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Emocjonalne i sytuacyjne determinanty
rozbieżności między proekologicznymi postawami
a zachowaniami konsumentów na rynku lotniczych
przewozów pasażerskich

Emotional and situational determinants of the gap
between environmental attitudes and consumer
behaviour in the air passenger transport market

Praca doktorska

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Introduction

In the face of escalating global environmental challenges, such as progressing climate change, degradation of natural resources, and increasing pressure to achieve climate policy objectives, the issue of sustainable consumption and mobility has become a significant focus of academic research, public policy initiatives, and corporate business strategies. One sector of particular importance in this context is transport, and within it, passenger air transport, which on the one hand plays a key role in socio-economic development, and on the other hand generates substantial environmental burdens.

In recent years, a clear increase in consumers' environmental awareness has been observed, reflected in declared pro-environmental attitudes, including beliefs about the need to reduce the negative environmental impacts of transport. At the same time, numerous empirical studies indicate the persistence of a significant discrepancy between declared attitudes and consumers' actual market behaviours, referred to in the literature as the attitude–behavior gap. This phenomenon is particularly evident in the context of air travel, where factors such as cost, travel time, convenience, and the availability of connections often outweigh environmental considerations in travel choice decisions.

Previous research on the attitude–behavior gap has focused primarily on cognitive determinants and structural barriers to engaging in pro-environmental actions. However, increasing attention is now being paid to the role of emotional and situational factors, which can significantly shape consumer decision-making processes, particularly in situations involving a conflict between personal values and self-interest. In the context of air transport, moral emotions such as guilt or shame associated with flying may play a particularly important role, alongside specific travel attributes that influence perceptions of attractiveness and accessibility. Short-haul air travel is of particular relevance in analyses of the attitude–behavior gap, as it represents a context in which air transport can realistically be substituted with more sustainable modes, such as rail. Despite the growing availability of alternative transport options and increasing awareness of their environmental benefits, consumers' decisions often remain inconsistent with their declared pro-environmental attitudes. This makes the short-haul air travel market a particularly important domain for examining the mechanisms underlying the discrepancy between attitudes and actual transport choices.

Research Objectives and Research Questions

The primary objective of this doctoral dissertation is to identify selected emotional and situational factors (including costs, travel time, social influence, and knowledge) that affect the likelihood of the occurrence of a gap between consumers' pro-environmental attitudes and their actual behaviours in the passenger air transport market, with a particular focus on short-haul travel. The main objective is supported by the following specific objectives:

- to determine the scale and manifestations of the attitude–behavior gap among Polish consumers in the context of short-haul air travel;
- to identify the role of emotions, particularly guilt and shame, in transport decision-making processes;
- to assess the relative importance of travel attributes (travel time, cost, CO₂ emissions, and number of transfers) in shaping transport preferences;
- to formulate recommendations for transport policy and marketing strategies of airlines and other stakeholders in the transport market.

Based on the adopted objectives, the following research questions were formulated concerning:

- the level of environmental knowledge, types of pro-environmental attitudes, and stages of readiness to change pro-environmental behaviours among travellers in Poland, analysed using the Transtheoretical Model of Behaviour Change (TTM);
- transport preferences of travellers in Poland with regard to domestic and international travel;
- emotions experienced by Polish consumers during passenger travel in the context of short-haul air transport and their impact on the likelihood of the attitude–behavior gap;
- the role of situational factors, such as cost, travel time, social influence, and level of knowledge, in increasing or reducing the likelihood of the attitude–behavior gap.

The formulated objectives and research questions define the framework for investigating the discrepancy between pro-environmental attitudes and actual consumer behaviours in the short-haul air transport segment.

Structure of the Dissertation

The structure of the dissertation is aligned with the adopted research objectives and comprises five chapters, functionally organised into three parts: theoretical–review, methodological, and empirical.

The first part, encompassing Chapters One, Two, and Three, has a theoretical–review character. Chapter One discusses the role of environmental awareness in shaping contemporary consumer behaviour, with reference to models and theories explaining pro-environmental decision-making. Chapter Two focuses on the role of emotions—particularly guilt and shame—in consumer decision-making processes in a (pro-)environmental context. Chapter Three presents the specific characteristics of the passenger air transport market, with particular emphasis on the discrepancy between consumer attitudes and behaviours, as well as actions undertaken by the aviation industry in response to environmental challenges.

The second part, presented in Chapter Four, focuses on the methodology of the author's own research. It outlines the research objectives and questions, data sources, research procedure, applied methods and techniques of data analysis, as well as the characteristics of the research sample. Particular emphasis is placed on the justification for adopting a triangulation strategy and on the construction of the variable representing the attitude–behavior gap.

The third part, presented in Chapter Five, is devoted to the presentation and interpretation of the empirical research results. It includes findings from analyses based on logistic regression models and a stated choice experiment, with the results discussed in relation to the existing literature.

The concluding section of the dissertation summarises the main research findings, identifies the limitations of the conducted study, and outlines directions for future research on the attitude–behavior gap in the context of air transport. It also presents practical implications and recommendations derived from the conducted analyses.

Research Methodology

The research procedure adopted in this dissertation was designed as a sequence of interrelated stages: (1) critical literature review, (2) problem conceptualisation and variable operationalisation, (3) selection of methods and construction of research instruments, (4)

pilot study, (5) main study, and (6) data analysis, hypothesis testing, and formulation of conclusions and recommendations. The starting point was a critical review of the literature on pro-environmental attitudes, transport behaviours, the role of emotions in consumer decision-making, and mechanisms underlying the attitude–behavior gap. This review enabled the identification of a research gap and the formulation of the main research objective, specific objectives, and research hypotheses, with particular emphasis on the role of emotions and socio-psychological motivators and barriers (including knowledge of CO₂ emissions, social pressure, costs, and convenience) in pro-environmental transport decisions.

Given the complexity of the phenomenon under study and the need to capture both declared attitudes and choices made under trade-off conditions, a strategy of theoretical triangulation and methodological triangulation was adopted. Empirical data were collected from two complementary sources: a computer-assisted web interview (CAWI) survey and a stated choice experiment. This approach enabled a parallel analysis of declared attitudes and intentions, as well as the simulation of transport decisions within structured choice scenarios.

As part of the quantitative research, an original survey questionnaire was developed and validated in a pilot study (March 2024; $n = 50$) to optimise the clarity and measurement validity of the questions. Subsequently, the main survey was conducted in June 2024 on a nationwide sample of $n = 600$. After verifying the completeness and logical consistency of responses and cleaning the dataset, a final sample of $n = 567$ was retained for analysis.

The sampling procedure was based on quota sampling, taking into account demographic criteria (age, gender, place of residence) as well as factors relevant to the analysed phenomenon (travel frequency and travel purpose). Participant recruitment was conducted online. The target population consisted of individuals aged 18–64 residing in Poland. The study was carried out following approval from the Research Ethics Committee of the Poznań University of Economics and Business.

Both original instruments and scales adopted from the literature were used in the measurement. A key element was an original scale of consumer attitudes and behaviours related to transport, comprising 24 items (12 attitude items and 12 behaviour items). The reliability of the scales was assessed using Cronbach's alpha coefficients: $\alpha = 0.8867$ for the attitude scale and $\alpha = 0.9024$ for the behaviour scale. The unidimensionality of both scales

was verified using exploratory factor analysis (EFA), in which the dominant factor explained 84.3% of the variance for attitudes and 83.9% for behaviours, respectively.

In addition, a set of scales derived from the literature was applied, including: the Differential Emotions Scale (DES-IV) (Izard, 1977; adaptation: Jarzębski, 2005), a scale measuring perceived climate threat (Gulla, Tucholska, & Ziernicka-Wojtaszek, 2020), a typology of climate attitudes (Orange, 2017; Langford, 2002), and a measure of stages of readiness to change based on the Transtheoretical Model of Change (TTM) (Prochaska & DiClemente, 1983). The DES-IV scale was adapted to the context of short-haul air travel, with a focus on five emotions considered particularly relevant to the attitude–behavior gap: joy, fear, guilt, shame, and interest.

In parallel, a stated choice experiment was designed and conducted among the same nationwide sample of respondents who participated in the survey study ($n = 567$), selected using quota sampling based on gender, age, and place of residence. The study was carried out in June 2024 and involved respondents making hypothetical choices among transport alternatives presented in sets of travel scenarios. The experiment was based on three real-world routes: Poznań–Kraków (domestic), Poznań–Vienna (international, medium-distance), and Poznań–Paris (international, longer-distance). Each scenario set included three alternative modes of transport—airplane, train, and car—described by four attributes: (1) travel time (including additional check-in and security screening time in the case of air travel), (2) travel cost per passenger, (3) estimated CO₂ emissions per passenger, and (4) number of transfers.

The attribute levels used in the scenarios were based on real-world data on travel times, prices, and CO₂ emissions, obtained from timetables, transport search engines, and emissions calculators. The objective of the experiment was to model travellers' preferences and to analyse trade-offs between environmental values (lower CO₂ emissions), convenience (travel time and directness), and travel cost. In addition, after each choice task, respondents were asked to provide a brief open-ended response to the question, “What determined your choice?”, which supported the interpretation of the motives underlying modal choice.

Data from the survey study were analysed using Stata 18. The analytical process comprised: (1) data preparation and cleaning, (2) analysis of the psychometric properties of the scales (including EFA), (3) testing of the research hypotheses, and (4) statistical modelling. Logistic regression models were employed to explain relationships relevant to the

occurrence of the attitude–behavior gap, while the results of the stated choice experiment were analysed to determine the importance of travel attributes and the transport preferences of the respondents.

Research Findings

The conducted empirical analyses confirmed that the gap between pro-environmental attitudes and actual consumer behaviours in the context of short-haul air transport is a widespread and multidimensional phenomenon. The findings indicate that this gap does not stem from a single factor, but rather from the simultaneous influence of cognitive, emotional, and situational determinants, whose significance becomes particularly evident in contexts requiring the incurrence of costs or the sacrifice of comfort.

An analysis of readiness to change pro-environmental behaviours, conducted using the Transtheoretical Model of Change (TTM), revealed that the majority of respondents were at the contemplation and preparation stages with respect to adopting more sustainable behaviours. At the same time, only a small proportion of participants had reached the action and maintenance stages, confirming the existence of a clear barrier between intention and the sustained implementation of pro-environmental transport behaviours.

With regard to attitudes towards the climate crisis, the dominant orientation among respondents was climate realism, characterised by awareness of environmental threats combined with a pragmatic approach to everyday choices and a strong need to maintain transport convenience and accessibility. These findings suggest that a high level of climate awareness does not necessarily translate into behavioural change in decision-making situations.

The analysis of environmental knowledge revealed a low level of respondents' objective knowledge regarding the emissions intensity of different modes of transport and mechanisms of CO₂ offsetting, alongside a clear discrepancy between declared and actual knowledge. This indicates a significant cognitive component that contributes to the persistence of the attitude–behavior gap.

The results of the transport preference analyses demonstrated substantial variation in decision-making depending on the type of trip. For domestic routes, respondents were significantly more likely to choose rail transport, whereas air transport dominated choices on international routes. Particularly noteworthy findings were obtained for medium-distance

routes, where no single mode of transport clearly prevailed. This suggests the existence of a “threshold moment” in modal choice, at which decisions cease to be automatic and become more strongly influenced by individual priorities and situational constraints.

The analysis of the role of emotions showed that, in the context of short-haul air travel, moral emotions—particularly guilt and shame—play a significant role in the occurrence of the attitude–behavior gap. However, only guilt was found to serve a regulatory function: higher levels of guilt were associated with a lower likelihood of the attitude–behavior gap, whereas no analogous effect was observed for shame.

Situational factors, especially travel cost and social pressure, significantly increased the likelihood of a discrepancy between attitudes and behaviours, even among individuals declaring strong pro-environmental attitudes. In contrast, a higher level of environmental knowledge was associated with greater consistency between declared attitudes and actual transport choices.

In addition, based on a comparison of declared attitudes and actual behaviours, four consumer segments were identified: green–green, green–brown, brown–green, and brown–brown. The largest group was the green–brown segment, comprising individuals with strong pro-environmental attitudes that are not accompanied by corresponding behaviours. This segment, accounting for over 40% of the sample, exhibits the highest potential for behavioural change and represents a key target group for educational, communication, and infrastructural interventions.

The results of the stated choice experiment further confirmed that, under simulated transport decision conditions, situational attributes such as travel cost, time, and convenience were more influential than the level of CO₂ emissions. This suggests that in decision-making contexts involving real trade-offs, environmental considerations remain secondary to utilitarian criteria.

The analysis of the results indicated that hypotheses H1a, H1b, H1c, and H2 were accepted, confirming, among other findings, the predominance of a realism-oriented attitude in perceptions of the climate crisis, a low level of knowledge regarding the environmental impact of transport, and the existence of a route-length threshold differentiating transport mode preferences. Hypothesis H3 was partially accepted: no evidence was found to support the dominance of negative over positive emotions in short-haul air travel choices (H3a—rejected), whereas the significant role of guilt as a factor

reducing the likelihood of the attitude–behavior gap was confirmed, with no analogous effect observed for shame (H3b—partially accepted). Hypothesis H4 was also partially accepted, as travel cost and social pressure were shown to significantly increase the likelihood of the attitude–behavior gap, while environmental knowledge played a protective role; however, no statistically significant effect of travel time was identified.

Theoretical and Practical Implications

The dissertation makes a significant contribution both to the advancement of scientific knowledge and to practice in the fields of sustainable mobility and consumer behaviour. Its primary theoretical contribution lies in an integrated approach to the attitude–behavior gap, conceptualised as a phenomenon shaped by the simultaneous influence of cognitive, emotional, and situational factors, particularly in the context of short-haul air travel.

The theoretical contribution of the study lies in extending existing models explaining the attitude–behavior gap by incorporating an emotional perspective and the stage of readiness to change, grounded in the Transtheoretical Model of Change (TTM). This approach enabled a deeper understanding of the dynamics of transport decision-making and the differentiation of consumers in terms of their potential to adopt more pro-environmental behaviours. An important methodological contribution of the study is the development and empirical validation of an original set of measurement instruments, including a scale of attitudes and behaviours.

A significant empirical contribution of the study is the identification of consumer segments differing in the consistency between declared pro-environmental attitudes and actual behaviours, with particular emphasis on the green–brown segment, which demonstrates the greatest potential for change. These findings deepen the understanding of consumer behaviour heterogeneity and enable more precise design of interventions aimed at fostering pro-environmental behaviour change.

From an applied perspective, the results highlight the need to design transport policy instruments and market-based measures that reduce cost and time barriers associated with alternative low-emission travel options, particularly on short- and medium-distance routes. In the domain of communication and education, a shift away from general pro-environmental messaging towards targeted actions focused on the green–brown segment is recommended, combining increased awareness of actual emissions with infrastructural and

organisational facilitators that support real behavioural change. The findings also underscore the importance of better integrating transport and information policies, so that pro-environmental choices are not only normatively desirable but also practically accessible and competitive relative to air transport.