



Air travel attitudes and behaviours: The development of environment-based segments[☆]



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A B S T R A C T

Keywords:

Air travel
Pro-environmental behaviour
Survey research
Transportation
Environmental psychology

In an era when the transport sector is increasingly contributing to environmental damage there is a need to better understand the behavioural response of consumers. Theories such as the Theory of Planned Behaviour and the Norm-Activation Model have had some success in explaining pro-environmental behaviours; this paper examines the application of these to air travel. It utilises insights from previous attitude behaviour research to develop a more detailed understanding of how normative influences, individual values and other psychological factors are affected by individual attitudes to air travel attitudes and how these influence behaviour. This informs recommendations for a policy response, which emphasises the need to bring air travel behaviour in line with other energy saving household behaviours.

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1. Introduction

There are on-going environmental pressures to reduce resource use and consumer waste, which is supported by central policy and local action. Transport makes a growing contribution to climate change, with carbon dioxide emissions from air travel predicted to increase by a factor of between 1.6 and 10 from 1992 until 2050 dependent upon growth scenarios (Intergovernmental Panel on Climate Change, 1999). Historically there have been effective efficiency improvements in air service provision; however, growth, assisted by changes such as liberalisation of the market (Doganis, 2002), is absorbing and exceeding these savings. Further technological advances are unlikely to make a significant difference in the short term. Arguably, therefore, emission reduction relies on changes in behaviour.

However, there is a current disharmony between how consumers and indeed policy-makers view travel and transport, in relation to other energy-intensive activities (European Commission, 2008). Researchers have frequently discussed the existence of a value-action or attitude-behaviour gap, whereby expressed pro-environmental attitudes or values are not reflected in the behaviours that individuals actually perform (Blake, 1999; Kollmuss and Agyeman, 2002). It is now widely acknowledged by

social-psychological researchers (Abrahamse et al., 2005; Blake, 1999) that the information-deficit model, whereby the provision of information about an issue of concern and action that can be taken is believed to lead to relevant behaviour being performed, does not adequately explain or necessarily influence the performance of those behaviours. Howarth et al. (2009) highlight that an individual's awareness and understanding of climate change is often not reflected in their actions with respect to transport, concluding that there is greater need for measures which support change rather than provide information. In terms of air travel, this gap between awareness and understanding, and an individual's actions, is arguably reinforced by political decisions which prioritize the advantages provided through airport connectivity and national competitiveness over the need to reduce emissions from air travel. In the UK, one example concerns airport expansion in London and the South East of England and the related debate about whether to build a third runway at Heathrow Airport.

This paper is based on an 'Air travel and the environment' household survey across five local authorities in the East Midlands region of the UK, conducted in spring 2009. It builds upon previous mail and internet household surveys designed to deliver a stated choice modelling capability and a greater understanding of air travel market segments. This survey has a clear environmental focus expanding upon attitudinal and behavioural questions from previous surveys. For instance, earlier research identified a small segment of 8% who were trying to reduce the number of flights taken for environmental reasons but a larger, price sensitive segment of 63% who would reduce the number of flights taken in response to an increase in fare of £50 (Davison and Ryley, 2010).

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To provide context for the study, air travel in the UK increased five-fold between 1970 and 2000 (Department for Transport, 2003), with future growth expected to continue albeit at a lower rate (Department for Transport, 2011). Low cost airlines have played a growing role in air transport provision, particularly from the regional airports, following the liberalisation of the market in the 1980s (Civil Aviation Authority, 2006). Legislatively The Climate Change Act (United Kingdom Parliament, 2008) recognises UK emissions from aviation and shipping as coming under the auspices of sources of emission for reduction. With the legally binding target for 2050 being an 80% reduction based on 1990 levels, emissions from other sectors would have to be cut dramatically to allow aviation to follow the existing trajectory (Bows et al., 2006; House of Commons Environmental Audit Commission, 2006).

The objective of this paper is to identify which members of the population have the greatest propensity to adapt their air travel choices and therefore limit increases in emissions. The application of segmentation techniques to attitudes and behaviour around air travel provides fresh insight into air travel choices. By examining the behavioural intentions and behaviour of different market segments with respect to their views on air travel and its impact on the environment, this paper utilises insights from previous attitude-behaviour research to develop a more detailed understanding of the effect of normative influences, individual values and other psychological/attitudinal, recognised as psychological constructs.

The identification of different segments within the population using cluster analysis, and characterisation of intentions and behaviours in relation to the attitudes and behaviours within those segments, will allow future policy and interventions aimed at reducing the reliance on air travel to target the segments of the population that are most likely to produce those reductions. By including variables identified by a range of attitude-behaviour frameworks as possible influences on individual behaviour, that segmentation analysis will be able to understand their influence on clearly-defined segments within the population.

The remainder of the section will introduce market segmentation with particular reference to air travel and environmental behaviour. Next is a discussion of the psychological constructs which provide the basis for this paper, leading into the methodology section. The results section presents the market segments based on responses to statements measuring air travel and environmental attitudes, and examines the behavioural intentions and behaviours of each segment through the application of path analysis. These results, together with the socio-demographic make-up of each group, inform the subsequent sections. These include a discussion of how this research contributes to existing knowledge and a conclusion which links to the primary policy and research implications.

1.1. Air travel market segmentation

In order to understand air travel behaviour, the aviation industry acknowledges that market segments behave differently in response to price changes, typically split into business (further split into 'routine' and 'urgent') and leisure (further split into 'holidays' and 'visiting friends and relations') passengers (Doganis, 2002). However, there are other ways the air travel market can be segmented with respect to willingness to pay. For instance when examining how holidays influenced quality of life Dolnicar et al. (2013) found a segment, equating to 10% of the population, to be crisis-proof given the importance of holidays to their wellbeing, thus highlighting a psychological reliance on leisure travel, and linked to this air travel.

A study by Ipsos MORI (2007) examined air travel behaviour of segments based on the receptiveness to policy approaches such as, information provision, leading by example, government regulation

and increases in total flight cost (fares or taxes). Segments range from the 'ultra greens' to the 'disengaged'. However, while the ultra greens are classed as frequent flyers that regularly use low cost airlines to fly for short breaks, the 'disengaged' are not really frequent flyers, demonstrating the value-action or attitude-behaviour gap, with particular reference to air travel. Research by Barr and colleagues, which applied market segmentation techniques to examine the influence of context on attitudes and behaviour found 'cognitive dissonance' within general environmental behaviour (Barr et al., 2010) and mode preferences and choice (Barr and Prillwitz, 2012). Specifically the segments exerting the highest degree of environmental concern in the household context were often those who were more flight dependent in a tourism context. It was often the groups with restricted mobility whose behaviour could be described as more environmentally conscious, for example the 'reluctant public transport users' when compared to the 'committed green travellers', the latter having the most pro-environmental stance.

1.2. Psychological constructs

A number of frameworks have been developed by researchers to attempt to explain these relationships. Two such approaches that have proved influential are the rational-actor models and moral/normative models (Kollmuss and Agyeman, 2002; Steg and Vlek, 2009).

Rational-actor models assume that individuals make reasoned choices based on the information available to them, choosing to act in the way that is most likely to return high benefits while incurring low costs (e.g. in money, time, effort or social approval) (Steg and Vlek, 2009). Perhaps the most widely used of these models is the Theory of Planned Behaviour (Ajzen, 1991), which identifies attitudes towards the behaviour, subjective norms and perceived behavioural control as influences on the formation of an intention to carry out a particular behaviour. The Theory of Planned Behaviour has had some success in explaining travel behaviour choices, particularly in explaining willingness to reduce car use (Abrahamse et al., 2009; Bamberg and Schmidt, 2003) and increased use of public transport (Heath and Gifford, 2002). However, researchers have also identified that individuals do not always act in their own rational self-interest, and that a mixture of self-interest and pro-social motives may provide a better explanation of individual behaviour (Bamberg and Möser, 2007).

Research examining pro-social motivations for behavioural choices which limit environmental impacts, such as reducing resource use and emissions, has frequently adopted a moral/normative approach, emphasising the influence that underlying values, beliefs and feelings of responsibility and obligation have on individual behaviour (Steg and Vlek, 2009). One influential theoretical model within this approach is the Norm-Activation Model (Schwartz, 1977), which identifies the influence on individual behaviour both from the individual's own beliefs and values, and from their perception of others' expectations and their own responsibilities to behave in a certain way. The personal norm is key to this process, and is influenced by an awareness of the consequences of the individual's actions, and the ascription of responsibility to act themselves. Schwartz's (1977) model was designed primarily to measure altruistic behaviour, but the subsequent Values-Beliefs-Norms theory (Stern et al., 1999) was developed from Schwartz's model to explain pro-environmental behavioural choices, including values and worldviews in a causal chain leading to the performance of behaviour.

Subsequent studies (Bamberg and Schmidt, 2003; Steg and Vlek, 2009; Wall et al., 2007) suggest that each of these approaches can explain different types of behaviour. For Wall et al. (2007) and

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