

Exploring Constraints to Rail Travel for Late Adopters of Technology

Charlotte Lenton¹, Brendan Ryan¹ & Jillian Rickly²

¹Human Factors Research Group, University of Nottingham, UK. ²School of Business, University of Nottingham, UK.

SUMMARY

This paper explores the accessibility and support provision in rail passenger environments in the GB rail network for passengers who are identified as late adopters of technology. The research data were collected at focus group sessions with rail industry representatives to gain an industry perspective on late adopters, their support needs, constraints to travel, and factors affecting accessibility of the GB rail network for this passenger group. Findings suggest several stages of the passenger journey which could be impacted by constraints to rail travel for the passenger group of interests and passengers more generally. Additionally, the analysis identifies areas of tension within industry regarding support provision for late adopters of technology in relation to accessibility of services and financial implications.

KEYWORDS

Accessibility, Late Adopters, Rail Travel, Barriers, Passengers.

Introduction

Ensuring rail passenger environments are accessible for all users is an ongoing topic of concern across the sector in Great Britain. This was brought to the forefront of discussions in industry, academia, and the media during a recent consultation to remove the provision of staff from ticket offices at train stations. Whilst these proposals have since been withdrawn by the train operators, discussion around the consultation has highlighted accessibility issues faced by many when using rail services. For example, activist group Transport for All (2023) launched a campaign opposing the proposals outlining the importance of ticket offices and the staff within them. This is particularly in reference to the additional support needs required by passengers with disabilities to access GB rail services which goes beyond the purchasing of tickets from ticket offices.

Whilst the provision of staff to support passengers at ticket offices is still currently available, passenger support services are being increasingly digitised and delivered virtually via online mechanisms. It is important to explore the implications of such changes to support provisions for passengers who can be identified as being late adopters of technology. There are currently no studies focusing on late adopters of technology as a passenger group using the GB rail network. Moreover, where late adopters of technology are considered in academic research they are represented stereotypically as elderly people with little interest in modern technology (Harvey et al., 2019). By contrast, this paper builds upon a research perspective that considers late adopters of technology as passengers who are unable, unwilling, or sceptical of using technology to support their rail journey. Importantly, this research does not adhere to the stereotypical representation of late adopters of technology as purely technophobic passengers who are *old* and *disinterested* in technology.

As the starting point of a broader research project to understand constraints to travel for late adopters of technology, this paper focuses on understanding the current support offer available for all passengers of GB rail services and how this affects the passenger group of interest. Due to the data being sourced from industry focus groups, this paper explores industry perspectives towards this passenger group and their understandings of the support requirements of late adopters of technology.

Constraints Negotiation Theory

This paper uses an approach developed in the field of leisure studies to identify and analyse the passenger support offer for late adopters of technology using rail services in Great Britain. The Constraints Negotiation Theory (CNT) approach seeks to identify constraints and analyse how these might be negotiated (Crawford et al., 1991). Importantly, this approach understands constraints as flexible, changeable, and negotiable. This is in stark contrast to previously held beliefs that constraints to participation in activities were permanent, fixed, and insurmountable (Jackson and Rucks, 1995). Aside from leisure studies, this framework could have benefits for constraint analysis in a variety of other academic fields. For example, the CNT approach has been successfully used in the field of travel and tourism research (see Karl et al., 2022; Rickly et al., 2022; Lee et al., 2023).

To identify and explore constraints in greater depth the framework divides constraints into three categories: intrapersonal, interpersonal, and structural. These categories are also structured in a hierarchical order with intrapersonal being most proximal to any individual or group of people through to structural constraints being most distant and more challenging for the constrained persons to influence. Some scholars argue that a hierarchical framework for constraints does not consider individual experiences of constraints and their negotiation (Godbey et al., 2010). Examples of intrapersonal constraints which are related to the individual include attitude, personality, and perceptions of ability to undertake an activity. Interpersonal constraints arise from interactions or anticipated interactions with others albeit friends and family, members of the public, or staff. The relationship between actors is often complex and diverse which can lead to constraints to undertake or participate in an activity. Structural constraints are rather different to intrapersonal and interpersonal constraints. Lee et al., (2023) suggest that structural constraints such as cost, time, and place-related factors such as accessibility of the environment have the largest impact on the learned helplessness of individuals in terms of constraint negotiation.

Following identification of constraints into one or more of the aforementioned categories, it is possible to use this information to predict and analyse how people might negotiate these constraints. It is suggested that interpersonal and structural constraints are negotiated through behavioural strategies (Stodolska et al., 2020). This involves the constrained individual altering their behaviour to negotiate the constraint. For example, if a passenger is unable to access in-person support at a rail station due to reduced opening hours of the ticket office they might take an extended lunch break to visit the station in the middle of the day rather than going after work when the ticket office is closed. In this example the individual modifies their behaviour to negotiate a structural time constraint. Conversely, it is anticipated that intrapersonal constraints are negotiated using cognitive strategies such as inner voice as a confidence booster or altering travel aspirations. Kart et al., (2022) suggest that cognitive negotiation also contributes to behavioural modifications such as choosing to travel to a different destination or using an alternative mode of travel.

Studies using Constraints Negotiation Theory have largely, if not directly, considered constraints to be factors which produce largely negative outcomes for the constrained individuals (Godbey et al., 2010). This is understandable as the context for studies within leisure and travel studies are looking for ways to improve experiences, enhance participation, and increase accessibility. Samdahl (2005) and later Godbey et al., (2010) reflect on this positioning of constraints as negative suggesting that

constraints should instead be considered influencers of behaviour which can have positive and negative outcomes for individuals. For example, security checks at airports can be stressful and interactions between individuals and staff might be uncomfortable for some travellers leading to a negative outcome. By contrast, these checks are in place to prevent harmful objects being taken onto the aircraft, which is a positive outcome of this constraint.

Method

This interdisciplinary research uses approaches from human factors and leisure studies to guide an exploration of passenger support provision available to service the needs of late adopters of technology when using GB rail. To better understand the built and digital rail passenger environments, a series of focus group sessions with industry representatives were conducted online. A total of four sessions were conducted with ten industry representatives. Participants included industry professionals working in a broad range of job roles from accessibility mentors to customer service managers and engineers. With the exception of one session, each focus group lasted approximately one hour. There was one focus group session which turned into two individual semi-structured interviews due to participant cancellations and another participant arriving more than 40 minutes late to the scheduled session.

Participants were asked to identify and consider challenges late adopters might encounter when travelling by rail, how the sector supports this passenger group, and what can be done to better support these users. The passenger journey is segmented into five phases: information and planning, booking, pre-journey, in-journey, and post-journey. This is based on the six-phase model proposed by Zalar et al., (2018) however, to simplify the journey phases the authors chose to combine the information and planning phases due to the similarity of the activities occurring in those phases. Participants were encouraged to consider the entire passenger journey based on these five phases throughout the focus group sessions.

Recruitment of industry participants was supported by the researcher's industry partner, the Rail Safety and Standards Board (RSSB), who have access to cross-industry representatives at working group meetings. RSSB also supported with the facilitation of the workshops providing a member of administrative staff to take live notes. The live notetaking was displayed on the screen throughout the focus group sessions where participants were encouraged to contribute to adding important points the notetaker missed and correcting notes they felt were inaccurate.

Thematic analysis is used to analyse the transcript data to identify themes and sub-themes which could suggest areas and activities within the passenger journey where constraints to travel might be impacting late adopters. Guided by the CNT approach, the analysis identified potential constraints to travel in accordance with the hierarchical framework starting with intrapersonal (within oneself), then interpersonal (interactions between people), and finally structural (wider influencing factors) constraints. This led to the development of 15 core themes and 19 sub-themes being identified in relation to 4 overarching topics namely, constraints to travel, improvements, support for late adopters, and barriers to technology use in rail.

Findings

Five themes were identified relating to the topic of constraints to travel. Themes relating to the accessibility of information and rail staff were segmented to produce further sub-themes due to the depth of the themes. Four and two sub-themes were identified for accessibility of information and rail staff respectively. For example, constraints associated with the accessibility of information could be divided into sub-themes in relation to an individual's knowledge of how to access information, delays with dissemination of information, the accuracy of information, and access to

train-specific information. Table 1 depicts the themes, sub-themes, and a brief description for the topic relating to constraints to travel. The brief descriptions are examples of potential constraints passenger could encounter developed from the transcript data. The possible constraints related to each of the themes is not limited to the example given in the description column of the table. Rather, these brief examples have been provided to give context to the constraints identified. For example, in relation to the accuracy of information theme participants suggested that digital information displays, automated announcements, and online information are not always kept up to date by train operators which could have a negative consequence for passengers:

“Sometimes when there are revised timetables it will say one thing on the posters on the walls and something completely different online. Then if there’s engineering work on top of that the other information doesn’t match up to what the engineering posters say too. No wonder people get so confused with what they’re looking at.” – Participant Six.

Table 1: Themes and sub-themes identified in relation to the constraints to travel topic.

Topic	Theme	Sub-Theme	Description
Constraints to Travel	Accessibility of Information	Knowing how to access information	Passenger unsure how to find information
		Delayed access to information	Information is slow to be passed to passengers
		Finding train-related information	Lack of train-specific information available for passengers and staff
		Accuracy of information	Inaccurate information has negative consequences for passenger and rail network
	Authorisation to Travel		Complexity of booking tickets
	Wayfinding		Navigating the built environments
	Consistency Across the Network		Inconsistent processes and information across network providers
	Rail Staff	Access to Staff	Reduced staff presence
		Staff Knowledge & Training	Lack of training for staff to effectively deal with passenger queries

All themes and sub-themes identified have an impact on the accessibility of rail travel for passengers who are late adopters of technology. Whilst many other passengers may also experience constraints associated with a lack of understanding how to find certain pieces of information, delayed access and accuracy of information were suggested to be of particular relevance to this passenger group. For example, keeping passengers informed during periods of disruption or delays is challenging. Information is posted online often in real-time. Passengers using social media technology such as X (formerly known as Twitter) are able to access up-to-date information issued by the train operating company. By contrast, passengers who do not have access to online digital facilities would be more reliant upon traditional methods of obtaining information such as speaking to staff in-person at the station. Participant ten explains that this can also have challenges:

“Not all of our staff have phones or access to digital stuff themselves either, so they can't even access it [information], and then that results in the passenger having to go around asking so many different people for help and getting nowhere so it becomes a traumatic experience for them.” – Participant Ten

The potential constraints to travel described in Table 1 have been identified considering late adopters of technology as the passenger group of concern. It is also possible that these constraints to rail travel could also affect other passenger groups who do not identify as late adopters of technology. For example, it is well known in industry that the current fares system in GB is complicated as the Rail Delivery Group (RDG) (2019) proposed fares reform to simplify fares and ticketing for passengers. The complexity of booking tickets is identified in this research in the authorisation to travel theme. It is likely that in addition to late adopters of technology, other passengers and potential passengers not befitting this group would also experience constraints to rail travel as a result. For late adopters of technology however, the constraint may be exacerbated by ticket booking services being limited to online purchasing or using a ticket machine.

Applying the Constraints Negotiation Theory approach to this example reveals additional factors influencing the presence of the constraint, situating the constraint in context for this group, and possible negotiation strategies (see Figure 1). For example, this constraint could be considered intrapersonal, structural, or both depending on the circumstances of the individual experiencing the constraint. Some example scenarios have been added to the diagram in Figure 1 to show the constraint in context. Additionally, a number of possible negotiation strategies have been applied to the diagram which are associated with either a cognitive or behavioural strategy.

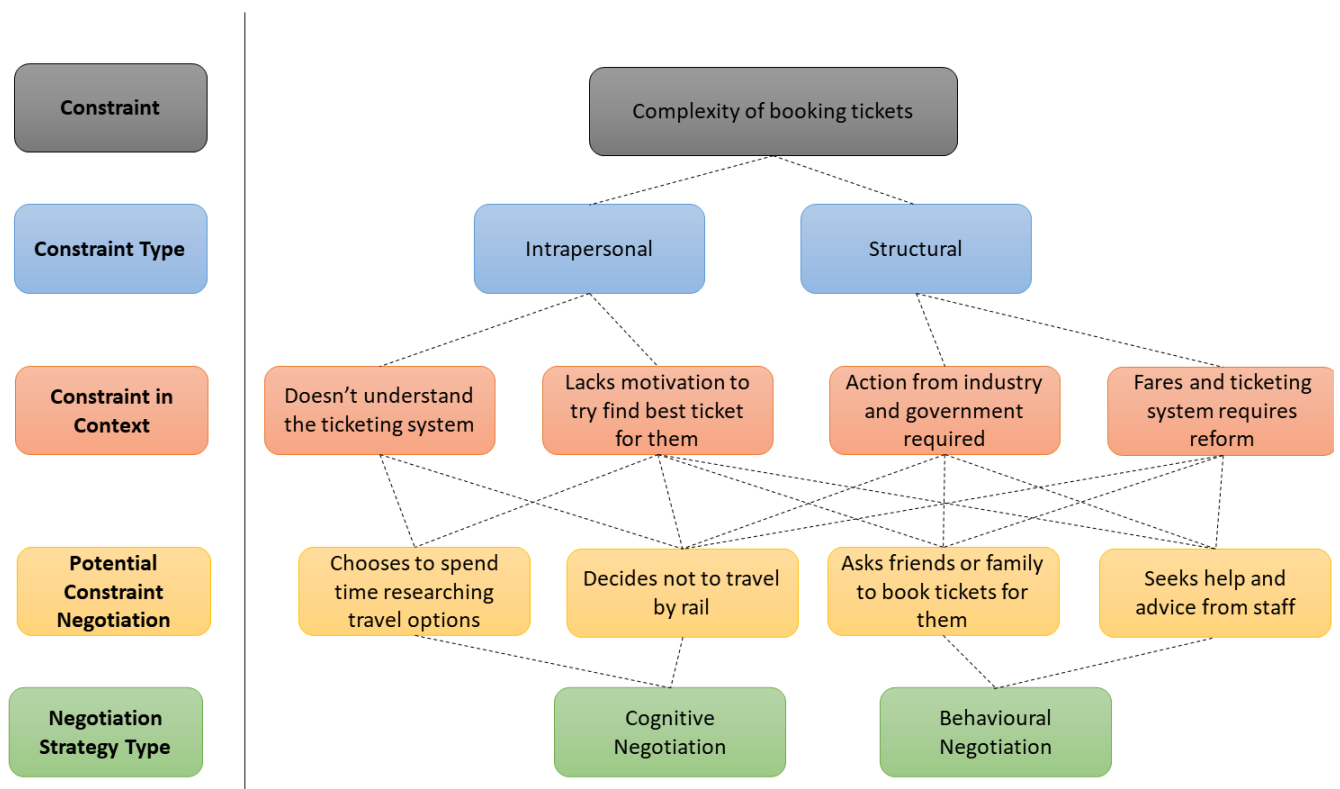


Figure 1: Example of Constraints Negotiation Theory approach applied to the constraint 'complexity of booking tickets' identified under the theme of authorisation to travel.

The outcomes of a potential constraint to travel will not be the same for every passenger within the late adopter of technology group. There will be several other factors influencing the constraint in context. For example, one passenger may not understand the fares and ticketing system whereas another passenger may understand the ticketing system but lack motivation to go through the process of finding the best ticket. The negotiation strategy may also differ between passengers. Further constraints could be factored into the constraint negotiation process as some passengers may not have friends or family members available to assist them with booking a train ticket. By contrast, another passenger might experience structural time constraints with having time to research the travel and ticketing options available to them.

In the scenario presented in Figure 1 deciding not to travel by rail is also labelled as a potential constraint negotiation strategy. The decision not to travel may occur in cases where motivation to negotiate constraints is low and constraints are strong. This type of inaction is considered a cognitive negotiation of the constraint as the person accepts their circumstances and decides not to travel. There are also differences between the motivation of individuals within groups of passengers to negotiate constraints. For example, research into the motivation of people with disabilities to negotiate constraints suggest people with extrovert personalities may be more likely to negotiate the constraint in a way that would facilitate their travel (Lyu et al., 2013).

Findings also suggest tensions within industry regarding the support provision for late adopters of technology as the industry moves towards further digitised support mechanisms for passengers. For example, there are challenges with balancing economic industry needs with avoiding passenger exclusion and the detrimental impact that would have on passengers and the rail sector. This is identified in the themes and sub-themes relating to the topic of supporting late adopters. Most participants agreed the rail industry should consider the needs of all passengers and provide suitable support and facilities to make rail accessible. By contrast, several participants also expressed the financial implications of providing staff support for all passengers. It was also highlighted that other sectors do not provide the same level of support as rail for people who do not use technology.

Table 2: Themes and sub-themes in relation to the supporting late adopters of technology topic.

Topic	Theme	Sub-Theme	Description
Supporting Late Adopters of Technology	Removing Support	Other Sectors Don't Support Them	Comparisons to other sectors where support has ceased
		It's Cheaper Not To	Financial benefits of ceasing support for LAs
	Balanced Approach	Accessibility Focus	Commitment to accessibility signifies support for all
		Providing Alternatives	A combination of modern and traditional support
	Excluding Users	Leaving People Behind	Unsupported users will be left behind
		Should Not Happen in Rail	Exclusion of passenger groups should not happen

Conclusion

Accessibility of rail services in Great Britain has received more attention than usual recently due to industry-wide consultation to close ticket offices in England. This research identifies several stages of the passenger journey which passengers could encounter constraints to rail travel. The outcomes of these can vary between passengers however, generally these are perceived as having a negative impact on the passenger. Applying Constraints Negotiation Theory to the thematic analysis of focus

group data reveals the complexity within each of the potential constraints. Although only one example is explored in depth in this paper.

The findings of this research are applicable to both industry, policymakers, and academia. Industry should consider how support for late adopters of technology can be continued and enhanced in increasingly digitised rail travel environments. Policy implications of this research include the identification of constraints to travel being present as a result of fragmentation and lack of consistency between train operators and infrastructures managers across the country. Finally, this research demonstrates the benefits of applying the Constraints Negotiation Theory approach to thematic analysis of focus group data allowing for a better understanding of constraints to rail travel for late adopters of technology.

As the data used in this research were compiled from industry representatives the constraints identified are hypothetical. Further research should include passengers who are identified as being late adopters of technology to confirm the findings of this study. Likewise, engagement with passenger participants may also reveal further constraints to travel which have not been identified through engagement with industry representatives.

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