Understanding passengers’ experiences of train journeys to inform the design of technological innovations

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Warwick Manufacturing Group (WMG) - University of Warwick, Coventry, UK
Unipart Rail, Doncaster, UK
Call
• Enhancing customer experience in rail travel

Funding
• £ 2M
• Innovate UK
• Rail Safety and Standards Board
Project
Customer Loyalty and Dynamic Seat Reservation system

CloseR
Consortium
Collaborative research between academic institutions and industry partners in the UK

UNIPART RAIL
SERVING THE WORLD’S RAILWAYS

GWR

TrainFX

LOYALTY PRIME

Cranfield University

WMG
THE UNIVERSITY OF WARWICK
System

Seat occupancy sensor

Proximity sensor/ticket reader

National Reservation System

Valid ticket
Empty seat
No info
Reserved

Loyalty scheme
## Study

### Participants and data points

<table>
<thead>
<tr>
<th>Method</th>
<th>Participants</th>
<th>Average duration per participant (minutes)</th>
<th>Total data points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-structured interviews</td>
<td>20</td>
<td>27</td>
<td>703 statements tagged</td>
</tr>
<tr>
<td>Questionnaires</td>
<td>50</td>
<td>-</td>
<td>248 statements tagged</td>
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## Materials

<table>
<thead>
<tr>
<th>With CLoSeR</th>
<th>Planning and Buying</th>
<th>Ticket Collection</th>
<th>Wayfinding</th>
<th>Boarding</th>
<th>Seat Location</th>
<th>Ticket Validation</th>
<th>Alighting</th>
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Materials
Analysis

Table of Participants:
- Participant 01: 75 nodes, 210 references
- Participant 02: 54 nodes, 130 references
- Participant 03: 68 nodes, 137 references
- Participant 04: 55 nodes, 113 references
- Participant 05: 61 nodes, 111 references
- Participant 06: 65 nodes, 133 references
- Participant 07: 62 nodes, 129 references
- Participant 08: 52 nodes, 115 references
- Participant 09: 60 nodes, 123 references
- Participant 10: 56 nodes, 124 references
- Participant 11: 22 nodes, 56 references
- Participant 12: 72 nodes, 149 references
- Participant 13: 72 nodes, 149 references
- Participant 14: 52 nodes, 99 references
- Participant 15: 52 nodes, 105 references
- Participant 16: 70 nodes, 138 references
- Participant 17: 66 nodes, 146 references
- Participant 18: 53 nodes, 105 references
- Participant 19: 51 nodes, 93 references
- Participant 20: 42 nodes, 75 references

Time Span:
- 0:00.0 - 0:15.0
- 0:15.0 - 0:30.0
- 0:30.0 - 0:45.0
- 0:45.0 - 1:00.0
- 1:00.0 - 1:15.0
- 1:15.0 - 1:30.0
- 1:30.0 - 1:45.0
- 1:45.0 - 2:00.0
- 2:00.0 - 2:15.0
- 2:15.0 - 2:30.0
- 2:30.0 - 2:45.0
- 2:45.0 - 3:00.0

Content:
- 45-54 Female Leisure - w. family Rugby - Glasgow
- 0:31.0 - 1:04.7 Explaining Journey Experience Map

- Right, there is one thing that I would say. I have a standard journey that I usually try and do, I have a specific train that I go for in the morning, which is a quarter to 7 train that takes me straight through to Glasgow in the morning. I always try and book that train, and then the same coming home. So I only look for directs trains, so there's a limited availability. There's actually less than there used to be because they upgraded Rugby Station, or the West Coast lines. And there's less choice now (laughs) for direct trains. But I look through trainline and erm its ... reasonably ... straightforward. Do you want me just to put a tick?
- 1:04.7 - 2:11.2 Ticket collections I usually erm order my tickets in advance and then go to the machine in the station, and that usually works okay.
- 2:11.2 - 2:24.1 And do you always buy in advance? And do you have specific time-frame, if some days before?
- 2:41.8 - 2:51.5 I'm usually trying to get the cheaper tickets, because the train tickets are (laughs) very expensive. Though, erm, I try and book them a round about 6 weeks before. But you've got any eye because they suddenly release the cheap ticket. So you've got to keep checking when that is, and then just by luck you get it and then you have to make sure you buy it before they've all sold out. You may check your ticket thinking that's the one I'm going to go for, you go back to buy it and its gone. So, erm.
- 3:32.8 - 3:45.5 And then, when you go to the station how do you locate the platform and...
Map

**PASSenger JOURNEY MAP**
Based on 20 interviews and evaluations by passengers, as part of the ClOSeR project.

**SCENARIO**
This map represents the average train journeys taken by our participants. These routes are mainly long distance services in which passengers can reserve a seat, and interact with train managers during the ticket validation process.

**GOALS AND EXPECTATIONS**
Passengers have the following goals when travelling by train:
- Find the cheapest ticket for their journeys
- Have a stress-free wayfinding and boarding
- Find a seat
- Have a stress-free journey up to the final destination

This line shows a graphic representation of the mood of passengers during specific touchpoints with the system. These show on the positive and activated spectrum feelings such as serene, happy, delighted and enthusiastic. The negative and deactivated side include sad, bored, distressed and alarmed.

**Activity**
- Plans and buys tickets
- Arrives at station
- Collects tickets
- Waits for boarding
- Goes through the barriers
- Goes to the platform
- Boards the train
- Finds a seat
- Travels
- Presents the ticket
- Travels
- Alights
- Finds exit
- Goes through barriers
- Leaves station

- Find cheap tickets
- Wayfinding and boarding
- Find a seat
- Stress-free journey
- Opportunities for ClOSeR
P3: Ticket barriers are always annoying.

P13: One annoying thing is the train is at the platform, but you aren’t told until 5 minutes beforehand that you should go, and there’s a swarming.

P17: I used to get the ten past 8, it was absolutely horrendous. Like fully elbowing people to get in. It’s horrendous, and dangerous.

P18: Where I really struggle at a different station is where you should stand at the platform. So if you’ve booked a seat, where should you be standing so you don’t have to run up the platform when the train arrives.

P3: I never bothered trying to find my seat because I’d just get on the nearest coach to me, that's fine, as long as there's space. But I won't go and hunt down where that seat is. I just seat in whatever seat I can find, even if I do have a seat reserved.
P1: By checking tickets it’s giving them a reason to be going up the train and interacting with people. If somebody’s got a problem, they stop and talk to them.

P8: Checking the ticket doesn’t really inconvenience me to be honest. It almost in a way gives some reassurance that if you’re travelling without a ticket you will be caught.

P5: What I don't understand though is why do you have to go through the barriers anyway, if you’ve already had it stamped. It’s like a double check.
Recommendations: What passengers want

- A stress-free navigation through stations up to the seats on a train
- An easier way to locate their reserved seats or an empty seat
- Avoid crowded trains
- A better way of proving the right to travel, but maintain the physical presence of a crew member
Parallel study – Passenger personas

Tina Harris
Age: 37
Occupation: Investment Banker

Tina has been commuting to London for nearly 20 years. She is very familiar with the train system, also travelling on longer journeys with her children to see family.

- Openness to electronic ticketing: 
- Openness to dynamic reserving: 

Tina expects train services to always operate functionally and reliably, she expects as much seeing how much her season pass costs. Importantly, Tina wants to feel that she is being given the best value for money possible. A shrewd investor, Tina is skeptical towards the implementation of new technology. She sees a loyalty scheme and interactive software as pointless sugar coating. She suspects that technology will result in staff redundancies, and she likes having train managers present as a symbol of authority.

A mother of three, when Tina travels with her family it is more stressful. It’s hard to handle both temperamental children and poor train organization. She is thankful that people often give up their reserved seats for her children. She also jokes at the idea that if many used the app, everyone would rush towards the free seating, canceling its possible benefits.

Joseph Hay
Age: 24
Occupation: Student

Joseph is a student who travels frequently for his studies. He values convenience and efficiency in his travel experience.

Harry Takin
Age: 60
Occupation: Retired

Harry is a retired man who enjoys leisurely long journeys. He appreciates the reliability and punctuality of the train service.

Lin Ford
Age: 40
Occupation: Businesswoman

Lin is a businesswoman who travels for work. She values comfort and efficiency.

Personas' experiences with Clusertm
Parallel study – Crew shadowing

Samantha
48, 20 years of experience
- She doesn’t mind manually checking every ticket, she wants to see every passenger and be visible in the process
- She’s concerned that some people may not be able to use new technologies
- She believes that the current processes are in place for a reason, there are limitations within the industry that have to be respected
- She works hard to perform all her roles by the book
- She doesn’t want to see technology reducing her roles and threatening her job

Charles
31, 4 years of experience
- He would like to see a modernisation of the train systems. He feels a bit embarrassed with the very old machines he has to use, and believes that new technology can make his job better
- He likes to chat with passengers as he goes along, giving extra information about connections (with the help of his staff phone) or making witty remarks when the situation permits
- He recognises that it’s difficult to sustain a high level of performance during a 3 hour journey
- He is keen on his commission so he would appreciate saving time checking valid tickets to concentrate on sales
Parallel study – Platform observation
Parallel study – Best-Worst Scaling Survey

Q11. Imagine that you have booked a train journey lasting approximately 2 hours. Please indicate which one of the options below that would be most preferred when travelling and one option that would be least preferred when travelling.

<table>
<thead>
<tr>
<th>Most preferred</th>
<th>Least preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to search for, reserve and/or change your seat before and during your journey</td>
<td>Ability to validate your ticket electronically at your seat, so you don’t need to present your ticket for inspection</td>
</tr>
<tr>
<td>Access to live information showing the occupancy levels of current and future trains</td>
<td></td>
</tr>
<tr>
<td>Directions displayed on your phone to help you find your platform and your seat on the train</td>
<td></td>
</tr>
</tbody>
</table>

![Bar chart showing preference rankings for various services](chart.png)
<table>
<thead>
<tr>
<th></th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OLED</strong></td>
<td></td>
</tr>
<tr>
<td>Positives</td>
<td>Immediately noticeable</td>
</tr>
<tr>
<td></td>
<td>Good contrast</td>
</tr>
<tr>
<td></td>
<td>Readability does not change with different light levels</td>
</tr>
<tr>
<td>Negatives</td>
<td>Poor formatting of text, only four lines of text</td>
</tr>
<tr>
<td></td>
<td>Glare in bright environments</td>
</tr>
<tr>
<td></td>
<td>Hard to read</td>
</tr>
<tr>
<td><strong>E-ink</strong></td>
<td></td>
</tr>
<tr>
<td>Positives</td>
<td>Information is clear, easy to read, text spaced out</td>
</tr>
<tr>
<td></td>
<td>Good in bright environment</td>
</tr>
<tr>
<td></td>
<td>Good contrast</td>
</tr>
<tr>
<td>Negatives</td>
<td>Hard to notice the display, does not stand out</td>
</tr>
<tr>
<td></td>
<td>Difficult to notice the information on the screen</td>
</tr>
</tbody>
</table>
Next steps – Integration and simulation
Thank you

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L.Oliveira@warwick.ac.uk