, with some codes being associated to several themes. The themes, their definitions, and affiliated codes are presented in Table 7.

Table 7 : Codebook of the thematic analysis

Theme	Theme definition	Codes
<b>Infrastructures and their influence on academic flying</b>	This theme examines the influence of infrastructures, mostly experiences with online events and alternative transport modes, and their influence on academic flying. Special focus is placed on the experiences of ECAs and their similarities and differences with other academics. It corresponds to the “material cultures” element from the theoretical framework.	Networking as the main driver of academic flying
		Conferences practices
		Benefits of virtual attendance
		Limits of virtual attendance
		Travelling with alternative transport modes
		Role of academic institutions
		Stress of travelling
		Differences in the travel behavior of different career stages
<b>Moderators at the institutional level</b>	This section highlights how higher education institutions support or hinder the reduction of academic flying, especially for ECAs. The sustainability framework of the university is first reflected upon in relation to its effect on academic flying, followed by the impact of the travel policy and internationalization strategies.	Sustainability at the university
		Role of academic institutions
		Internationalization as a driver of academic flying
		Travelling with alternative transport modes
		Positive outcomes of academic travel
<b>Academic communities and their effects</b>	This theme focuses on academic communities, such as supervisors, research groups, and academic peers, and their effect on the aspirations and expectations of ECAs.	Implicit pressure to academic travel
		Role of peers
		Role of supervisors
		Travelling with alternative transport modes
		Strong environmental values



<b>on academic flying</b>		Limits of virtual attendance
		Positive outcomes of academic travel
		The present and future culture of academic flying
<b>Individual level moderators</b>	This theme investigates individual level factors and how they act as drivers or barriers to the reduction of academic flying. It encompasses the enjoyability of academic travel, personal beliefs, views on alternative transport modes, and family commitments.	Academic travel as a perk
		Effects of travelling on personal life
		Networking as the main driver of academic travel
		Stress of travelling
		Strong environmental values
		The reduction of academic flying is not needed
		The impact of academic travel on family commitments
		Positive outcomes of academic travel
		Ideas to reduce academic flying
<b>Academic flying and networking cultures</b>	This final theme explores how the need for networking constitutes the biggest barrier to the reduction of academic flying, especially for ECAs. Additionally, the theme explains what the future culture of academic flying and networking resemble to potentially reduce business air travel, especially with the new generation of academics.	Differences in the travel behavior of different career stages
		Implicit pressure to academic travel
		Networking as the main driver of academic travel
		Conferences practices
		Role of supervisor
		Role of peers
		Role of academic institutions
		Positive outcomes of academic travel
		Specificities of ECAs and influences on their travel
		The present and future culture of academic flying

As presented in Table 7, the five themes and their associated codes illustrate the influential factors to the reduction of academic flying, especially for ECAs. Some themes and their elements were previously identified by the theoretical framework, while others emerged from the empirical analysis. Influential factors were found to operate at different levels. First, structural elements, such as transport infrastructures, influenced the reduction of academic flying. Second, institutional expectations and aspirations played a significant role on the reduction of business air travel. Third, some drivers and barriers related to academic communities and peer pressure or encouragements. Fourth, some influential factors were associated with individual academics. Finally, the last theme explores the importance of networking and its implications for the reduction of academic flying.

## 4. FINDINGS

This chapter presents the analysis of the empirical data in five sub-sections, each corresponding to a theme. The themes are first defined, the associated codes explained, and illustrated with quotes withdrawn from the dataset.

### 4.1. Infrastructures and their influence on academic flying

This theme examines the influence of infrastructures, experiences in online events, and alternative transport modes, on academic flying. It corresponds to the “material cultures” element of the theoretical framework.

#### 4.1.1. Networking in online events as a barrier to the reduction of academic flying

A key influence on academic flying consisted in the perceptions and experiences of study participants with virtual attendance. Consistently with the literature, the quality of online events represented mostly a barrier to the reduction of academic air travel, both for ECAs and other career stages. Indeed, although the university encouraged considering virtual attendance options before travelling, study participants were dissatisfied with the quality of online events they had attended. When asked about their views on virtual events, a participant stated:

*“I think they really suck. I don't have much good to say about them. They have their uses, of course, for some situations”* (Postdoctoral researcher, interviewee #6).

Those feelings were shared across the different career stages, with a fairly negative view on virtual attendance. Overall, the study participants were dissatisfied with the lack of networking opportunities in online events, which emerged as the main driver of academic flying. Networking was commonly stated as occurring during so-called “informal moments” in face-to-face events.

*“When you go to conferences, there are a lot of dinners, there is a lot of this unofficial socialization, like going to a bar together, eating out, having these small chats, and creating an interaction between each other. Then maybe you contact that person later for a paper or on any other issues”* (Doctoral researcher, interviewee #3).

Thus, the lack of informal moments in online events hindered the networking possibilities for the study participants, which resulted in a poor perception of virtual attendance over physical presence to events. Additionally, even interviewees who had participated in online events in which organizers tried to recreate those informal moments had fairly negative experiences. The attempts to recreate face-to-face interactions did not allow study participants to network effectively. Additionally, the inaccessibility of nonverbal communication rendered online networking and informal moments even more complicated.

*“I've been to some conferences like that [with a more developed networking aspect]. But when you go into this room, you're still just talking to the screen. You don't meet people. It's just in my experience, it hasn't worked at all”* (Postdoctoral researcher, interviewee #6).

The analysis demonstrated other elements rendering online events a barrier to the reduction of academic flying, such as difficulties concentrating online. Additionally, online trainings on the usage of certain equipment was inferior compared to physical presence. This was the case for study participants in hard disciplines, which was the only notable difference between hard and soft disciplines.

However, online attendance was deemed as rather suitable in certain cases, especially to sustain online contacts. The empirical analysis highlighted that interviewees with more mature careers and established networks found online means mostly sufficient to sustain their network:

*“I feel like I have reached a quite big academic network, I have been in touch the big players in my field [...] so in that case basically I can just e-mail any guy and suggest collaborations.”* (Assistant professor, interviewee #7).

Therefore, online attendance appeared already more suitable for academics with an established network and more mature careers. As ECAs, and especially doctoral researchers, do not have an established network yet, the current rare attempts to provide networking opportunities in online events constituted a barrier to the reduction of academic flying. Furthermore, the analysis demonstrated that online attendance does not allow doctoral researchers to practice their presentation and networking skills, which were important competencies to be developed for their careers.

*“The doctorate student who works with me was presenting a poster at a conference online for her first time. You have a hundred people there actually, but you don't have people*

*knocking at your zoom door to ask questions. Maybe they send you messages, but you don't have the pleasure to present, and you don't also have this possibility to develop your presenting skills.”* (Postdoctoral researcher, interviewee #5).

Furthermore, the doctoral researchers interviewed had often started their diploma during the travel restrictions period of the Covid-19 pandemic. The lack of networking possibilities during the pandemic resulted in doctoral researchers having a rather poor academic network. This motivated them to travel more, now that the restrictions faded, to catch up on the opportunities missed during travel restrictions.

*“I'm not that big fan of online cooperation and getting to know people online. For me it was maybe a little bit like, I'll just wait until I can travel again and not do that online thing [...]. I'm trying to get back the Covid-19 years, during which I was not networking.”* (Doctoral researcher, interviewee #2).

The empirical analysis underlined that the current culture of online events represented a barrier to the reduction of academic flying. This is further emphasized for doctoral researchers who did not have an established network, as networking opportunities in online events are usually absent or poorly developed.

#### *4.1.2. Access to alternative transport infrastructures*

The analysis highlighted that access to transport infrastructures influenced the travel behavior of the interviewees. Study participants shared their perception and experiences with alternative transport modes and how those affected their reduction of academic flying. First, emphasis was placed on the non-mandatory nature academic air travel per se, as it is academic travel which was deemed as important, but not necessarily flying. Interviewees highlighted that academic travel could be operated by other transport modes than flying, at least for short and medium distances. Flying results naturally as the most common mean due to its convenience and time and cost-efficiency compared to alternative transport modes. The empirical analysis emphasized the location of Tampere University as an additional barrier to travel with alternative transport modes.

*“I feel that once you're in Finland, it's unfortunately impossible to avoid academic flying to a large degree. But I think if you're in continental Europe, it's entirely possible.”* (Associate professor, interviewee #8).

The location of Tampere University and lack of railway connection to the rest of Europe constituted an important barrier to the reduction of academic flying. Such location induced for study participants that any travel to the rest of Europe would last at least several days, which was constraining for academics even when they are willing to travel for longer.

## **4.2. Moderators at the institutional level**

This section highlights how the university and funding bodies implicitly and explicitly support or hinder the reduction of academic flying, especially for ECAs. The sustainability framework of the university is first reflected upon in relation to its effect on academic flying, followed by the impact of the travel policy and internationalization strategies on academic air travel.

### *4.2.1. The sustainability framework of the university as a potential driver*

Sustainability is a key value of the university, which wishes to become carbon neutral by 2030 (O'Hern & Sjögren, 2023). Not only does the university wish to include sustainability in research projects for its contribution to society, but it also aspires for its researchers to be examples in promoting sustainability. This commitment to sustainability and wish for academics to set an example would seem to act as a driver to the reduction of academic flying, through institutional support. However, the empirical data showed that the university documents examined do not directly address the question of business air travel emissions, which are not directly integrated in the roadmap to carbon neutrality. Thus, the institutional support might be directed towards sustainability efforts but not necessarily towards the reduction of academic flying emissions. Nevertheless, the analysis identified some notions which involved a switch towards “responsible business travel”, although air travel was not directly mentioned. Such elements render the importance of business air travel in the sustainability strategy of the university as a question mark. One of the interviewees highlighted this point in the following way:

*“We see this policy emails like about discrimination and well-being and that kind of stuff. So, you see that's the focus of university, that they want a university community [...] But you haven't heard anything about sustainability. That tells about politics or policy coming from the University. So, I am not sure it's their priority at the moment.”* (Assistant professor, interviewee #7)

The lack of a specific commitment to the reduction of flying further translates into a deficiency of institutional support to, for example, switch to alternative transport modes. For instance, the process of travelling with alternative transport modes currently needs to be planned by the academics themselves, which is time-consuming and stress inducing.

*“You have all the writing you have to do and teaching and stuff and then spend hours and hours and hours looking after these different trains and reserving places from here and there. [...] It's just like a huge amount of stress and something that somebody else needs to do for me.”* (Postdoctoral researcher, interviewee #6).

Additionally, longer trips with alternative transport modes, which may sometimes last several days, pose the question of the daily travel allowance, which raises financial questions.

*“You can't just tell people travel by train and not by plane. People are paid for their time. Therefore, if you are somehow expected to spend two days travelling by train, it needs to be compensated in a fair way. Otherwise of course you will fly, I would also fly in this case. So, I guess it comes down to the budget.”* (Associate professor, interviewee #8)

The empirical analysis highlighted the sustainability framework of the university as a potential driver to the reduction of academic flying. The commitment to carbon neutrality and wish for researchers to be examples in this domain indicate a potential driver. However, the empirical analysis showed that little is mentioned about flights emissions in the official documents examined. The sustainability framework appeared to affect all academics in a similar manner.

#### 4.2.2. *The travel policy and cost-efficiency rule*

The analysis demonstrates that the principles of the travel policy are paradoxical. While the travel policy employs notions of responsible business travel, the main emphasis of the guidelines is on the cost-efficiency of the travel. Thus, the rules of the travel policy seem contradictory, as responsible business travel and cost-efficient transport modes are rarely compatible for medium distance travels:

*“The cost-efficiency and responsibility requirements also apply to travel. Business travel must be carried out as cost efficiently and responsibly as possible, but without*

*compromising operational quality.*” (Tampere Universities, Travel Policy, p. 4, document #4).

Consequently, academics may have to fly despite their willingness to utilize alternative transport modes. A study participant highlighted the issue with the following example:

*“Next year I have a conference in Finland, in Rovaniemi. [...] I'm not sure if I'm allowed to travel with train and to have a night cabin, because it's not part of the normal train ticket pack [...] If the night packet with the train is not available, then it takes me the whole working day to travel there with train and it's almost easier to just fly during the night. I'm not sure how that's going to go, but then maybe I'd have my first domestic flight.”* (Doctoral researcher, interviewee #2).

Therefore, the emphasis on the cost-efficiency of the travel acted as a barrier to the reduction of academic flying, as it did not enable the usage of alternative transport modes. This moderator did not appear to affect academics of different career stages in different ways.

#### *4.2.3. Internationalization requirements*

The view of the university towards internationalization is one of the key moderators to investigate in regard to its effects towards the reduction of academic flying. The thematic analysis highlighted that Tampere University wishes to develop its international attractiveness and internationalization:

*“We will support international mobility and collaboration among the members of our university community.”* (Tampere University, Tampere University Strategy 2030, p. 11, document #1)

The empirical analysis demonstrated that internationalization strategies create expectations for academics to display patterns of mobility and international experience. Nevertheless, this direction is common to the whole academia, which pressures universities to follow the trends to remain competitive:



*“We cannot just keep loose because the other universities, they are happy to collect the money. It is a competition between that and how successful we are.”* (Full professor, interviewee #11).

Although internationalization strategies acted as a barrier to the reduction of academic air travel, the study participants, regardless of their career stages, did not feel any direct expectations from the university to travel and be international.

*“I felt that the expectation and the encouragement to attend international venues was a lot stronger in continental Europe. [...] I feel like anything related to Tampere university, there is no pressure.”* (Associate professor, interviewee #8)

Moreover, requirements of internationalization for research funding hindered the reduction of academic flying. International mobility patterns or collaborations were commonly requested to access funding and develop one’s career. A review criterion to access an academic research fellowship read as follow:

*“Quality of research environment and collaboration networks (incl. researcher mobility)”*.  
(Research Council of Finland, Call for funding: Academic research fellowship 2024, document #5)

The analysis highlighted expectations of mobility were especially strong for ECAs. Patterns of mobility and international experience can be determining to access funding or more secure positions, which was acknowledged by ECAs.

*“[I fly] to establish myself as an academic, career wise, to show that I am actually going out and meeting other researchers outside my institution. To show it on the papers and applications. To say “oh, by the way, look here, on the CV”.”* (Doctoral researcher, interviewee #3).

Furthermore, internationalization strategies create a loop, within which international mobility is needed to access funding while the funding granted partly serves academic flying. Thus, part of the funds are allocated for travel, even when academics themselves determined that they could utilize the funding in better ways:

*“If you don’t use that money, it’s going to be just disappearing. [...] So, we have to travel just to spend this money. Sometimes they organize these workshops, some summer*

*schools, some conferences, that are not most crucial, but there is money in the project and there is this understanding that we have to do it. I believe actually there should be kind of like a system, especially for traveling, that you can transfer that money for some other following years, and it doesn't have to be for travel.”* (Assistant professor, interviewee #7).

The reduction of academic flying and internationalization strategies are not incompatible concepts. International collaborations are highly beneficial for research, and it should remain an important principle of academia. Similarly, the study participants viewed internationalization as necessary for research creativity and excellence:

*“Academic work is global work. It cannot be just limited to one institution, it is global in essence. That's the reason why you have to have contacts, you have to discuss. You cannot do science in isolation.”* (Full professor, interviewee #12).

Nevertheless, interviewees suggested that the university and funding bodies could represent support systems to achieve internationalization in a more sustainable way.

*“The funding bodies, who really play a huge role in the Finnish academia, could at least not include academic flying as a requirement. And if they really wanted to be front runners, they could say that, well, “we realized that travelling by land takes more time and it may cost more, so you're allowed to do that if you receive our funding”.”* (Full professor, interviewee #10)

The empirical analysis underlined internationalization requirements stemming from the academia as a barrier to the reduction of academic flying. This is especially the case for ECAs, who need to fulfill requirements to develop their career and achieve more secure positions. However, funds granted to academics with more mature career stages also entailed additional responsibilities and travel, especially when they were project runners.

#### **4.3. Academic communities and their effects on academic flying**

This theme adopts a middle-level perspective by focusing on academic communities, especially supervisors, research groups, and academic peers, and their effects on the aspirations and expectations of ECAs regarding flying. This is a rather novel angle which emerged from the data and had not been identified or addressed by the existing literature.

#### 4.3.1. *The encouragements of the supervisor*

The data highlighted the importance of the supervisor as a barrier to the reduction of academic flying. The analysis showed that the supervisor commonly encouraged academic travel for ECAs to develop their network. The supervisors acknowledged the importance of academic travel for research excellence and career development, and thus motivated ECAs to travel and participate in person to academic events. Those encouragements were specific to doctoral researchers who wish to pursue a career in academia.

*“Since it was a big boost for my career and vision during my early years, if a PhD student is willing to travel for academic reasons, I would never say that no, don't travel.”* (Assistant professor, interviewee #7).

The empirical analysis showed that such encouragement is not perceived as a pressure for doctoral researchers. Rather, they perceived it as a good opportunity to network and develop their career.

*“My supervisor encourages me, not forces, but encourages. Sometimes I find the conferences myself, or sometimes I find them through him. Because networking is important for him too, often he will join me in some conferences.”* (Doctoral researcher, interviewee #2)

Nevertheless, the supervisor could also act as a driver to the reduction of academic flying. This is especially the case when the latter had strong environmental values and encourages their PhD students to, for example, utilize alternative transport modes. Furthermore, this created an essential influence and support for PhD students to reduce their flying.

*“I don't pressure them not to travel, because I feel that would be unfair. So, what I tried to say is that if your situation enables it, then I'm happy for my project funding to be utilized for that kind of purpose.”* (Full professor, interviewee #10).

The empirical analysis highlighted the importance of the supervisor in the travel behavior of doctoral researchers. Overall, supervisors acknowledged the need to travel and thus encouraged their PhD students to attend face-to-face events, which represents a barrier to the reduction of academic flying.

#### 4.3.2. Academic peers

Interviewees highlighted their academic peers as an important moderator to the reduction of academic flying. Indeed, they sometimes created pressure to attend certain events and conform to the norm of academic travel. The peer pressure appeared especially strong for academics with more mature careers.

*“People asked me to give so-called keynote lectures at conferences, which in some cases would have meant like flying all the way to [North America] just to give a one-hour address and then come back. Also, I was invited to [a destination across the globe]. For the same purpose and I've declined those invitations. Some people don't take it very well. Other people say, well, that's great [...]. And you have really inspired us to think differently, [...] then there are people who simply don't respond to the email, so that feels bad. (Full professor, interviewee #10).*

Additionally, academic communities and colleagues played an important role in recognizing virtual attendance as valuable as face-to-face interactions. Virtual attendance was currently not well perceived and recognized, to say the least, by peers. The lack of recognition of online events by one's peers constituted a barrier to its wider adoption and favored face-to-face attendance and associated travelling.

*“If I'm attending an online conference, I cannot put an automated e-mail to my outlook account saying that I'm attending a virtual conference, [...] people would laugh at me. But if I say like “I'm traveling for conference now” then people say, OK, he's going to reply two days later, and they don't mind.” (Assistant professor, interviewee #7)*

Therefore, academic peers created travel expectations especially for influential academics. While this represented a barrier to the reduction of academic flying, interviewees also highlighted initiatives from their academic communities to question the norm of academic flying. Overall, the empirical analysis demonstrated that academic peers exercised a significant influence on the travel behavior of individual academics, mostly hindering the reduction of flying. Expectations of travelling appeared directed especially at academics with more mature careers.

#### 4.3.3. The influence of the research group on the reduction of academic flying

According to the data analysis, the influence of the research group on academic flying represented an influential factor of academic flying. Indeed, practices and norms within the research groups shaped the travel behavior of individuals within the team. First, the research group could create an implicit pressure to travel to in-person events. This was especially the case for events attended by several research group members. Consequently, colleagues within the research groups created implicit pressure to attend events, regardless of career stages.

*“Often you go to same conferences and with the same [colleagues]. [The pressure] is not very explicit. You get emails, like are you going to this conference and things like that.”*

(Doctoral researcher, interviewee #3)

However, practices and values within the research group could also act as a driver to the reduction of academic flying. According to the data analysis, some research groups with strong environmental values, for example with sustainability as a main research topic, had developed common practices to reduce their flying and utilize alternative transport modes.

*“In my research group, many of us do this on-land travels. We always travel by land if possible.”* (Full professor, interviewee #12).

Sharing such practices created an environment in which travelling in such way is normal, accepted and even supported by one’s peers. Additionally, sharing experiences of travelling with alternative transport modes and travelling with peers could be fruitful from an academic perspective. Furthermore, it renders travelling less stressful for individual academics, for which travelling can often feel draining and lonely.

*“We went to [a European city] again and now we took the train. [...] We actually found the train ride almost the best part of the journey [...] But when I went to [the UK], it was a long trip. Although I did get some work done on the train, it was still kind of exhausting. Like going on the train and changing the train all the time, being alone and not talking with anyone.”* (Postdoctoral researcher, interviewee #6)

According to the empirical analysis, research groups were an important moderator towards the reduction of academic flying. It acted both as a barrier and driver depending on the group and its culture. Peer pressure to travel created exceptions to attend

certain events and fly, while practices to reduce flying, such as utilizing alternative transport modes, could inspire others and be a norm within the research group. Such support from one's colleagues was an influential factor to reduce flying for all academics, regardless of their career stages.

#### **4.4. Individual level moderators**

This theme investigates individual level factors and how they act as drivers or barriers to the reduction of academic flying. It encompasses the enjoyability of academic travel, personal beliefs, views on alternative transport modes, and family commitments.

##### *4.4.1. Enjoyability of academic travel as a barrier*

The analysis highlighted that academic travel is sometimes perceived as a perk, which is a barrier to the reduction of academic flying. Additionally, this was somehow facilitated by the travel policy of the university, which allows academics to combine their holidays with business travel.

*“You may combine business travel and up to a week-long holiday or comparable leisure time [...] No reimbursements, such as per diem allowances or accommodation costs, will be provided for the holiday period [...] However, return trips to the business travel destination may be reimbursed according to the actual costs, if extending the stay does not result in additional costs.”* (Tampere University, Travel policy, p. 7, document #4)

Such rule was appreciated by academics, and interviewees sometimes utilized this opportunity to extend their stay to their business travel destinations.

*“Another motivation [for academic flying] is that, sometimes, we can also combine this personal, leisure activity, with academic travel. [...] I try to use this kind of opportunity. It's also encouraged by the university, with this travel policy.”* (Doctoral researcher, interviewee #1).

Additionally, some interviewees argued that the possibility to combine business travel and holidays enabled them to reduce their total amount of flying. For example, if they had to fly to Japan for a conference, they could extend their stay for a holiday and would not have to come back there later during personal holidays. This would result in only one return flight to Japan instead of two, thus reducing the total amount of flying.

Furthermore, study participants found academic travel to provide a pause from the daily routine of being an academic. This was perceived positively, especially to take a break from important work loads. Additionally, academic friendships achieved through networking were viewed as a positive outcome of academic travel, as illustrated by the following quotation:

*“We are humans developing friendships. Sometimes you really meet amazing people you would have never had otherwise the opportunity to meet and to listen to.”* (Assistant professor, interviewee #7).

The analysis highlighted that the enjoyability of academic flying represented a barrier to its reduction. However, such view seems to fade away as one advances in their academic career. Academic flying then appeared to become more stressing and less enjoyable. This seemed to start manifesting after the completion of the PhD, as the “glamour” of air travel, as referred to by several study participants, started to disappear.

*“The glamour in air travel sort of like fell off. For me, there was this sort of like this whole idea that you work in a position that you can get closer to these trips.”* (Postdoctoral researcher, interviewee #4).

Consequently, the enjoyability of academic travel was a stronger barrier to its reduction for doctoral researchers than for other, more advanced, career stages.

#### *4.4.2. Strong environmental values and personal beliefs*

According to the data analysis, an important driver to the reduction of academic flying related to strong environmental values. Indeed, all study participants valued, devoted environmental efforts, and believed that individuals had a role, at least to a certain extent. According to the study participants, such role could involve decreasing one’s carbon footprint, setting an example, or influencing politics through individual actions. Strong environmental values sometimes translated into the renouncement of certain business travels:

*“I’m not going very easily to Asia, and actually I never flew to the US. That might have been a very good thing to do, but that was something that I think was too far. The flight was too long, so I didn’t do the trip [for environmental reasons].”* (Full professor, interviewee #12)

Additionally, strong environmental values sometimes translated into a will for more radical actions, such as establishing carbon budgets for business air travel at the university. Furthermore, those values sometimes resulted in environmental guilt or additional stress related to flying. An interviewee illustrated this environmental stress with the following quote:

*“With the long trip to Australia, I have in the back of my head those pictures of Australia sort of like burning. I think the climate crisis has become a bit more prevalent. [...] So now I have been getting more, [...] maybe anxiety is a strong word, but like negative feelings towards these. [...] This is something that I feel a bit bad about.”* (Postdoctoral researcher, interviewee #4).

The uncomfortable dissonance between one’s values and travel behavior also concerned doctoral researchers, although no notable difference was found with academics of other career stages.

*“With the PhD student who was with me, we discussed this quite frequently because they are grappling with the difficulty. They have similar [environmental] values, but they also have the pressure to network. So, it’s really driving them crazy.”* (Full professor, interviewee #10)

However, not all study participants with environmental values perceived the reduction of academic flying as necessary or as a true solution to reduce emissions. Several academics argued that the academic flying was already kept to a minimum. Additionally, it was argued that the carbon handprint of higher education, that is the positive environmental impact which results from research, exceeded the pollution emitted by flying:

*“If there is something, which for some reason would necessitate flying, then I would fly anyway and make a bigger impact along that target line.”* (Associate professor, interviewee #9).

Additionally, there was sometimes a dissonance between the values and behavior of the academics, although it did not result in any negative feelings:

*“I do believe that all individuals must make choices, so climate change doesn’t advance faster [...] But, then again, I also love to travel. That’s kind of like this big contradiction.”*  
(Doctoral researcher, interviewee #2)



Thus, sole strong environmental values were not enough to act as a driver to the reduction of academic travel. Additionally, there must be a personal belief, as the term employed by Tseng, Lee et al. (2022), that reducing academic flying from an individual level is important. Personal beliefs, rather than environmental values per se, were therefore a driver to the reduction of academic flying. This moderator was similar for all career stages and did not appear stronger or weaker for ECAs.

#### 4.4.3. Views on alternative transport modes

The analysis demonstrated that study participants had fairly positive views and experiences with alternative transport modes, regardless of their career stages. Train travel in particular was deemed as a pleasant way to business travel, even for longer distances. Interviewees appreciated the possibilities to work and relax during train trips, as well as enjoying sceneries. This contrasted with experiences of flying, which academics commonly perceived as stress inducing and negative.

*“The atmosphere is much nicer in the trains than in airplanes. I also like to work, write, and read in trains.”* (Postdoctoral researcher, interviewee #4).

However, it was not always possible for study participants to plan and organize those longer trips. Such ability depended on their workload and obligations. This was specially prominent for academics with more mature careers and responsibilities to be present at certain places at certain times. The analysis showed that such obligations hindered the possibility to spend several days travelling by train and favored flying to reach the destination quickly and fulfill their obligations. This occurred despite willingness to travel by other transport modes. Those time obligations concerned mostly interviewees with more mature careers.

*“This year, I expect that I have to fly a few times as well. Let's see if I'm able to organize this kind of ground travels. I'm not totally sure. It also depends on the responsibilities you have.”* (Full professor, interviewee #12)

While those longer travels were not always possible, interviewees had fairly positive views of travelling with alternative transport modes, especially trains, which is beneficial to the reduction of flying.

#### 4.4.4. The complex role of caring duties

The data analysis demonstrated the complex role of the family in the reduction of academic flying. First, caring duties could reduce flying due to the stress that travelling creates. Indeed, time spent away from home when one has children, especially young ones, sometimes resulted in an additional stress. Additionally, it could favor the usage of online tools to reduce the time spent away from the family.

*“I find it challenging to fly and leave my family behind because there are so many children. It's actually quite taxing on my family and my spouse.”* (Doctoral researcher, interviewee #3).

Similarly, such duties could favor flying to limit the time spent away from the family. In such case, family commitments acted as a barrier to the reduction of air travel, as one could not spend more time utilizing alternative transport modes for example.

Additionally, academic travel could be perceived as a way to pause from daily family duties which can be rather taxing. As a result, family commitments could become a barrier to the reduction of academic flying, as it allowed a pause in daily stressful routines.

*“It was nice to get some breathing space just for myself when I was away for a couple of days. On the one hand it was stressing, but on the other hand, if it was a nice event with nice people, then it was [...] some kind of a break from reality, for a while.”* (Full professor, interviewee #10).

While most experiences of important family commitments occurred at the early stage of one's academic career, that is during the PhD degree or the postdoc phase, only one out of the six ECAs of this study had strong family commitments with children. Similarly, an academic with a more mature career stage had young children and associated caring duties. Thus, based on the data analysis, it is rather difficult to state or not that those caring duties only applied to ECAs.

Additionally, several study participants pointed out that academic travel did not affect their personal and family life in any negative way.

*“I don't live with my partner, but she also works in the academia. We understand the situation of each other, so it doesn't put pressure on that either. And we don't have kids, so there is no need to take them into consideration. So, for me, the travelling only almost offers benefits.”* (Postdoctoral researcher, interviewee #4)

To conclude on the impact of caring duties on academic flying, the empirical data demonstrated such element as a complex moderator to the reduction of academic flying. Indeed, it could act both as a driver or barrier depending on the situation. Furthermore, this moderator was not necessarily specific to ECAs. Such factor was stronger when academics had young children, regardless of their career stage, but otherwise did not significantly affect the family life of academics. Caring duties of young children is thus a more precise and suitable term to define this moderator, over the sole concept of family commitments.

#### **4.5. Academic flying and networking cultures**

This final theme explores how the need for networking constitutes the most important barrier to the reduction of academic flying, especially for ECAs. Additionally, the theme explains what the future culture of academic flying and networking might resemble to potentially reduce business air travel, especially with the new generation of researchers.

##### *4.5.1. The networking need as the main barrier to the reduction of flying*

The data analysis demonstrated that networking was the main driver for academic flying. Indeed, study participants highlighted that networking was usually the true purpose of attending face-to-face conferences, over listening to, or presenting, one's research. As discussed in previous themes, interviewees stressed the importance of networking opportunities during informal moments in conferences, such as during coffee breaks or lunches.

*"I think the whole point of conference is not working. Nobody comes there to listen to talks. People come to, you know, bump into each other in the corridor and get introduced to others. Maybe see the face that they know from journal articles for example."* (Associate professor, interviewee #8)

In fact, the analysis revealed that networking during conferences had several purposes for academics. First, it allowed them to develop international research collaborations. This was deemed as important for research excellence, to gather diverse experiences and insights, and to fulfill funding criteria which often require international experiences and collaborations.

*“I really would like to meet those people in person and say, hey, your job is amazing. We should collaborate. This is something that I wouldn't do by e-mail.”* (Postdoctoral researcher, interviewee #5)

Networking also enabled establishing a name in one's field. This was especially important for doctoral researchers who are just starting their academic career.

*“It's nice that people would know who I am. [...] I think it's just important to be known in the academic world.”* (Doctoral researcher, interviewee #2)

Another point revealed by the analysis was that while scholars with more mature career stages were mostly travelling to maintain their network, they were also trying to regularly refresh their network. The data analysis showed that interviewees with more mature careers would sometimes network to find ECAs to join their research groups or to update their understanding of current trends.

The thematic analysis found that flying to establish one's network mainly concerned doctoral researchers, and not ECAs in general. Additionally, establishing one's network was important for doctoral researchers to find a defendant for their thesis defense. Nevertheless, and paradoxically, travelling and networking was not deemed as essential for the PhD degree itself, but rather to develop one's career.

*“I don't think that conferences actually contribute very much to your PhD conceptualization, because I don't find the conversation in the conference fruitful, I have to say. [...] It's much more about sociability than practical things like formulating the research.”* (Doctoral researcher, interviewee #3).

However, some interviewees questioned if networking during conferences was fruitful to establish one's network and have meaningful outcomes. Several academics perceived longer stays at foreign universities and research groups as valuable to develop a strong network, one's skills and thus the academic career of ECAs.

*“All the funding which is currently given to conference travel could be used for longer, inter-university stays. I'm sure it would be a lot better for actually fostering collaborations [...] It would be a lot more efficient than trying to talk to this one professor you're interested in during the coffee break at the conference. So instead of, you know, flying 1000 people to five different conferences in one year. You could like pay for longer stays of fewer of*

*those people who would bring their networks with them.”* (Associate professor, interviewee #8).

The benefits of longer inter-university stays were also acknowledged by ECAs, who viewed them as essential to develop their network, skills, and career.

*“I am expected to have a longer next stay in another country, another institute for research, like a visit. This is very beneficial for developing the academic network and joint research.”*

(Doctoral researcher, interviewee #1)

The analysis revealed that on the one hand, ECAs, and especially doctoral researchers, mostly traveled and flew to establish their network which ultimately served their career through different mechanisms. On the other hand, academics with more mature careers mostly travel and fly to maintain their network. The need for networking is undoubtedly the strongest barrier to the reduction of academic flying, especially for doctoral researchers. Online attendance was deemed as somehow sufficient to sustain contacts and one's network. However, academics with more mature careers had more mandatory duties and opportunities to have an active role during events, such as being a keynote speaker at a conference. Regarding ECAs, longer stays at foreign universities have been argued as valuable for networking opportunities and developing the academic career and skills of ECAs, sometimes more than attending conferences.

#### *4.5.2. The future culture of academic networking and flying*

This last section examines the views of different career stages on the culture of academic networking and flying and what it might resemble in the future. The academic flying culture could almost be completely associated to networking, as it is the main driver for travelling. The data highlighted the different views on such culture between ECAs and academics with more mature career stages. Indeed, the norm of academic flying has started to be questioned by academics themselves over the past few years, especially during the Covid-19 pandemic, which constrained academics to network differently, although not as effectively as hoped. Thus, the norm of academic flying appears to be slowly evolving, for instance by advocating travelling with alternative transport modes or sustaining contacts online.

*“I have been doing it [ground travelling] all along. But earlier it was not something that you discussed with the others and maybe somebody was thinking that, OK, you just waste your time by doing that. But that's not the case anymore, because more and more people understand why you do it.”* (Full professor, interviewee #12).

Additionally, several study participants, especially ECAs, have highlighted that the perspectives on academic flying may be a generational matter as well. Several interviewees highlighted how the older generation of academics has established its career in a less environmentally stressed setting, while the career of younger academics started in a world where climate change is a main, if not the most important, crisis which mankind is facing. While this does not indicate that academics with more mature careers are less sensitive to sustainability issues or to the topic of academic flying, interviewees suggested that older researchers may be used to former networking habits which they practiced for most of their career. Thus, it may be more difficult for them to change such customs and adapt to new means of networking.

*“I have a feeling that it's maybe a generational issue as well. Like the older generation might be used to the old ways, and then the new generation, who may be in the PhD, learn to use the tools and not so be so susceptible to the old ways, or maybe more willing to change”.* (Doctoral researcher, interviewee #3).

Furthermore, while study participants acknowledged that international research and face-to-face interactions will still remain essential for academic work, they mostly believed that the academic travel needed could be reduced or achieved with alternative transport modes in the future.

*“I think that physical conference will stay as part of academic. We just have to figure out how to travel in a bit more environmentally sound way.”* (Postdoctoral researcher, interviewee #4).

Additionally, the analysis highlighted the need to develop and learn new ways of networking, mostly through online tools, which as discussed appeared more suitable to sustain contacts rather than to establish new ones.

*“Something that we should start doing is to reconsider the significance of conferences in academic life, because of course it's very outdated concept that came from the times*

*where people could not exchange manuscripts at the click of a button, [...] It's a bit sad that it still exists purely for the purposes of networking.” (Associate professor, interviewee #8)*

Finally, encouraging academics to develop a new culture of academic networking and travel would be consistent with the sustainability framework of the university, which wishes scholars to be example of sustainable practices.

*“All the members of the community promote sustainable development through their own activities [...] and by developing our internal practices.” (Tampere Universities, Tampere Universities: Roadmap to Sustainable Development, p. 3, document #2)*

According to the data analysis, a new culture of academic flying and networking seems to be emerging, mostly from individual academics and research communities.

#### **4.6. Summary of the empirical analysis**

To conclude the findings chapter, the empirical analysis identified several drivers and barriers currently influencing the reduction of academic flying. Such factors operated at different levels, that is structural, institutional, community, and individual. Table 8 below concludes the findings section by summarizing the moderators identified, their current effects and the groups of academics they affect.

Table 8 : Current drivers and barriers to the reduction of academic flying and the affected groups of academics

Moderator	Level	Current effect(s)	Academics affected
Location of Tampere University	Structural	<u>Barrier:</u> It renders the usage of alternative transport modes more complicated as there is no direct railway connection to the rest of Europe.	All academics
Networking culture of online events	Structural	<u>Barrier:</u> Negative views on online events because they are not deemed suitable to establish network. They are more suited to sustain contacts.	All academics but especially doctoral researchers
Sustainability framework of the university	Institutional	<u>Potential driver:</u> The university wishes to be more sustainable but does not currently directly address academic flying. Consequently, it is not considered as a current driver.	All academics
Travel policy of the university	Institutional	<u>Barrier:</u> The policy and the cost-efficiency rule of business travel do not allow the usage of alternative transport modes.	All academics
Internationalization strategies of higher education	Institutional	<u>Barrier:</u> It incentivizes academics to have international experiences and networks to access funding.	All academics but especially ECAs
Encouragements of the supervisor	Academic community	<u>Barrier:</u> Supervisors encourage doctoral researchers, to travel and establish a network.	Doctoral researchers



Expectations from the academic community	Academic community	<u>Barrier:</u> Academics with more mature careers can be excepted to join events and have active roles in their communities. They also have more obligations.	Academics with more mature career stages
Values and practices within research groups	Academic community	<u>Both driver and barrier:</u> It acts as a driver by sharing values within the research group and by providing support. It can be a barrier if such practices are not developed within the group.	All academics
Enjoyability of academic travel	Individual	<u>Barrier:</u> The enjoyability of academic travel renders it more difficult to reduce flying and renounce this benefit.	Doctoral researchers
Personal beliefs	Individual	<u>Driver:</u> Personal beliefs motivate academics to reduce their flying to align their behavior with their values.	All academics
Views on alternative transport modes	Individual	<u>Driver:</u> Academics overall have a positive view on utilizing other transport modes, especially the train, for reasonable distances.	All academics
Caring duties of young children	Individual	<u>Both driver and barrier:</u> It acts as a driver by not wanting to spend time away from the family. It can incentivize for example online attendance to reconcile family duties and academic life. It acts as a barrier especially regarding the usage of alternative transport modes which would mean longer time spent away from the family.	All academics, relates maybe more to the age of the individual
The necessity to network	Individual	<u>Barrier:</u> This represents the strongest barrier to the reduction of academic flying for all academics. The need to establish a network is an imperative for ECAs and especially doctoral researchers. Such factor is also strong for academics with more mature careers, especially to sustain and sometimes update their network.	All academics but especially doctoral researchers

As shown in Table 8, the empirical analysis did not find strong differences between the moderators of ECAs and those of academics with more mature careers. However, the few differences identified, such as the encouragement of the supervisor as a barrier to the reduction of flying, affected mostly doctoral researchers and not postdoctoral researchers. This is a key finding which nuances that specificities do not concern all ECAs but mostly doctoral researchers. Additionally, ECAs often highlighted that there was no direct or explicit pressure from institutions and peers to fly. Instead, the expectations were rather implicit. Finally, almost all the drivers and barriers identified are specific to this context and time and could become their opposite if certain actions are undertaken.

## 5. DISCUSSION AND CONCLUSION

### 5.1. Summary of the study

The research aim of this study was to explore and identify the drivers and barriers of ECAs to reduce their business air travel. Furthermore, a main research question and three sub-questions were formulated to guide the study. The research aim was fulfilled by conducting an exploratory single case study of Tampere University. First, an existing conceptual framework on the reduction of academic flying and its influential factors was presented. The relevance of the proposed model by Tseng, Lee, et al. (2022) was argued and utilized as a basis for the final theoretical framework. To address the possible gaps of the existing model and adapt it to ECAs, a literature review on academic flying and the general characteristics of ECAs was conducted. Consequently, the final framework included elements identified in the literature, such as increased family commitments for ECAs and the role of the academic supervisor. The resulting theoretical framework served as a reading grid for the analysis and to present the findings.

The study adopted the critical realism research philosophy. This involved acknowledging the subjectivity of the researcher while trying to minimize it as much as possible. An abductive reasoning logic was applied, which involved an interactive process between the theoretical framework developed and the data gathered. The case study involved collecting five institutional documents and conducting 12 semi-structured interviews, with six ECAs and six academics with more mature careers. The results were analyzed through thematic analysis.

The thematic analysis identified five themes which constitute the findings of the study. The themes were respectively: infrastructures and their influence on academic flying; moderators at the institutional level, academics communities and their effects on academic flying, individual level moderators, and academic flying and networking cultures. The themes were first defined, and their associated codes explained. Quotes withdrawn directly from the dataset illustrated the themes and their characteristics.

The themes identified enabled answering the research questions, which are now directly addressed, starting by the sub-questions which allow responding to the main research question.

**Sub-question 1:** *What structural and institutional factors facilitate or hinder the reduction of business air travel for early-career academics?*

The findings have highlighted structural and institutional factors which influence the reduction of academic flying for ECAs. First, it was found that the location of Tampere University hindered the reduction of academic flying, as there is no direct railway infrastructure to the rest of Europe. This entailed that reaching European destinations by alternative transport modes resulted in at least a couple of days of travelling, which rendered flying much more convenient. An emerging structural factor from the data analysis consisted in the networking culture of virtual events. The latter represented a barrier to the reduction of flying for ECAs, as the networking aspect of virtual events was either completely absent or poorly developed. One must consider an alternative explanation which could relate to the personal preferences of academics. Consequently, online events could still be less favored even when their networking aspect is of great quality.

Furthermore, three institutional factors were found to affect the reduction of flying for ECAs. First, the sustainability framework could act as a potential driver. Sustainability is an essential value of the university, but sustainable principles appeared to be seldomly applied to business travel at the moment based on the empirical analysis. While such commitment theoretically facilitated the reduction of air travel for ECAs, the apparent lack of focus on academic flying did not enable this factor to completely drive the reduction of business air travel. Second, the cost-efficiency principle travel policy acted as a barrier to the reduction of academic flying for ECAs. The obligation hindered ECAs and other academics to travel with alternative transport modes, which are often more expensive to reach medium distance destinations. Finally, the internationalization strategy of higher education hindered the reduction of academic flying. Such direction placed international experiences requirements on ECAs and thus rendered the reduction of business air travel challenging for both universities and individual academics. Nevertheless, the analysis revealed that the academics did not feel direct or explicit pressure from higher education to conduct business air travel.

**Sub-question 2:** *What individual factors facilitate or hinder the reduction of business air travel for early-career academics?*

Individual factors were found to play an important role in the reduction of academic flying. First, the empirical analysis demonstrated that the enjoyability of academic travel, especially for doctoral researchers, was a barrier to the reduction of flying. This perceived enjoyability rendered the reduction of flying more difficult to renounce. However,

an alternative explanation could be that the enjoyability of business air travel is simply a secondary effect, and not a driver per se. Second, personal beliefs related to environmental values were found to be a significant driver to the reduction of academic air travel. Third, the views of ECAs on alternative transport modes, which were overall positive, acted as a driver to the reduction of academic flying at least for reasonable distances. Finally, caring duties of young children acted both as a driver and barrier of the reduction of academic flying. On the one hand, it rendered other, longer, means of travelling as inconvenient to reconcile with family obligations. Additionally, business travel could be perceived as a break from the daily stressing routine of being a young parent. On the other hand, the factor could sometimes drive the reduction of flying and incentivize ECAs and other academics to attend events virtually to reconcile family duties and academic work. However, it appeared that such moderator was not directly linked to ECAs, as defined in this study, but rather to the age or personal situation of the academic.

**Sub-question 3:** *How do the drivers and barriers of early-career academics differ from those with more mature careers?*

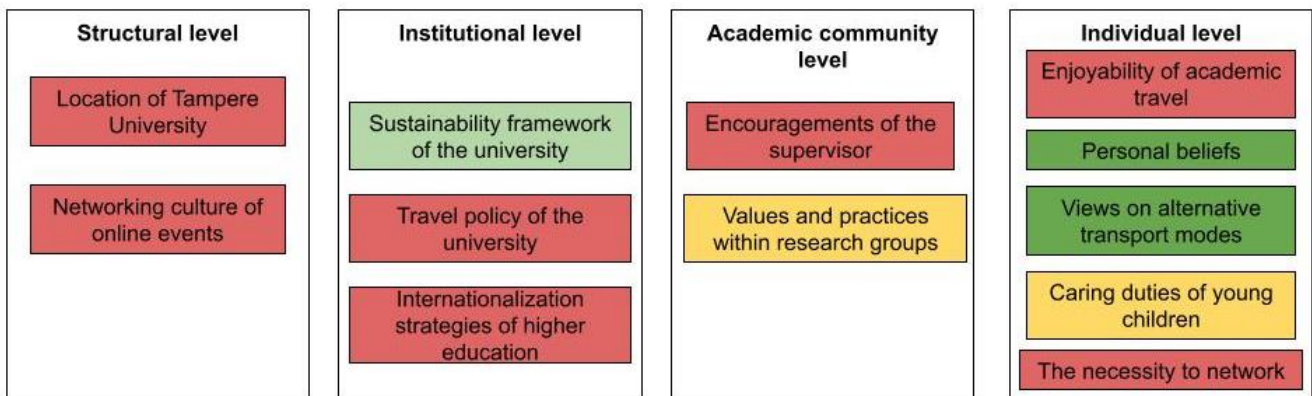
The findings did not reveal significant differences between the drivers and barriers of ECAs and those of academics with more mature careers. For instance, the effects of the travel policy of the university and personal beliefs did not differ depending on the career stages. Nevertheless, some factors slightly diverged between ECAs and academics with more mature careers. Expectations created by academic peers were mainly directed towards academics with more mature careers, as they have more responsibilities and opportunities. Furthermore, internationalization strategies created expectations for ECAs to cultivate international experiences and develop their career.

However, a notable finding lied in differences between doctoral researchers and academics with more mature careers, including postdoctoral researchers. Indeed, doctoral researchers exhibited specific factors influencing their air travel behavior. For example, the encouragements of their supervisor to travel hindered their reduction of flying. Additionally, the enjoyability of academic travel was prominent amongst doctoral researchers, while this factor appeared to diminish with career progression. Finally, the imperative of networking and its effect on the reduction of flying was different between doctoral researchers and other academics. On the one hand, flying was an imperative for doctoral researchers to gather contacts and develop their career. Face-to-face events were deemed as essential to establish a network. On the other hand, academics with more mature career stages, including postdoctoral researchers, already had a rather well-established network and found

online means as somewhat sufficient to at least sustain their network. The need to travel to network, which is the main barrier to the reduction of academic flying, thus appeared stronger for doctoral researchers.

**Main research question:** *At Tampere University, Finland, what are the drivers and barriers of early-career academics to reduce their business air travel?*

Several factors, operating at different levels, were found to influence the reduction of business air travel for ECAs working at Tampere University. The drivers and barriers identified by the analysis are illustrated in Figure 7 below. The elements in green represent the drivers, while the red ones highlight the barriers. The sustainability framework of the university is colored with light green as it was identified as a potential driver. The elements in yellow were highlighted both as drivers and barriers depending on the situation.



*Figure 7: Drivers and barriers of ECAs revealed by the analysis*

As illustrated in Figure 7, the empirical analysis revealed several drivers to the reduction of academic flying for ECAs. First, the sustainability framework was identified as a potential driver if correctly exploited and further developed around the reduction of academic flying. Second, values and practices developed within the research group to reduce flying could represent driver. However, an alternative explanation could relate to location of the international networks of the research group. For example, research groups with contacts or projects located in Europe have more possibilities to reduce their flying, while this may prove more challenging for groups with contacts in North America. Nevertheless, the influence of academic communities on business air travel is a novel finding which emerged from the empirical analysis. Third, personal beliefs associated to environmental values were a significant individual driver. Fourth, positive views on alternative transport modes drove the reduction of business air travel, at least for reasonable distances. Finally, caring duties of young children could sometimes encourage online attendance and consequently reduce flying.

Numerous barriers to the reduction of academic flying for ECAs were identified in this study. Barriers related to the structural level consisted in the location of Tampere University and the inherent difficult access to alternative transport infrastructures. Additionally, the current poorly developed networking culture of online events was a barrier to its wider adoption. Furthermore, two barriers operated at the institutional level. The travel policy and cost-efficiency rule of business travel hindered the reduction of academic flying. Additionally, internationalization strategies of higher education bodies further motivated flying and obstructed its reduction. An academic community-level barrier included the encouragements of the supervisor to travel, especially for doctoral researchers. However, it is unsure whether the encouragements of the supervisor was a support to an already made decision of the ECA, or if it actually drove the choice to travel. Additionally, the absence of practices to decrease flying within the research group and peer pressure from colleagues could also act as a barrier. Moreover, individual level barriers were identified. The perceived enjoyability of academic travel was mostly present amongst doctoral researchers and did not facilitate the voluntary reduction of academic flying. Depending on the situation, caring duties of young children could favor flying over utilizing alternative transport modes, and consequently be a barrier. Additionally, the main barrier to the reduction of academic flying lied in the imperative to establish a network in face-to-face events. This imperative was most strongly felt by doctoral researchers, as the network of other academics was already more developed to various extents.

## **5.2. Theoretical contributions**

The study has multiple important theoretical contributions. Several scholars have addressed and questioned academic flying over the past few years (Nursey-Bray et al., 2019; Strengers, 2014; Tseng, Higham, et al., 2023, to only cite a few). Nevertheless, there was a research gap regarding the unique perspective of ECAs, for which flying appears necessary to establish a “scientific capital” and develop their career, as stated by Berné et al. (2022, p. 8). Addressing this research gap thus seemed essential to further understand the complex topic of academic flying and suitable ways to address it. Additionally, such study enabled exploring the dissonances between the sustainability aspirations of higher education institutions, internationalization strategies, and the expectations they entail for ECAs. Therefore, this study appears to be the first research focusing on the perspectives of ECAs regarding the reduction of academic flying.

The thesis contributes to existing literature on academic flying by strengthening existing knowledge. First, the study confirmed that the networking culture of online events was either absent or poorly developed. This echoes papers and research included in the literature review, such as the work of Sheller (2022), Tseng, Higham, et al. (2023), or van de Glind and Gomez-Baggethun (2023). Second, the empirical analysis underlined that academic institutions could acknowledge the dissonance between their sustainability aspirations, internationalization requirements, and associated travel. Such dissonances have been discussed in previous studies, such as the work on Australian universities by Glover et al. (2018). Furthermore, the analysis highlighted the enjoyability of academic travel as a barrier to the reduction of academic flying. This is consistent with the existing literature, which highlighted that academic travel to foreign destinations can be appreciated (Le Quéré et al., 2015; Schrems & Upham, 2020; Sheller, 2022). However, the study underlined that such a view was mostly held by doctoral researchers, and that it appeared to diminish as one's career progresses. Additionally, the analysis expectedly confirmed that personal beliefs associated with environmental values drove the reduction of academic flying, as previously argued (Tseng, Lee, et al., 2022). Finally, the study addressed the complex role of caring duties of young children on the reduction of academic flying. While previous studies (Kreil, 2021; Tseng, Lee, et al., 2022; Whitmarsh et al., 2020) argued that family commitments have an influence on the travel behavior, the analysis nuanced that caring duties of young children is a more appropriate term. Furthermore, this factor appeared to relate more to the age and personal situation of the academic, rather than the position.

Additionally, novel findings emerged from the study and contribute to research on academic flying. First, the study demonstrated that the differences between ECAs and academics with more mature careers were not significant. The findings highlighted that those disparities mainly concerned doctoral researchers. The study contributes to existing knowledge by demonstrating that the necessity to network is most strongly felt by doctoral researchers. Second, the empirical data revealed that the travel policy of the university plays a significant role on the travel behavior of academics. The cost-obligation rule of the transport mode for business travel did not enable academics to travel with alternative transport modes, which are often more costly for longer trips. Such an element had not been addressed by the literature reviewed. Additionally, one of the emerging findings of this study was the essential influence of academic communities, composed of supervisors, academic peers, and research groups, on the reduction of business air travel. Such an observation had not been extensively discussed previously based on the reviewed literature.



Furthermore, this study builds on existing theory by enriching the practice-based academic flying framework developed by Tseng, Lee, et al. (2022). Prior to the beginning of this study, in Summer 2023, the framework had not been applied except by its creators themselves. The authors had encouraged the application of the framework with universities located in diverse locations and with academics of different career stages (Tseng, Higham, et al., 2022; Tseng, Lee, et al., 2022). This research applied the framework within the context of Tampere University and focused on ECAs. The study provides nuances and additional constructs and moderators identified specific to the context addressed. The academic flying framework of ECAs at Tampere University is drawn in Figure 8 below. The content written in blue corresponds to the additional findings which were not expected by the theoretical framework presented at the end of the second chapter, but which emerged from the analysis.

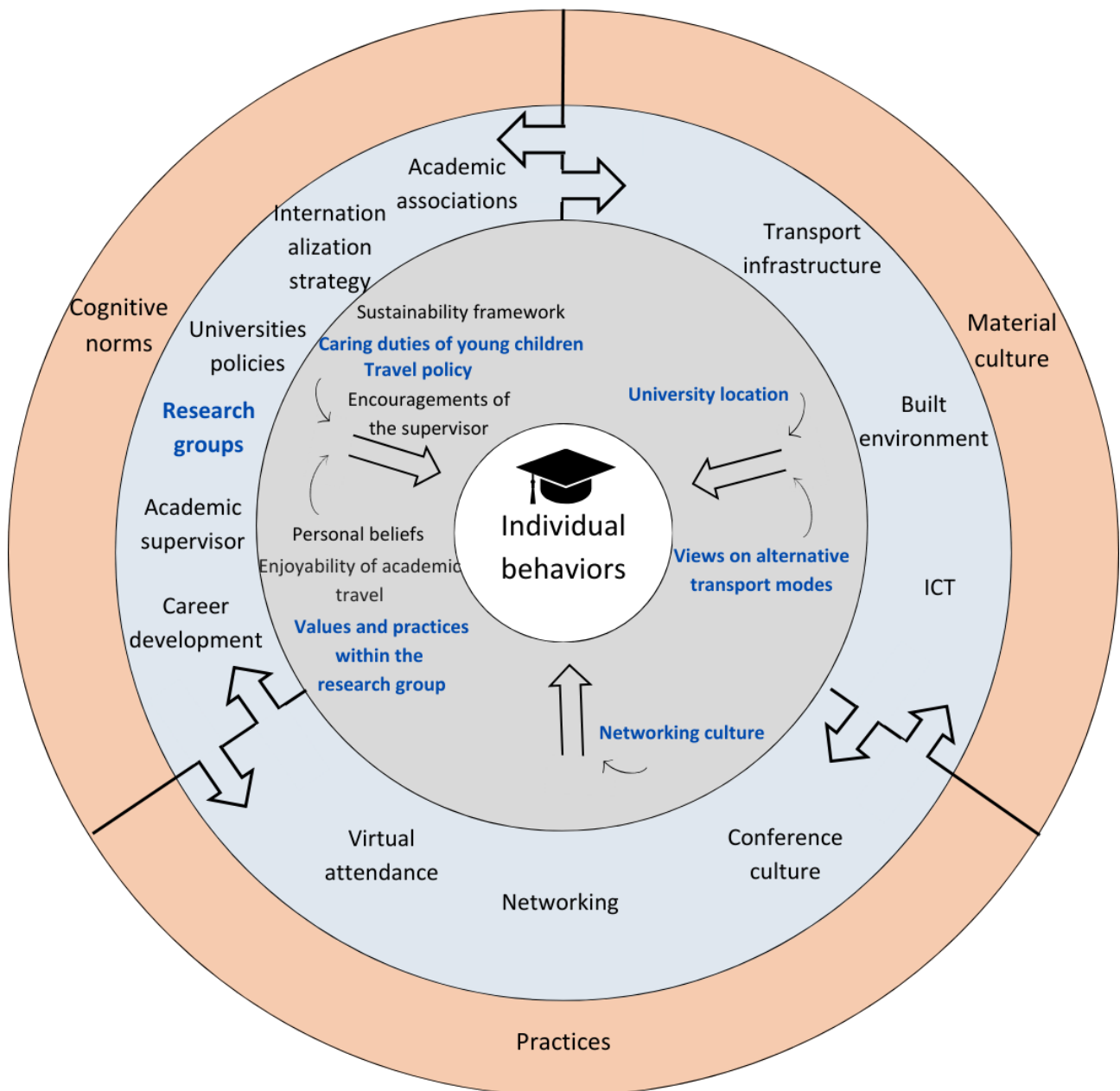


Figure 8 : The revised practice-based academic flying framework of early-career academics of Tampere University (figure adapted by the author, based on Figure 1 from Tseng, Lee, et al., 2022, Copyright © 2024 Elsevier B.V., adapted with permission)

The revised model illustrated in Figure 8 can be reflected upon and compared with the theoretical framework presented at the end of chapter two. On the one hand, the findings confirmed expected factors present in the theoretical framework. For example, the encouragements of the supervisor were indeed found to influence the travel behavior of ECAs, especially doctoral researchers. Additionally, the analysis confirmed the construct of career development as a main concept and aspiration of ECAs. On the other hand, the

revised framework highlights the constituents, written in blue, which emerged from the data and were not mapped in the theoretical framework. For example, the values and practices within the research group significantly influenced the reduction of academic flying. Furthermore, the empirical analysis revealed the networking culture as a moderator which shaped the practices of academics. Finally, some factors were predicted to affect the behavior of ECAs but were not identified as such in the analysis. For example, the literature review had identified the “publish or perish” culture as a concept which would drive academic flying among ECAs. However, the empirical analysis did not highlight such construct.

### 5.3. Practical implications for Tampere University

The findings of the thesis lead to meaningful practical implications. Such recommendations drawn from the analysis are targeted at the case organization which commissioned this thesis. At Tampere University, business air travel emissions represented 15% in 2022 (Viskari et al., n.d.) and about 20% (preliminary results, E.-L. Viskari, personal communication, 15 April 2024) in 2023. Such topic is important to tackle for Tampere University to achieve carbon neutrality by 2030. One of the main expected outcomes of the thesis was to provide suggestions which would consider different career stages. Identifying specific drivers and barriers of ECAs thus helped to identify considerations when trying to reduce academic flying emissions. Consequently, this thesis leads to five main practical implications for Tampere University to reduce academic flying. A summary of those recommendations can be found in Table 9.

*Table 9 : Practical implications addressed to Tampere University*

Practical implication	Reasoning
Account for career differences when developing measures, especially regarding the effect such measure would entail for doctoral researchers.	The differences in the drivers and barriers mainly lay between doctoral researchers and academics with more mature careers.
Explicitly committing to the reduction of business air travel.	An official commitment could inform the staff members that this topic is important to tackle to achieve carbon neutrality.
Encouraging and incentivizing virtual attendance, when possible, for non-mandatory events. This could be directed	Online attendance has been found as somewhat sufficient to sustain contacts. Since academics with more mature career

especially at academics with more mature career stages.	stages mostly have an established network, they could lower their academic flying more than ECAs who are still developing their networks.
Supporting ECAs by prioritizing longer stays at institutions over short-term business travel visits.	Longer stays at foreign universities appear valuable to develop the skills of ECAs and establish a stable network, sometimes more than short-term business travel visits.
Training and encouraging research groups to develop and adopt practices of utilizing alternative transport modes and attendance to virtual events.	Research groups have a strong influence on academic flying. They can create a support environment in which the reduction of academic flying is encouraged by colleagues.

As presented in Table 9, measures to decrease academic flying at the university should consider their effects on academics of different career stages. While the study has demonstrated that the distinctions between the drivers and barriers of ECAs and other academics were not significant, several differences lied between doctoral researchers and other academics, including postdoctoral researchers. Therefore, the measures implemented by the university should consider potential negative impacts on doctoral researchers and try to limit them. This would be essential to let them develop their network and career.

Furthermore, the university could formally commit to the reduction of its business air travel by fully and explicitly integrate this aspect to its sustainability framework. Such engagement would signal to the staff members that the university wishes to tackle this important subject as part of its sustainability strategy. This would also enable the institution to further formulate the concept of responsible business travel and what it entails in practice.

Third, a main recommendation lies in encouraging virtual attendance for academics with more mature career stages over face-to-face presence when possible. The study found that online attendance is somewhat sufficient for academics of mature careers to sustain their network. This indicates that academics with more mature careers could decrease their air travel behavior to a certain extent by attending more online events over face-to-face ones. However, virtual events are less suitable for ECAs and especially doctoral researchers, as they are still to develop a stable network which is facilitated, if not required, by face-to-face presence. Such direction would seem efficient for all career stages and a fair

compromise to decrease emissions from flights, while not hindering opportunities of ECAs. Nevertheless, a paradox lies with the growing obligations of academics with more mature careers, which often renders air travel mandatory and challenging to avoid.

Fourth, and consistently with the university strategy of supporting ECAs (Tampere University, 2020), the institution could prioritize longer stays at foreign universities, rather than short-term visits to conferences. Indeed, such type of academic travel appeared more fruitful to develop a network and develop one's skills. Through such types of visits, ECAs would be able to establish a strong network and access opportunities for collaborations. Additionally, it would enable them and the university to fulfill internationalization requirements and obtain the associated benefits while lowering air travel. Instead of attending for example five conferences in two years, a doctoral researcher could undertake a long-term visit at a foreign university and attend two conferences which are essential in their field of research. However, this recommendation could create rebound effects and potentially cancel out the decrease in emissions initially hoped for. For example, longer stays at foreign institutions could result in more personal flights from the hosting university and the home country of the academic.

Fifth, the university could benefit from the strong influence of research groups on the reduction of academic flying. The findings highlighted the importance of research groups on the reduction of academic flying, regardless of career stages. For example, the university could provide group trainings to raise awareness on academic flying. Furthermore, support could be provided to research groups on utilizing alternative transport modes and maximizing virtual attendance when suitable. Additionally, incentives and recognition could be awarded to research groups that actively try to reduce their air travel. Encouragements could inspire researchers to work together to reduce their flying and provide a supportive environment in which such practices are normalized and encouraged.

This section has highlighted several measures that the university could consider to lower business air travel while accounting for career differences. The author is aware that those recommendations require efforts and resources from the university, for example regarding an increased usage of alternative transport modes. Nevertheless, such direction would be consistent with the sustainability strategy and the desire for researchers to set an example of sustainability practices in society (Tampere Universities, n.d.-c).

#### **5.4. Assessing the quality of the study**

The quality and trustworthiness of qualitative studies are commonly determined by four criteria: credibility, dependability, confirmability, and transferability (Cope, 2014). Credibility in research demonstrates the value of the study and its believability (Houghton et al., 2013). In qualitative research, the author should validate the credibility of the research by demonstrating the methods employed throughout the study (Cope, 2014). An audit of the study can highlight the strength of methodological choices and interpretations of the author (Houghton et al., 2013).

First, the thesis has established a strong framework to guide the study and analysis. Indeed, the theoretical framework is based on the existing model by Tseng, Lee, et al. (2022). Utilizing an existing model to form the theoretical basis of the thesis builds on existing knowledge and serves as a reading grid for the analysis. Additionally, the literature selected for the theoretical chapter is reliable and enhances the credibility of the thesis. Although the literature review was not exhaustive, it covered a significant amount of papers published at the time the review was conducted. Moreover, the quality of the literature review is ensured by the almost exclusive selection of peer-reviewed articles to enhance the quality of the theoretical chapter.

Furthermore, the data collection process constitutes an important quality of the thesis. Indeed, the sample of interviewees, 12 study participants, provided rich data to understand the topic at hand. In addition, the sample was carefully designed to be representative and gather different experiences which account for possible career, gender, and discipline differences. Moreover, the ethical considerations applied in the interviews, such as introductory comments and a reminder about the anonymous nature of the participation, limited possible biases from participants given the delicate topic at hand. Additionally, the author ensured the quality of the documents selected for analysis by withdrawing them directly from official sources.

The credibility and trustworthiness of the study is enhanced through triangulation (Cope, 2014). Triangulation entails utilizing different types of data and sources to reach conclusions (Casey & Murphy, 2009, as cited in Cope, 2014). Triangulation occurred in this study through the conscious choice of constituting the dataset of both institutional documents and semi-structured interviews. This broad collection process improves the complexity and richness of the study and explanations provided (Rashid et al., 2019). Triangulation is especially important in case study research, as the phenomena can then be

explored from numerous perspectives and enhance data credibility and nuanced findings (Baxter & Jack, 2008).

The dependability of qualitative studies is determined by the replicability of the data in similar contexts (Polit & Beck, 2012; Tobin & Begley, 2004, as cited in Cope, 2014). A study is dependable if another researcher could follow the same research methodology in a similar context and achieve equivalent results (Cope, 2014). The thesis provides a detailed methodology which could be followed step by step by another researcher. While the analysis of qualitative studies remains an individual process of the researcher (Schutz 1994, Cutcliffe & McKenna 2004, as cited in Houghton et al., 2013), the data analysis followed a systematic approach to code the dataset. The steps followed in the thematic analysis could be replicated by another researcher and achieve similar findings.

Confirmability exhibits the competency of the researcher in minimizing their own biases in the interpretations provided to the data. Instead, the research should strive to be as objective as possible to represent the meanings of the dataset and not their own views (Cope, 2014). Attention to objectivity is especially important in critical realism, and the philosophy acknowledges that while personal biases can never be completely erased, they should be minimized (Bhaskar & Hartwig, 2016; Edwards et al., 2014). In this research, alternative explanations to observations were carefully considered to assess the findings and minimize the subjective biases of the author. Additionally, providing quotes from the dataset to illustrate the codes and themes identified enhanced the confirmability of the research (Cope, 2014).

Transferability refers to the extent of the application of the results to other contexts (Houghton et al., 2013). It involves informing the context with rich information and enables the reader to form their own opinion and assess the transferability of the results (Cope, 2014). This criterion was enhanced through the selection of the case study, instrumental in its nature. Tampere University is not an exceptional case and its characteristics regarding business air travel concur with other researched cases. Such selection enables the transferability of the analysis to other cases to a certain extent. The findings could be generalized to other universities with similar characteristics as Tampere University. Furthermore, the thesis provided information on the study context, through a case description, to inform the reader on the setting of the research. Additionally, the study described the characteristics of the study participants which were identified as relevant in the theoretical chapter, such as their positions and gender.

## **5.5. Limitations and suggestions for future research**

While the quality of the research has been established, the critical realism philosophy emphasizes that every research is imperfect and that such limitations must be highlighted (Edwards et al., 2014). The objective of listing the limitations of the study is also to provide suggestions for further research to overcome them and improve the validity of future findings (Bui, 2020). This research presents several weaknesses acknowledged by the author.

A first limitation involves the definition of ECAs provided in the introductory chapter of the thesis. This study has established the definition by considering the position as a discriminating criterion, against for instance the age or the years of experience. However, it must be acknowledged that the literature reviewed to identify the main characteristics of ECAs may have utilized another classification when employing the term “ECAs”. For instance, the study by Schaer et al. (2017) considered ECAs as scholars who acquired their PhD within the last 10 years, which included even advanced positions such as professors. Such dissonance may have impacted the findings from the literature review. While there does not seem to be a standardized definition for the term “ECAs” (Hemmings, 2012), future studies could aim to find commonly utilized criteria to define ECAs before examining their business travel behavior.

Furthermore, the articles selected to establish the characteristics of ECAs only constitute a small fraction of the thousands of papers which exist on the subject. Therefore, some relevant characteristics of ECAs regarding their flying behavior may have been neglected by the author. Future research could conduct or utilize an extensive literature review on the specific features of ECAs.

A second limit lies in the model on which is based the theoretical framework. While, the usage of existing theories is consistent with critical realism, the philosophy acknowledges that theories are fallible (Edwards et al., 2014). First, the nascent nature of the practice-based academic flying framework naturally constitutes a limit to its reliability. The framework was proposed (Tseng, Higham, et al., 2022) and updated rather recently (Tseng, Lee, et al., 2022). Therefore, only a few articles explain this model, which leaves gaps regarding the explanations of some concepts. As recommended by Tseng, Higham, et al., (2022) research could further build upon this existing model to extend its application and nuances. Additionally, studies could apply the revised framework developed in this thesis to further test the model.



Furthermore, the case study research design presents limitations that must be acknowledged. While case studies of instrumental use can be generalized to some extent (Baxter & Jack, 2008), the scope of application of the findings is still limited. Context plays a crucial role within the critical realism paradigm. While Tampere University is not an exceptional case in academic flying, it still possesses specific attributes which may limit the generalization of the findings to other institutions, even when located in Finland. For example, the case description highlighted that the uneven distribution of the flights emissions was less significant than in other universities. Furthermore, the description of the demographics of ECAs at Tampere University was limited and an estimation. The author estimated the share of ECAs at the institution by utilizing the intranet, which is less reliable than collecting the data directly from the university. Consequently, other characteristics relevant for the description, such as the gender and age distribution, or the types of contracts (e.g., employed by the university, funding), could not be accessed despite efforts undertaken by the author. Future research could employ a multiple case study approach with several Finnish universities to identify their similarities and differences over the topic. Moreover, they should provide a rich list of the relevant characteristics of ECAs to contextualize further the research.

Some limitations can also be attributed to the data collection process. First, the choice of the institutional documents was subjective and left to the appreciation of the author. Other documents could have been relevant for the analysis but were either not available or deemed pertinent by the author. The reader should thus be mindful of those subjective choices and remember that other institutional documents may validate or contest the results of this study. Second, the few documents selected represent a fraction of the data that could inform about the institutional elements of the topic. In that sense, a separate study could be conducted by solely utilizing institutional documents.

Furthermore, the author acknowledges that the documents selected only represent a small part of the reality. For instance, the travel policy may display the formal rules related to business travel, while other actions may exist in practice. This was proven to be the case, as one interviewee received reimbursement for a long train trip despite it being more expensive than flights, thus contradicting the cost-obligation rule of the travel policy. Additionally, while the analysis formulated that the university does not extensively include the reduction of business air travel in its sustainability framework, the commissioned nature of this thesis demonstrates otherwise. Future research could develop further the institutional context of the reduction of academic flying for ECAs through different means. A

systematic large selection of official documents could be analyzed, such as multiple calls for funding directed at ECAs and the travel expectations they entail. Additionally, interviews with sustainability experts and business travel agency specialists could be conducted to reflect the possible differences between official rules and actual practices.

Limitations also concerned the semi-structured interviewees. Indeed, the volunteered or agreed will to participate in this research involved that study participants consider such topic as somewhat important. This may have influenced the results drawn from the analysis. Study participants with various initial opinions over academic flying may have resulted in different findings. Furthermore, while actions were undertaken to minimize this limitation, there still exists a possibility that participants provided socially desirable answers which did not fully reflect their opinions (Saunders et al., 2019). Consequently, future research could aim to minimize those biases by selecting participants with different levels of environmental values and highlight similarities and differences in their answers.

Finally, critical realists acknowledge that the results of studies are interpreted and thus subjective to the perspective of the author (Saunders et al., 2019). While the thematic analysis was conducted in a systematic manner, another researcher may have drawn different codes from the dataset. The thematic analysis of future studies on the topic could thus be conducted by at least two researchers to compare emerging codes and themes and enhance the quality of the findings.

Despite its limitations, the thesis presents interesting avenues to expand research on academic flying. As Bui (2020) formulates, recommendations for future research address how the study and findings can be developed. First, a partial transition to online settings seems like the most suitable solution to effectively decrease emissions generated by business air travel. Indeed, virtual conferences could have carbon footprint lower by 94% compared to face-to-face ones (Tao et al., 2021, p. 4). However, the current networking culture of online events is poorly developed, when not completely absent. While some research has formulated ways which can slightly increase the networking possibilities in online events (van de Glind & Gomez-Baggethun, 2023), those still appear insufficient to fulfill the networking needs of academics, and especially of ECAs. Several study participants suggested that, instead of trying to replicate informal interactions occurring during conferences, online events could create their own networking culture which offers benefits not proposed in face-to-face interactions. Therefore, future research could investigate emerging ways to network successfully in online events, while not necessarily trying to replicate face-to-face interactions. Such study would be beneficial for conference organizers

to operationalize a new academic networking culture, and enable a long-term reduction of academic flying.

Furthermore, the study highlighted that longer stays at foreign universities appear more suitable for ECAs to develop their skills and a stable network, over short visits at conferences. This supports the findings of Fontes et al. (2013), who found that long-term research visits favor network and knowledge building. Future research could further explore the benefits and limits of those longer stays as a partial replacement to attending several conferences per year, especially in regard to network building for doctoral researchers. The studies could also consider the possible rebound effects this would entail in terms flights emissions.

The research ultimately provides societal benefits. The study provided important considerations for universities to reduce their business air travel and advance further in their journey towards carbon neutrality. Additionally, efforts undertaken by universities and researchers could raise awareness and inspire other organizations and individuals to reduce their own flying. Nevertheless, it must be emphasized that internationalization, academic networking, and travel, will remain necessary for research excellence. Yet, recent calls from researchers themselves, along with an increasing number of studies on the subject, argue that such benefits could be achieved in a more sustainable way which requires less air travel. However, sole individual academics cannot bear the full responsibility of changing the academic flying culture. This behavior is strongly influenced by the standards, expectations, and policies of the academia. Reducing academic flying requires changes at all levels of higher education, and institutional support as much as, if not more, than the individual will of academics. Initiatives from academic institutions would further align their practices with their sustainability aspirations. The development of new networking cultures appears inevitable for the academia to reduce business air travel, remain credible regarding climate change warnings, and contribute to the achievement of carbon neutrality in universities and in society.

## REFERENCES

- Academic Positions. (2018, February 8). *Finnish Academic Job Titles Explained*.  
<https://academicpositions.com/career-advice/finnish-academic-job-titles-explained>
- Ahonen, V., Siljander, M., Pellikka, P., Johansson, T., & Rask, M. (2021). The Sustainability of Academic Air Mobility in Finnish Universities. *Sustainability*, 13(5), 2948.  
<https://doi.org/10.3390/su13052948>
- Annala, J. (2022). Disciplinary knowledge practices and powerful knowledge: A study on knowledge and curriculum structures in regions. *Teaching in Higher Education*, 27(8), 1084–1102. <https://doi.org/10.1080/13562517.2022.2114340>
- Ansmann, L., Flickinger, T. E., Barello, S., Kunneman, M., Mantwill, S., Quilligan, S., Zanini, C., & Aelbrecht, K. (2014). Career development for early career academics: Benefits of networking and the role of professional societies. *Patient Education and Counseling*, 97(1), 132–134. <https://doi.org/10.1016/j.pec.2014.06.013>
- Aprile, K. T., Ellem, P., & Lole, L. (2021). Publish, perish, or pursue? Early career academics' perspectives on demands for research productivity in regional universities. *Higher Education Research & Development*, 40(6), 1131–1145.  
<https://doi.org/10.1080/07294360.2020.1804334>
- Atmosfair. (n.d.). *Paris aligned annual carbon budget*. Atmosfair. Retrieved 16 May 2024, from [https://www.atmosfair.de/en/green\\_travel/annual\\_climate\\_budget/](https://www.atmosfair.de/en/green_travel/annual_climate_budget/)
- Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13(4), 544–559.  
<https://doi.org/10.46743/2160-3715/2008.1573>
- Berné, O., Agier, L., Hardy, A., Lellouch, E., Aumont, O., Mariette, J., & Ben-Ari, T. (2022). The carbon footprint of scientific visibility. *Environmental Research Letters*, 17(12), 124008. <https://doi.org/10.1088/1748-9326/ac9b51>
- Bhaskar, R., & Hartwig, M. (2016). *Enlightened common sense: The philosophy of critical realism*. Routledge.
- Bjørkdahl, K., & Franco Duharte, A. S. (2022). Introduction: Ending the romance of academic flying. In K. Bjørkdahl & A. S. Franco Duharte (Eds.), *Academic flying and the means of communication* (pp. 1–18). Springer Nature Singapore.  
[https://doi.org/10.1007/978-981-16-4911-0\\_1](https://doi.org/10.1007/978-981-16-4911-0_1)

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Bosanquet, A. (2017). Academic, Woman, Mother: Negotiating Multiple Subjectivities During Early Career. In R. Thwaites & A. Pressland (Eds.), *Being an Early Career Feminist Academic* (pp. 73–91). Palgrave Macmillan UK. [https://doi.org/10.1057/978-1-137-54325-7\\_4](https://doi.org/10.1057/978-1-137-54325-7_4)
- Bounouara, Y. (2024). *Measures to Decrease Business Air Travel Emissions—Final Project Report*. Tampere University.
- Bousema, T., Selvaraj, P., Djimde, A. A., Yakar, D., Hagedorn, B., Pratt, A., Barret, D., Whitfield, K., & Cohen, J. M. (2020). Reducing the Carbon Footprint of Academic Conferences: The Example of the American Society of Tropical Medicine and Hygiene. *The American Journal of Tropical Medicine and Hygiene*, 103(5), 1758–1761. <https://doi.org/10.4269/ajtmh.20-1013>
- Breda University of Applied Sciences. (n.d.). *Information Skills Toolbox*. Breda University of Applied Sciences. <https://buas.libguides.com/c.php?g=670074&p=4776470>
- Bui, Y. N. (2020). *How to write a master's thesis* (Third edition). SAGE Publications, Inc.
- Burrell, G., and Morgan, G. (2016). *Sociological paradigms and organisational analysis*. Abington: Routledge (originally published by Heinemann 1979).
- Capwell, S. (2016). Academic careers: What do early career researchers think? *Journal of Epidemiology and Community Health*, 71(2), 207–208. <https://doi.org/10.1136/jech-2016-207438>
- Casey, D., & Murphy, K. (2009). Issues in using methodological triangulation in research. *Nurse Researcher*, 16(4), 40–55. doi:10.7748/nr2009.07.16.4.40.c7160
- Ciers, J., Mandic, A., Toth, L., & Op 'T Veld, G. (2018). Carbon Footprint of Academic Air Travel: A Case Study in Switzerland. *Sustainability*, 11(1), 80. <https://doi.org/10.3390/su11010080>
- Cope, D. G. (2014). Methods and Meanings: Credibility and Trustworthiness of Qualitative Research. *Oncology Nursing Forum*, 41(1), 89–91. <https://doi.org/10.1188/14.ONF.89-91>
- Cutcliffe JR, McKenna HP (2004) Expert qualitative researchers and the use of audit trails. *Journal of Advanced Nursing*, (45)2, 126-135.
- Deem, R. (2022). The Early Stage Academic and the contemporary university: Communities of practice versus new managerialism. In C. S. Sarrico, M. J. Rosa, & T. Carvalho

- (Eds.), *Research handbook on academic careers and managing academics* (pp. 405–419). EE | Edward Elgar Publishing.
- Edwards, P. K., O'Mahoney, J., & Vincent, S. (Eds.). (2014). *Studying organizations using critical realism: A practical guide* (First edition). Oxford University Press.
- Espedal, G., Jelstad Løvaas, B., Sirris, S., & Wæraas, A. (Eds.). (2022). *Researching Values: Methodological Approaches for Understanding Values Work in Organisations and Leadership*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-90769-3>
- European University Institute. (2018). *Finland, academic career structure*. <https://www.eui.eu/programmesandfellowships/academiccareersobservatory/academiccareersbycountry/finland>
- Fletcher, A. J. (2017). Applying critical realism in qualitative research: Methodology meets method. *International Journal of Social Research Methodology*, 20(2), 181–194. <https://doi.org/10.1080/13645579.2016.1144401>
- Flyvbjerg, B. (2006). Five Misunderstandings About Case-Study Research. *Qualitative Inquiry*, 12(2), 219–245. <https://doi.org/10.1177/1077800405284363>
- Fontes, M., Videira, P., & Calapez, T. (2013). The Impact of Long-term Scientific Mobility on the Creation of Persistent Knowledge Networks. *Mobilities*, 8(3), 440–465. <https://doi.org/10.1080/17450101.2012.655976>
- Galletta, A. (2013). *Mastering the semi-structured interview and beyond: From research design to analysis and publication*. New York Univ. Press.
- Geschwind, L., Wiklund Pasia, J., & Barman, L. (2022). The university as Gemeinschaft and Gesellschaft: Early career academics on competition, collaboration, and performance requirements. In C. S. Sarrico, M. J. Rosa, & T. Carvalho (Eds.), *Research handbook on academic careers and managing academics* (pp. 420–434). EE | Edward Elgar Publishing.
- Gewinner, I. (2017). Inequality in Academia: The Way Social Connections Work. In R. Thwaites & A. Pressland (Eds.), *Being an Early Career Feminist Academic* (pp. 195–214). Palgrave Macmillan UK. [https://doi.org/10.1057/978-1-137-54325-7\\_10](https://doi.org/10.1057/978-1-137-54325-7_10)
- Glover, A., Strengers, Y., & Lewis, T. (2018). Sustainability and academic air travel in Australian universities. *International Journal of Sustainability in Higher Education*, 19(4), 756–772. <https://doi.org/10.1108/IJSHE-08-2017-0129>

- Hemmings, B. (2012). Sources of research confidence for early career academics: A qualitative study. *Higher Education Research & Development*, 31(2), 171–184. <https://doi.org/10.1080/07294360.2011.559198>
- Hollywood, A., McCarthy, D., Spencely, C., & Winstone, N. (2020). ‘Overwhelmed at first’: The experience of career development in early career academics. *Journal of Further and Higher Education*, 44(7), 998–1012. <https://doi.org/10.1080/0309877X.2019.1636213>
- Hoolohan, C., McLachlan, C., Jones, C., Larkin, A., Birch, C., Mander, S., & Broderick, J. (2021). Responding to the climate emergency: How are UK universities establishing sustainable workplace routines for flying and food? *Climate Policy*, 21(7), 853–867. <https://doi.org/10.1080/14693062.2021.1881426>
- Houghton, C., Casey, D., Shaw, D., & Murphy, K. (2013). Rigour in qualitative case-study research. *Nurse Researcher*, 20(4), 12–17. <https://doi.org/10.7748/nr2013.03.20.4.12.e326>
- Jäckle, S. (2022). The carbon footprint of travelling to international academic conferences and options to minimise it. In K. Bjørkdahl & A. S. Franco Duharte (Eds.), *Academic flying and the means of communication* (pp. 19–52). Springer Nature Singapore. [https://doi.org/10.1007/978-981-16-4911-0\\_2](https://doi.org/10.1007/978-981-16-4911-0_2)
- Jacobson, L. (2022). The virus and the elephant in the room: Knowledge, emotions and a pandemic—drivers to reducing flying in academia. In K. Bjørkdahl & A. S. Franco Duharte (Eds.), *Academic flying and the means of communication* (pp. 209–235). Springer Nature Singapore. [https://doi.org/10.1007/978-981-16-4911-0\\_9](https://doi.org/10.1007/978-981-16-4911-0_9)
- Kalfa, S., Wilkinson, A., & Gollan, P. J. (2018). The Academic Game: Compliance and Resistance in Universities. *Work, Employment and Society*, 32(2), 274–291. <https://doi.org/10.1177/0950017017695043>
- Kaplan, K. 2010. “Academia: The Changing Face of Tenure.” *Nature* 468(7320): 123–125. doi:10.1038/nj7320-123a.
- Khanna, P. (2019). Positivism and Realism. In P. Liamputtong (Ed.), *Handbook of Research Methods in Health Social Sciences* (pp. 151–168). Springer Singapore. [https://doi.org/10.1007/978-981-10-5251-4\\_59](https://doi.org/10.1007/978-981-10-5251-4_59)
- Kreil, A. S. (2021). Does flying less harm academic work? Arguments and assumptions about reducing air travel in academia. *Travel Behaviour and Society*, 25, 52–61. <https://doi.org/10.1016/j.tbs.2021.04.011>

- Laudel, G., & Gläser, J. (2008). From apprentice to colleague: the metamorphosis of Early Career Researchers. *Higher Education*, 55(3), 387–406. <https://doi.org/10.1007/s10734-007-9063-7>
- Le Quéré, C., Capstick, S., Corner, A., Cutting, D., Johnson, M., Minns, A., Schroeder, H., Walker-Springett, K., Whitmarsh, L., & Wood, R. (2015). *Towards a culture of low-carbon research for the 21st Century* (Working Paper 161). Tyndall Centre for Climate Change Research.
- Lee, D. S., Fahey, D. W., Forster, P. M., Newton, P. J., Wit, R. C. N., Lim, L. L., Owen, B., & Sausen, R. (2009). Aviation and global climate change in the 21st century. *Atmospheric Environment*, 43(22–23), 3520–3537. <https://doi.org/10.1016/j.atmosenv.2009.04.024>
- Marinoni, G. (n.d.). *Internationalization of Higher Education: An Evolving Landscape, Locally and Globally*, IAU 5th Global Survey. DUZ Verlags-und Medienhaus GmbH. [https://www.iau-aiu.net/IMG/pdf/iau\\_5th\\_global\\_survey\\_executive\\_summary.pdf](https://www.iau-aiu.net/IMG/pdf/iau_5th_global_survey_executive_summary.pdf)
- Matthews, K. E., Lodge, J. M., & Bosanquet, A. (2014). Early career academic perceptions, attitudes and professional development activities: Questioning the teaching and research gap to further academic development. *International Journal for Academic Development*, 19(2), 112–124. <https://doi.org/10.1080/1360144X.2012.724421>
- Nurse-Bray, M., Palmer, R., Meyer-Mclean, B., Wanner, T., & Birzer, C. (2019). The Fear of Not Flying: Achieving Sustainable Academic Plane Travel in Higher Education Based on Insights from South Australia. *Sustainability*, 11(9), 2694. <https://doi.org/10.3390/su11092694>
- O’Hern, S., & Sjögren, J. (2023). *Tampere University Commuter Travel Survey Summary Report 2023*. Verne Transport Research Center.
- Owen, Bethan, David S Lee, and Ling Lim. “Flying into the Future: Aviation Emissions Scenarios to 2050.” *Environmental science & technology* 44.7 (2010): 2255–2260. Web.
- Pargman, D., Laaksohalmi, J., Eriksson, E., Robèrt, M., & Bjørn-Hansen, A. (2022). Who gets to fly? In K. Bjørkdahl & A. S. Franco Duharte (Eds.), *Academic flying and the means of communication* (pp. 133–158). Springer Nature Singapore. [https://doi.org/10.1007/978-981-16-4911-0\\_6](https://doi.org/10.1007/978-981-16-4911-0_6)
- Peters, S. (2014). How to Become a Successful Researcher: Tips for Early Career Researchers. *Scandinavian Journal of Work, Environment & Health*, 40(4), 432–434. <https://doi.org/10.5271/sjweh.3425>



- Price, D.D.; Beaver, D.D. (1966) Collaboration in an invisible college. *American Psychologist*. 21, 1011–1018. [CrossRef]
- Poggioli, N. A., & Hoffman, A. J. (2022). Decarbonising academia's flyout culture. In K. Bjørkdahl & A. S. Franco Duharte (Eds.), *Academic flying and the means of communication* (pp. 237–267). Springer Nature Singapore. [https://doi.org/10.1007/978-981-16-4911-0\\_10](https://doi.org/10.1007/978-981-16-4911-0_10)
- Polit, D.F., & Beck, C.T. (2012). *Nursing research: Generating and assessing evidence for nursing practice*. Philadelphia, PA: Lippincott Williams and Wilkins
- Powell, K. 2015. "The Future of the Postdoc." *Nature* 520(7546): 144–147. doi:10.1038/520144a.
- Quinton, J. N. (2020). Cutting the carbon cost of academic travel. *Nature Reviews Earth & Environment*, 1(1), 13–13. <https://doi.org/10.1038/s43017-019-0008-3>
- Radloff, A. (2016). *Mapping researcher mobility: Measuring research collaboration among APEC economies*. Asia-Pacific Economic Cooperation (APEC). [https://research.acer.edu.au/higher\\_education/51](https://research.acer.edu.au/higher_education/51)
- Rashid, Y., Rashid, A., Warraich, M. A., Sabir, S. S., & Waseem, A. (2019). Case Study Method: A Step-by-Step Guide for Business Researchers. *International Journal of Qualitative Methods*, 18, 160940691986242. <https://doi.org/10.1177/1609406919862424>
- Remenyi, D. (2022). *Case Study Research: The Quick Guide Series* (1st ed.). UJ Press. <https://doi.org/10.36615/9781776413409>
- Research Council of Finland. (n.d.). *What We Are*. Retrieved 9 April 2024, from <https://www.aka.fi/en/about-us/what-we-do/what-we-are/>
- Reyes-García, V., Graf, L., Junqueira, A. B., & Madrid, C. (2022). Decarbonizing the academic sector: Lessons from an international research project. *Journal of Cleaner Production*, 368, 133174. <https://doi.org/10.1016/j.jclepro.2022.133174>
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (Eighth Edition). Pearson.
- Schaer, M., Dahinden, J., & Toader, A. (2017). Transnational mobility among early-career academics: Gendered aspects of negotiations and arrangements within heterosexual couples. *Journal of Ethnic and Migration Studies*, 43(8), 1292–1307. <https://doi.org/10.1080/1369183X.2017.1300254>

- Schmidt, A. (2022). University air travel and greenhouse gas mitigation: An analysis of higher education climate policies. *International Journal of Sustainability in Higher Education*, 23(6), 1426–1442. <https://doi.org/10.1108/IJSHE-07-2021-0318>
- Schrems, I., & Upham, P. (2020). Cognitive Dissonance in Sustainability Scientists Regarding Air Travel for Academic Purposes: A Qualitative Study. *Sustainability*, 12(5), 1837. <https://doi.org/10.3390/su12051837>
- Schreuer, A., Thaller, A. E., & Posch, A. (2023). Reducing air travel emissions in academia: An exploration of universities' manoeuvring room. *International Journal of Sustainability in Higher Education*, 24(9), 102–117. <https://doi.org/10.1108/IJSHE-03-2022-0070>
- Schutz SE. (1994). Exploring the benefits of a subjective approach in qualitative nursing research. *Journal of Advanced Nursing*, (20)3, 412-417.
- Sheller, M. (2022). The end of flying: Coronavirus confinement, academic (im)mobilities and me. In K. Bjørkdahl & A. S. Franco Duharte (Eds.), *Academic flying and the means of communication* (pp. 53–77). Springer Nature Singapore. [https://doi.org/10.1007/978-981-16-4911-0\\_3](https://doi.org/10.1007/978-981-16-4911-0_3)
- Shove, E. (2010). Beyond the ABC: Climate Change Policy and Theories of Social Change. *Environment and Planning A: Economy and Space*, 42(6), 1273–1285. <https://doi.org/10.1068/a42282>
- Spinellis, D., & Louridas, P. (2013). The Carbon Footprint of Conference Papers. *PLoS ONE*, 8(6), e66508. <https://doi.org/10.1371/journal.pone.0066508>
- Stephenson, J., Barton, B., Carrington, G., Doering, A., Ford, R., Hopkins, D., Lawson, R., McCarthy, A., Rees, D., Scott, M., Thorsnes, P., Walton, S., Williams, J., & Wooliscroft, B. (2015). The energy cultures framework: Exploring the role of norms, practices and material culture in shaping energy behaviour in New Zealand. *Energy Research & Social Science*, 7, 117–123. <https://doi.org/10.1016/j.erss.2015.03.005>
- Storme, T., Beaverstock, J. V., Derrudder, B., Faulconbridge, J. R., & Witlox, F. (2013). How to cope with mobility expectations in academia: Individual travel strategies of tenured academics at Ghent University, Flanders. *Research in Transportation Business & Management*, 9, 12–20. <https://doi.org/10.1016/j.rtbm.2013.05.004>
- Strengers, Y. (2014, June 4). Fly or die: Air travel and the internationalisation of academic careers. *The Demand Centre - Collaborative Research & Engagement*. <http://www.demand.ac.uk/04/06/2014/fly-or-die-air-travel-and-the-internationalisation-of-academic-careers/>

- Suddaby, R. (2006). From the editors: What grounded theory is not. *Academy of Management Journal*, 49(4), 633–642. <https://doi.org/10.5465/AMJ.2006.22083020>
- Tampere Universities. (n.d.-a). *Data Protection in Research*. Tampere Universities. <https://www.tuni.fi/en/research/responsible-science-and-research/data-protection#expander-trigger--353347>
- Tampere Universities. (n.d.-b). *Faculties and units*. Tampere Universities. <https://www.tuni.fi/en/about-us/tampere-university/faculties-and-units>
- Tampere Universities. (n.d.-c). *Tampere Universities: Roadmap to sustainable development 2020-2030* [Roadmap]. Retrieved 12 March 2024, from <https://www.tuni.fi/en/about-us/sustainable-development-at-tampere-universities/sustainability-and-responsibility-goals>
- Tampere Universities. (n.d.-d). *Tampere University*. Tampere Universities. Retrieved 21 April 2024, from <https://www.tuni.fi/en/about-us/tampere-university>
- Tampere Universities. (2022). *Travel Policy*. Tampere Universities. [https://content-webapi.tuni.fi/proxy/public/2022-11/tuni\\_matkustussaan-to-2022-ytn-24.10.2022-final\\_3.11.2022.pdf](https://content-webapi.tuni.fi/proxy/public/2022-11/tuni_matkustussaan-to-2022-ytn-24.10.2022-final_3.11.2022.pdf)
- Tampere University. (2020). *Tampere University's strategy 2030*. Tampere University. <https://content-webapi.tuni.fi/proxy/public/2020-02/tampereen-yliopisto-strategia-10022020-eng.pdf>
- Tao, Y., Steckel, D., Klemeš, J. J., & You, F. (2021). Trend towards virtual and hybrid conferences may be an effective climate change mitigation strategy. *Nature Communications*, 12(1), 7324. <https://doi.org/10.1038/s41467-021-27251-2>
- Taşçi, G. (2022). Bridges to the future: Mobility experiences of early-career researchers. *Research in Educational Administration and Leadership*, 7(1), 162–207. <https://doi.org/10.30828/real.1010307>
- Tobin, G.A., & Begley, C.M. (2004). Methodological rigour within a qualitative framework. *Journal of Advanced Nursing*, 48, 388–396.
- Tolvanen, K. (2021). *Tampere Universities Carbon Footprint 2019: Carbon Calculation Report*. Tampere Universities. <https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=0CDgQw7AJahcKEwjw68uxy9GAAXUAAAAHQAAAAQAw&url=https%3A%2F%2Fcontent-webapi.tuni.fi%2Fproxy%2Fpublic%2F2021-04%2Fcarbon->

report-2019.pdf&psig=AOvVaw0ihtdjP5nNvFAA-  
fNYKHwr&ust=1691739634349859&opi=89978449

- Tseng, S. H. Y., Higham, J., & Lee, C. (2022). Academic air travel cultures: A framework for reducing academic flying. In K. Bjørkdahl & A. S. Franco Duharte (Eds.), *Academic flying and the means of communication* (pp. 327–353). Springer Nature Singapore. [https://doi.org/10.1007/978-981-16-4911-0\\_13](https://doi.org/10.1007/978-981-16-4911-0_13)
- Tseng, S. H. Y., Higham, J., & Lee, C. (2023). Towards post-COVID-19 responsible academic air travel. *International Journal of Sustainability in Higher Education*. <https://doi.org/10.1108/IJSHE-09-2022-0313>
- Tseng, S. H. Y., Lee, C., & Higham, J. (2022). Managing academic air travel emissions: Towards system-wide practice change. *Transportation Research Part D: Transport and Environment*, 113, 103504. <https://doi.org/10.1016/j.trd.2022.103504>
- Tseng, S. H. Y., Lee, C., & Higham, J. (2023). The impact of COVID-19 on academic aeromobility practices: Hypocrisy or moral quandary? *Mobilities*, 18(3), 445–467. <https://doi.org/10.1080/17450101.2022.2121658>
- UN environment program. (2021, October 28). *Over 1,000 Universities and colleges make net-zero pledges as new nature initiative is unveiled* [Press Release]. <https://www.unep.org/news-and-stories/press-release/over-1000-universities-and-colleges-make-net-zero-pledges-new-nature>
- Uzzell D, 2010, “*Psychology and climate change: collective solutions to a global problem*”, Joint British Academy/British Psychological Society Annual Lecture
- van de Glind, B., & Gomez-Baggethun, E. (2023). Reducing academic flying beyond COVID-19: Drivers, alternatives, and avenues for change. *The Geographical Journal*, 189(2), 300–313. <https://doi.org/10.1111/geoj.12471>
- Viskari, E.-L. (2024, April 15). *Case description in thesis* [Personal communication].
- Viskari, E.-L., Nurminen, M., Asikainen, E., & Tienhaara, P. (n.d.). *Tampereen korkeakoulu—Yhteisön hiilijalanjälki 2022*. Tampere Universities. <https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=0CDgQw7AJahcKEwjw68uxy9GAAXUAAAAHQAAAAQAw&url=https%3A%2F%2Fcontent-webapi.tuni.fi%2Fproxy%2Fpublic%2F2021-04%2Fcarbon-report-2019.pdf&psig=AOvVaw0ihtdjP5nNvFAA-fNYKHwr&ust=1691739634349859&opi=89978449>
- Whitmarsh, L., Capstick, S., Moore, I., Köhler, J., & Le Quéré, C. (2020). Use of aviation by climate change researchers: Structural influences, personal attitudes, and

- information provision. *Global Environmental Change*, 65, 102184.  
<https://doi.org/10.1016/j.gloenvcha.2020.102184>
- Willig, C., & Rogers, W. S. (2017). *The SAGE Handbook of Qualitative Research in Psychology*. SAGE Publications Ltd. <https://doi.org/10.4135/9781526405555>
- Wolff, H.-G., & Moser, K. (2009). Effects of networking on career success: A longitudinal study. *Journal of Applied Psychology*, 94(1), 196–206.  
<https://doi.org/10.1037/a0013350>
- Wynes, S., Donner, S. D., Tannason, S., & Nabors, N. (2019a). Academic air travel has a limited influence on professional success. *Journal of Cleaner Production*, 226, 959–967. <https://doi.org/10.1016/j.jclepro.2019.04.109>
- Yin, R. K. (2007). *Case study research: Design and methods* (3. ed., [Nachdr.]). Sage.
- Ylijoki, O.-H., & Henriksson, L. (2018). Insights from Early Career Academics: Making Time for Working Together in Finland. In L. Gornall, B. Thomas, & S. Lucy (Eds.), *Exploring Consensual Leadership in Higher Education: Co-operation, Collaboration and Partnership* (pp. 20–52). Bloomsbury Academic.  
<https://doi.org/10.5040/9781350043596>
- Zhao, X., Yin, H., Fang, C., & Liu, X. (2021). For the Sustainable Development of Universities: Exploring the External Factors Impacting Returned Early Career Academic's Research Performance in China. *Sustainability*, 13(3), 1333.  
<https://doi.org/10.3390/su13031333>

# APPENDICES

## Appendix A: Summary of the key terms of the practice-based academic flying framework (Formatted by the author, based on Tseng, Lee, et al., 2022)

Concepts	Definition	Representation in the figure	Example
<b>Elements</b>	In relation to the given behavior, <u>cognitive norms</u> are what academics think, <u>material cultures</u> are what academics have and <u>practices</u> are what academics do.	In the outer pink sphere.	<i>Cognitive norms (the expectations and aspirations of the academic).</i>
<b>Constructs</b>	<u>Main concepts</u> of the elements.	In the inner blue sphere.	<i>Academic associations are an important part of the academia and being part of one of them is important for integration and networking. They create expectations and aspirations for the individual.</i>
<b>Dimensions</b>	<u>Detailed actions within each construct.</u>	Not represented in the figure.	<i>Participating in the discipline network abroad.</i>
<b>Moderators</b>	The <u>support and / or barriers</u> which shape the strength of the relationship between the elements and the behavior.	In the inner grey sphere.	<i>Institutional support is low and does not encourage low carbon travel.</i>
<b>Individual behaviors</b>	The reduction of academic flying.	In the inner white sphere.	<i>An individual may not want to reduce flying and instead conduct air travel to join discipline event abroad.</i>

## Appendix B: Questionnaire guide for the semi-structured interviews

As the questionnaire guide was utilized for semi-structured interviews, questions slightly varied depending on the context and the participant.

### *Introduction:*

*I would first like to thank you once more for participating in this study. It will be very valuable to understand better the motivations for academic flying. Please note that this interview is part of a research master's thesis commissioned by Tampere University. Before we start, I would like to emphasize that your participation will remain anonymous and that I will not judge your opinions. There is no right or wrong answers, and you are welcome to speak freely about your views and possible critiques. The aim of this study is to understand what incentivizes you to fly or to not fly, so please feel free to express your personal experiences on the subject. Regarding the term "academic flying" and "academic air travel" which I will most likely employ numerous times during our interaction, please note that it refers to business air travel undertaken to fulfill your work expectations. It may for instance be that you take flights to attend conferences, present your research, or give a lecture. Do you have any questions regarding the study, or the data privacy notice?*

- 1) How would you describe your approach to environmental sustainability in general?
- 2) How do you feel about academic flying and travel in general? E.g., is it something you personally enjoy or something you tend to avoid and dislike?
- 3) What are your career goals? Do you think flying is necessary for you to achieve your them? Why is that?
- 4) How would you describe your expectations in terms of mobility? What causes those expectations in your opinion?
- 5) How would you describe the role of the institutions in higher academia in reducing flying? What about your role?

- 6) How do expectations of mobility affect your personal life? For example, your family life? Feel free to share what you feel comfortable with.
- 7) What do you think of virtual attendance as a replacement for physical attendance? For instance, when you went to [city which the academic visited for a business trip] did you have an online attendance option?
- 8) Have you tried business travelling with other means, for instance ferry train or buses, what were your experiences? Feel free to share examples.
- 9) *Question specifically for academics with more mature careers:* are you mentoring any ECAs? If yes, how do you address international mobility with them?
- 10) *Question for ECAs:* how does your academic mentor address international mobility with you?
- 11) What are three main reasons that motivate you to fly? And on the contrary what are three main reasons that may stop you from flying?
- 12) If anything, and if you think we should decrease academic flying in higher academia, what do think would be needed to decrease academic flying (in general) both on the short-term and the long-term?
- 13) Would you like to add something you haven't had the chance to discuss until now?

*Concluding comments:*

*Thank you once again for your participation. I will share the thesis with you once it is ready and approved. If you have any additional thoughts or questions, do not hesitate to contact me by e-mail.*



## Appendix C: DPIA pre-assessment (template retrieved from Tampere Universities, n.d.-a)

### Checklist for determining whether a Data Protection Impact Assessment (DPIA) is required

A Data Protection Impact Assessment (DPIA) is mandatory under the EU's General Data Protection Regulation (GDPR) if:

- 1) the processing of personal data meets at least **two** of the criteria for determining whether processing is likely to result in a *high risk* to the rights and freedoms of individuals;
- 2) the processing activities are included in the data protection authority's list of *specific processing situations*;
- 3) the data controller relies on some conditional exemptions to the rights of data subjects (research participants) under the GDPR.

Three scenarios where the need to carry out a DPIA must be assessed are presented below. Complete the screening questions to determine whether you will need to do a DPIA before starting your research.

- 1) If your answer to at least two of the questions is "yes", you may need to carry out a DPIA. If your answer to at least three of the questions is "yes", you must carry out a DPIA.

<input type="checkbox"/>	<p>Processing of special category data (sensitive data) or other data of a highly personal nature</p> <p><i>The participants will be briefly asked about their previous and planned business air travel behaviour, but not extensively.</i></p>	<p>The following types of personal data are considered sensitive:</p> <ul style="list-style-type: none"> <li>- health-related data</li> <li>- location data (tracking an individual's location)</li> <li>- genetic data</li> <li>- biometric data for the purpose of uniquely identifying a person</li> <li>- racial or ethnic origin</li> <li>- political opinions</li> <li>- religious or political beliefs</li> <li>- trade union membership</li> <li>- sexual orientation or behaviour</li> <li>- criminal convictions and offences</li> <li>- financial data that may be used to commit payment fraud</li> <li>- electronic communications</li> <li>- other data of a highly personal nature (such as notes and diaries).</li> </ul>
<input type="checkbox"/>	<p>Large-scale processing of personal data</p>	<p>Processing can be considered large scale if:</p> <ul style="list-style-type: none"> <li>- the number of research participants is 10,000 or higher;</li> <li>- a great deal of data is collected on specific individuals;</li> <li>- data is collected on a large number of individuals who belong to a specific group (such as a large number of people who belong to a small ethnic group or work for the same employer);</li> <li>- processing activities continue on a permanent or a long-term basis;</li> </ul>





		- processing occurs over a large geographical area.
<input type="checkbox"/>	Unexpected combination of datasets	During your study, will you combine personal data from multiple sources in a way that would exceed the reasonable expectations of your data subjects? For example, will you combine data that was originally collected for two different purposes or by two different data controllers?
x	Processing of data concerning vulnerable data subjects <i>The participants will be employees of TUNI.</i>	Will you process data about individuals who may have difficulty exercising their data subject rights due to their vulnerable position? For example, children, elderly people, employees, patients and asylum seekers are considered vulnerable.
<input type="checkbox"/>	Innovative use or application of new technological or organisational solutions	Will you use new technology in innovative ways to process personal data during your study? Will you collect or use data in a new way? Is it difficult to estimate the impact of using new technology?
<input type="checkbox"/>	Evaluation and scoring	Will you process personal data for the purpose of evaluating or scoring your research participants (for example, to evaluate or predict an individual's disease risk or to create a profile based on an individual's behaviour)?
<input type="checkbox"/>	Automated decision-making that affects data subject rights	Will your processing involve automated decision-making (the process of making a decision by automated means without any human involvement) and/or profiling that may have significant impacts on research participants? Significant impacts include, for example, discrimination, exclusion, a significant invasion of privacy, defining a research participant's fee with the help of automated decision-making, etc. Read more about automated decision-making: <a href="https://tietosuoja.fi/en/automated-decision-making-and-profiling">https://tietosuoja.fi/en/automated-decision-making-and-profiling</a>
<input type="checkbox"/>	Systematic monitoring of data subjects	Will your study entail the systematic monitoring of research participants?

Examples of research scenarios where a DPIA is required:

- Special category data (sensitive data) will be processed during the study AND personal data will be processed on a large scale.
- Personal data will be combined in a way that would exceed the reasonable expectations of data subjects AND data concerning vulnerable research participants (such as children, patients or elderly people) will be processed during the study.
- New technological solutions will be utilised during the study AND personal data will be processed on a large scale.

## 2) The data protection authority's list of specific processing situations

The data protection authority has drawn up a list of specific processing situations. You will need to carry out a DPIA if your processing activities qualify as high risk based on at least one of the criteria presented in the above table AND you will process personal data that falls into the following categories:


<input type="checkbox"/>		Biometric data for the purpose of uniquely identifying a person
<input type="checkbox"/>		Genetic data
<input type="checkbox"/>		Location data
<input type="checkbox"/>		Personal data collected from another source than the data subject, and the data controller relies on an exemption to the obligation to inform data subjects.

Examples of research scenarios where a DPIA is required:

- Genetic data will be processed during the study (*specific processing situation*) AND genetic data will be processed on a large scale (*indicates high risk*).
- Location data will be processed during the study (*specific processing situation*) AND location data will be combined with other personal datasets in a way that would exceed the reasonable expectations of data subjects (*indicates high risk*).
- Data subjects will not be (personally) informed of the processing of their personal data because providing the information to the individuals would be impossible or involve a disproportionate effort (*specific processing situation*) AND personal data concerning vulnerable individuals will be processed during the study (*indicates high risk*).

## 3) Derogation from data subject rights

A DPIA is required if **special category data** will be processed in the context of scientific or historical research or for statistical purposes and the data controller will rely on an exemption to data subject rights.

<input type="checkbox"/>		Special category data is processed during the study, and the data controller relies on an exemption to data subject rights.
--------------------------	---	---

### Summary

A DPIA is required. Contact the data protection officer at [dpo@tuni.fi](mailto:dpo@tuni.fi).

A DPIA is not required. Carry out a concise risk assessment.

Name of study: Master's thesis about academic flying, case study of TUNI  
Form filled out by: Yasmine Bounouara, Master's Student and Research Assistant

Date: 14/08/2023

Read more about Data Protection Impact Assessment: <https://tietosuoja.fi/en/impact-assessments>

## Appendix D: Concise risk assessment

Severity of the breach of damage	<b>Serious</b>	Low Risk	High Risk	High Risk
	<b>Identified impacts</b>	Low Risk	Moderate Risk <i>The respondents are employees of the university and may potentially emit critiques towards their organization or colleagues. Breach in the anonymity of the participants could harm their reputation and employment relationship.</i>	High Risk
	<b>Minor impacts</b>	Low Risk	Low Risk <i>Minor data are collected about the travel behavior (e.g., number of previous flights, number of planned flights) to prepare for the interviews.</i>	Low Risk
		<b>Remote</b>	<b>Possible</b>	<b>Highly likely</b>
<b>Likelihood of the breach of damage</b>				