# border
crossing
train
ticketing

a field study report, June 2016

Expertise Centre for E-ticketing in Public Transport

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Faculty of
Industrial Design Engineering

TUDelft
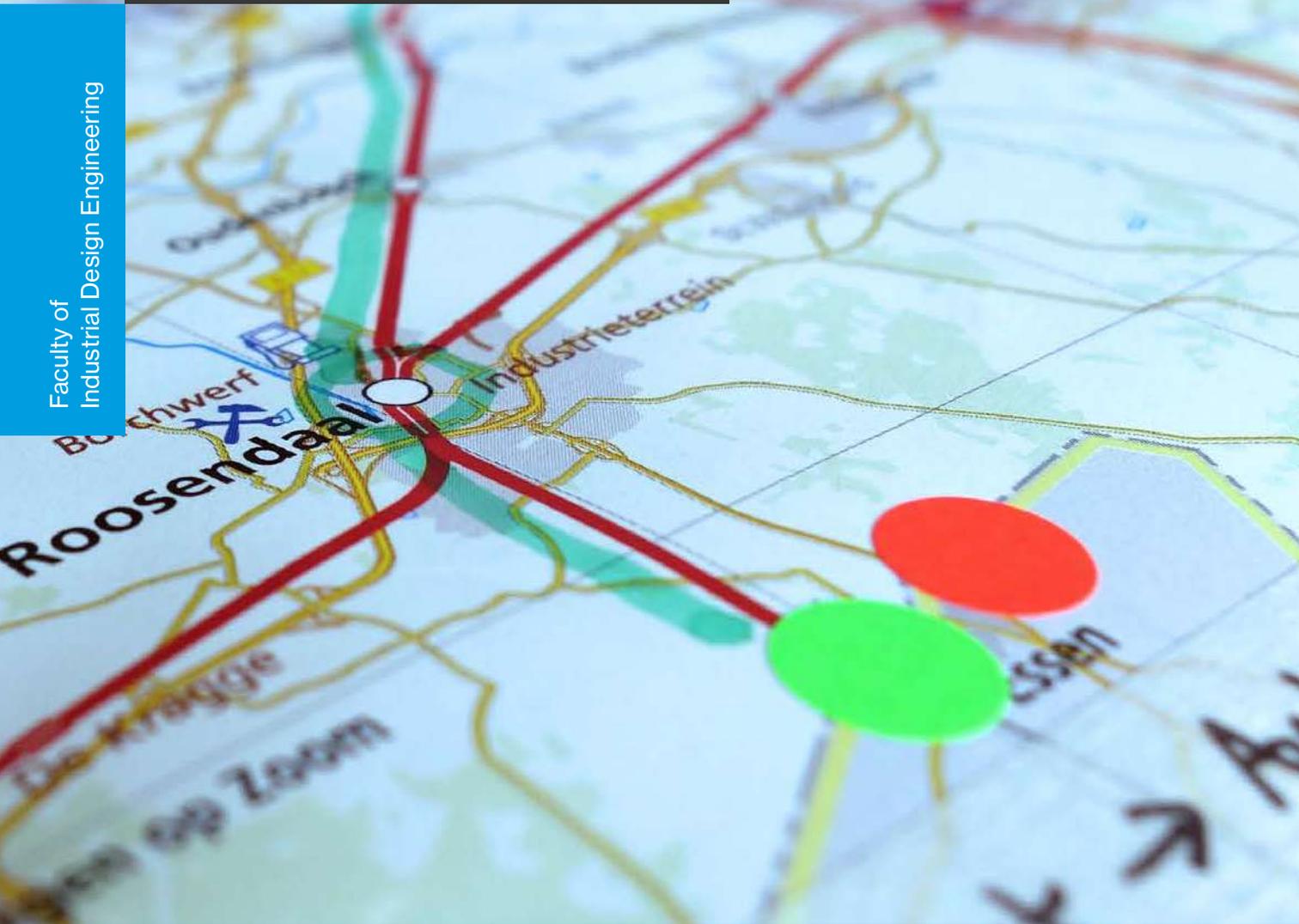
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Delft University of Technology
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Figure 1: International train ticket from the NS TVM.

List of definitions and abbreviations

Check-in & check-out: Travelers validating their electronic payment card when entering (check-in) or exiting (check-out) the public transportation system, either at gates on stations or validation poles at stations or in vehicles.

Payment border: The area that separates the paid and unpaid area in the station. An open payment border has poles, a closed payment border has gates. Travelers will go through the payment border when going from the station's entrance to the platforms or visa versa.

Customer journey map: Detailed visualisation of the steps users take to reach a specific goal. The map puts the user and current behavior at the core and reveals points for improvement in the journey.

Gate: Electronic ticketing gates are situated at the closed payment border. It registers a check-in or check-out. The doors of the gate provide a barrier between the paid and unpaid area. The doors open on check-in or check-out, or when a traveler scans a 'key'.

He/she: Wherever used in this report, the masculine third person is used indiscriminately and it can be replaced by the opposite sex: 'he' can be 'she' as well.

Key: a code to open the gates, usually a (square) barcode, when the traveler has no OV-chipkaart.

KGOV: Kort grensoverschrijdend openbaar vervoer (Dutch), meaning 'short distance border crossing public transportation'. In this report KGOV refers to trains traveling short distances across the Dutch border, usually low speed local trains stopping at multiple smaller stations.

LGOV: Lang grensoverschrijdend openbaar vervoer (Dutch), meaning 'long distance border crossing public transportation'. In this report LGOV refers to trains traveling longer distances across the Dutch border, usually high speed trains only stopping at larger stations (e.g. Thalys, ICE).

NS: Nederlandse Spoorwegen (Dutch), 'Dutch railways' in English.

OV: Openbaar vervoer (Dutch), 'public transportation' in English.

> **I wanted to buy a ticket at the ticket window, but they sent me to the DB machine. I understand that it is impossible to place service staff next to each machine, but I was unable to obtain a ticket.**
> **I had to choose between getting the train or getting a ticket and waiting for an hour.**
>
> **So I don't have a ticket.**

OV-betalen: Multiple forms of payment for public transportation in the Netherlands exist. Together they are labeled 'OV-betalen', meaning 'public transportation payment' in English.

OV-chipkaart: A smartcard the size of a credit card that enables public transportation users in the Netherlands to travel on all modes of public transport. In this report the OV-chipkaart refers to the plastic electronic card itself. All travelers can buy an anonymous OV-chipkaart on which they can load credit to use the Dutch public transportation. Travelers with a Dutch bank account can buy a personal OV-chipkaart on which they can add subscriptions.

OV-chipkaart system: Reference to the collection of computer systems and hardware elements that are required to make traveling with the OV-chipkaart possible.

Overstapzone: one or more OV-chipkaart validators placed at the train platforms specifically for travelers interchanging between modalities, operators or tickets used for the journey.

Tailgating: word used for a traveler exiting through a gate by walking closely behind another traveler and not using their own ticket or key to open the gate.

Temporary OV-chipkaart: A smartcard the size of a credit card in paper that can be bought for one specific journey.

Travelers / users: In this report the terms travelers and users describe international travelers, who use the train (for part of) their journey.

TVM: ticket vending machine.

Validator: Pole at the station where travelers can check-in or out with their OV-chipkaart.

Executive summary

In the context of Expertise Centre E-ticketing for Public Transport this study aims to analyze the journey of long- and short distance international train travelers with a focus on the role of the OV-betalen in the journey.

This study shows that there is no such thing as *the* customer journey of international train travelers. All travelers go through the main customer journey phases: pre-public transportation, pre-travel, travel and post travel. However the steps travelers take within these phases, how they behave, what their needs, wishes and expectations are during the journey and what issues they encounter depend greatly on:
- The **type of traveler** defined by travel frequency, origin, travel motivation and personal characteristics of the traveler;
- The **route** referring to the distance covered during the journey, and
- **Train stations** encountered, influencing for example the presence of service personnel and open- or closed payment borders.

The larger part of the international train travelers are quite satisfied with their international journey, especially those traveling with high speed long distance trains. There are however issues in international train journeys that can make travelers confused, insecure, irritated or angry. Issues that occurred most and/or had the largest influence on the experience of the journey are caused by:
- Limited understanding of **ticket options** due to the wide assortiment of options, ways to buy the tickets, unclear terminology and lack of transparency of pricing that can make travelers confused and insecure,
- **Closed payment borders**, which can form a physical barrier for entering and specifically leaving the station,
- **Service personnel** that is not able to help travelers due to lack of tools or knowledge and,
- **Delays and cancellations**, specifically delays occurring in a journey that contains a trip with reserved seating.

"I live in the Netherlands, but I never use the OV-chipkaart. I suspect it is very complicated.

I just go by car.

It is important to emphasize that international train travel, especially KGOV, is not not a separate, self-contained system but part of national transportation systems. Regularly international train journeys consists of a chain of linked trips that can be national, KGOV and/or LGOV. This implies that:

- Issues international travelers encounter do not necessarily arise at border train stations or larger station where high speed trains arrive. They can arise throughout the country.
- Changing one aspect of the system can solve an issue for one group but can create new issues for other groups of travelers.

This means that international travelers should be seen as one of the user groups (personas) using the Dutch public transportation system including OV-betalen, not as a separate group.

When looking at the issues that can arise for international travelers in the context of the Dutch OV-system the easiest and largest improvement in the experience of the journey can be realised by **improving communication**: information provision and guidance during the pre public transportation, pre travel, travel and post travel phase. This will increase transparency of the system and with that the understanding and confidence of the traveler in all phases of the customer journey.

Our recommendations to improve the journey include:

- Pro-active information provision regarding:
    - delays and their effect on the traveller's tickets and reservations,
    - how to use the barcode at closed gates,
- Clearer indication of which gates are equipped with a barcode reader,
- Increased visibility and approachability of the information / SOS poles,
- Providing international subscriptions for frequent travelers,
- Providing suitable payment options for tickets for international travelers at all points of sales,
- Improved communication between operators, especially those operating at the same station, to be able to beter assist travelers with questions regarding their journey, tickets and reservations,
- Service personnel representing all operator at a specific station, and
- Availability of international service desk options at all stations to facilitate information provision and rebooking options.

1

Introduction

In the Expertise Centre E-ticketing for Public Transport (X-CEPT) graduation students and researchers of the faculty of Industrial Design Engineering of Delft University of Technology envision design solutions that increase the usability of electronic ticketing for public transport in the Netherlands. Projects initiated by X-CEPT focus on the benefits for the traveler but also take the position of different stakeholders and the existing infrastructure into account.

In the context of X-CEPT this sub-project aims to analyze long- and short distance international train travel. The focus of this analysis is on the role of OV-betalen, use patterns and issues that travelers encounter before, during and after their international train journey. The analysis leads to insight in the current situation and points for improvement.

This project is closely related and complementary to a study into OV-betalen for international travelers arriving at an airport in the Netherlands, conducted by Larissa Lehr.

1.1 Research goal & questions

The overall research goal is to analyze the journey of long- and short distance international train travelers with a focus on the role of the OV-betalen in the journey.

To reach this goal the following research questions need to be answered:

- What steps do international train travelers take during their journey both long distance (ICE, Thalys) and short distance (NS, Arriva, NMBS)?

During the international train journey:

- What factors influence how international train travelers behave regarding (electronic) ticketing?
- What are the needs, wishes and expectations of international train travelers regarding (electronic) ticketing in general and the OV-chipkaart specifically?

"I have reservations for the Thalys, but now there is no Fyra service from Breda to Rotterdam. So my trip failed already.

Quote from Dutch international traveler

- What is the role of the OV-chipkaart system (e.g. tickets, cards, ticket machines, gates, check-in and check–out points, etc.) during the international journey and when the journey continues in the Netherlands?

1.2 Method

To answer the research questions we used a combination of qualitative research methods to get a complete picture of the journey of international train travelers. Qualitative research is specifically suitable to dig deep into travelers experiences, behavior, needs, wishes and motivation.

The following combination of methods was used:
- Stakeholder interviews
- Interviews with NS service personnel at different types of stations
- First person experiences
- Observations at stations and trains
- Interviews with international travelers
- Analysis of complaints regarding international train travel filled to the OV-loket

A more detailed description of the method can be found in the appendix.

All data was collected between 11th of April and 31th of May 2016. If relevant and possible notes, video recordings, audio recording and / or photos were made during the data collection.

1.3 Reading guide

This report describes insights and conclusions regarding the journey of international train travelers. The customer journey is described in detail per phase in chapter 3. Chapter 2 provides context for the journey. Conclusions and discusion can be found in chapter 4, followed by recommendations and opportunities in chapter 5.

Context of the journey

There is no such thing as the customer journey of international train travelers. All travelers go to the main customer journey phases: pre public transportation, pre-travel, travel and post-travel (see paragraph 2.3). However the steps travelers take within these phases, how they behave and what issues they encounter during their journey depend greatly on the traveler involved (see paragraph 2.1 types of travelers) and the context in which he makes his journey (see paragraph 2.2 trajectory and stations).

2.1 Types of travelers

International train travelers are a diverse group of people. The main dimensions that influence how travelers behave and experience their journey are the following:

- **Travel frequency**: frequent versus incidental
- **Origin**: Dutch versus non-Dutch, also influenced by whether or not one lives in the Netherlands
- **Travel motivation**: business or educations versus pleasure
- **Personal characteristics**: semi-fixed characteristics, like age and digital skills and changing characteristics, like mood or whether one is in a hurry.

The dimensions and their influence on needs, wishes, expectations and behavior of travelers during their journey is explained in the next paragraphs.

2.1.1 Travel frequency

Travel frequency influences the level of experience one has with traveling by public transportation in general and the train specifically. It is composed of:

- **General** travel frequency both in the Netherlands or abroad, with the train or other modalities.
- **International** travel frequency regards the experience one has with crossing borders by train into another country.

"I bought an OV-chipkaart. At first it was quite hard to understand how it worked, but I had experience with the Oyster Card in London.

So I figured it out.

Quote from German student in Enschede

Figure 2: Explanation on the back of an international train ticket from the NS TVM: "When travelling with NS you have to check in and out with an NS-reader at a gate or pole. When you're travelling with a different carrier, you have to check in and out as well. You check in and out by each carrier. For questions about using the card, please contact our staff at the station or on the train. Or look for more information on ns.nl/ovchipkaart".

The travel frequency influences for example whether travelers are familiar with systems and ticket types, how confident one is while traveling and whether they feel the need for a subscription. The table below summarizes the main differences*:

Needs, wishes and expectations

Frequent travelers look for:
- Efficiency
- Comfort
- Convenience

This reflects in their desire for subscriptions, good connections, comfortable stopping locations, wifi and power points in the train.

Infrequent travelers generally look for:
- Information
- Confirmation

This is reflected in their wish for signage, information about their journey, service personnel to talk too and (personal) help in case they need it.

Behavior

Frequent travelers behave habitual, confident and efficient.
They know their way around. They have developed their own mental model of how to travel and tend to stick to this model.
Frequent travelers tend to skip steps in the customer journey.

Infrequent travelers behave less certain. They tend to seek information about their international journey (well) in advance. They also tend to shop more for the best ticket option.

* Please note that travel frequency is not polar, it is an axis on which travelers can have indefinite levels of travel experience.

" German travelers want transparency and certainty upfront about what a journey will cost them.

An OV-chipkaart doesn't fit with that need.

Quote from German stakeholder

2.1.2 Origin

Origin regards to whether a traveler is Dutch or non-Dutch. It primarily influences the familiarity with Dutch public transportation, the OV-chipkaart and OV-chipkaart facilities and the ease with which one can find and understand travel information. Please note that behavior is also influenced by whether or not one lives in the Netherlands: Dutch who live abroad tend to behave more like non-Dutch and non-Dutch living in the Netherlands tend to be have more like Dutch. The table below summarizes the main differences*:

Needs, wishes and expectations

Dutch travelers look for:
- Convenience
- Clarity of ticket options

Dutch travelers primarily need information about ticket options and to what extent their OV-chipkaart, possibly with discounts and subscriptions, works with international tickets.

For **non-Dutch travelers** the focus is on:
- Information
- Convenience

Non-Dutch travelers need information about the Dutch public transport system in general in a language they can understand.
They tend to prefer a person to direct their questions too, specifically if they are very uncertain. Talking to a person is perceived as easier and provides more certainty about the information obtained.
Origin also influences the expectations travelers have of the Dutch system.

Behavior

Dutch travelers behave (more) confident while traveling in the Netherlands. They also tend to have an OV-chipkaart and prefer to use it for (part of) their journey. It is also easier for Dutch people to find and understand travel information.

Non-Dutch travelers tend to be less confident.
Most of them do not use the OV-chipkaart, because:
- They don't know the OV-chipkaart exists.

" I don't know what kind of ticket I have (shows ticket). This has been handed to me by our travel office at work.

- They think the OV-chipkaart is only for frequent, native travelers.
- The OV-chipkaart is considered to be too much of a hassle to use.
- Information about the OV-chipkaart was hard to find.

The disposable OV-chipkaarten (see figure 1) are sometimes used by foreign travelers, when they buy a ticket at a Dutch TVM or at a Dutch service desk.

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* Please note that origin is a semi-polar dimension: one is either Dutch or not. However, having been to the Netherlands before or staying there for a longer period of time moves non-Dutch travelers closer to the Dutch travelers end of the axis regarding their needs, expectations and behavior.

2.1.3 Travel motivation

Travel motivation refers to the occasion for which the traveler makes the journey. The main motivations that we encountered are business, education (students) and pleasure (tourists). Travel motivation primarily influences the time one has available for traveling, the need for comfort and price one is willing to pay for a ticket. The table below summarizes the main differences:

Needs, wishes and expectations

Business travelers are focust on:
- Convenience
- Efficiency

This for example reflects in their wish for good connections and wifi and power points in the train.

Educational travelers look for:
- Efficiency
- Lowest price

Students generally consider a low price the most important factor for their ticket. In addition they tend to have the same wishes for good connections as business travelers.

Pleasure travelers seek:
- Convenience
- Lowest price

> **"We are a family with two small kids. It turned out that the reserved seats in the ICE were in a four-seater as we requested, but two seats were on the other side of the aisle.
> And we were located in a silence coupe.**

Quote from international travelers

Pleasure travelers also expect convenience and comfort during their journey but they are less explicit about this than business travelers. The price of the ticket is important.

Business travelers generally prefer convenience and efficiency over a low price.
We encountered frequent business travelers (e.g. commuters) mostly in KGOV and incidental business travelers mostly in LGOV.
Some business travelers don't book their journey themselves.

Students aim to have the cheapest ticket option available. They value an efficient trip and are willing to take the bus (considered less comfortable) instead of the train if this is quicker.
Among students we can distinguish:
• commuting students: mainly German students who study just across the border in Enschede or Maastricht.
• Dutch students making pleasure trips abroad.
The first group looks for cheap subscriptions. The second group is mainly interested in how the international ticket works with their Student OV-card.

Pleasure travelers tend to have more time available for their journey than business travelers or students. They generally:
• have more time to prepare their journey.
• start searching for tickets earlier and (like students) shop around
• arrive at the station well in advance.
A specific subcategory of 'budget pleasure travelers' can be distinguished. They tend to travel semi-frequent and shop around for THE cheapest option (e.g. a 'Hemacard'). The budget travelers tend to be well informed and very satisfied with their ticket and journey in general.

2.1.4 Personal characteristics
Finally, the journey is also influenced by a wide range of personal characteristics and preferences that will not be explained in detail. For example

" I got this ticket from the municipality. You can not find it online, but if you write a letter, you can get this 'Parkstad ticket'.

Quote from student from Limburg studying in Aachen

- **Age** influences among things whether travelers would like to talk to a person to buy a ticket or the time one needs to interchange between trains.
- **Digital skills** influence whether a traveler wants or tries to use the TVM or internet to book a ticket.
- Whether one is in a **hurry** influence the patience one has to try to figure out how it works by himself or the ability to understand the TVM.

2.1.5 Influence of travel type on issues

Of the dimensions described in this paragraph travel frequency and origin are the main influencers of the likeliness that travelers encounter issues during their journey. Infrequent and non-Dutch international travelers are most likely to encounter issues, as illustrated by the diagram below, because they are least familiar with Dutch OV.
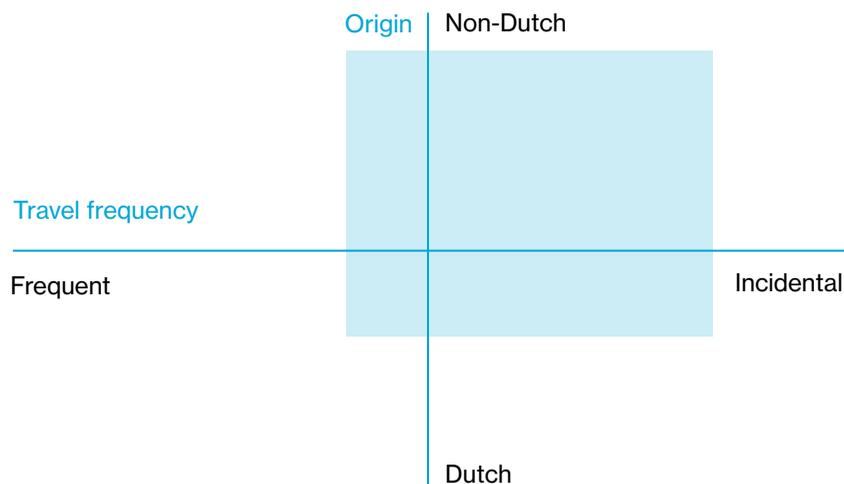
2.2 Route and stations

Next to the traveler himself there are other factors in the travel context that influence the customer journey and the customer experience. It seems that the main factors influencing how travelers behave and experience their journey are the following:

- Distance covered
- Type of train station one encounters.

Both are explained in the next paragraphs.

2.2.1 Distance covered

The distance an international train traveler covers influences the:

- Needs, wishes and expectations that one has regarding the journey
- Behavior during the pre-travel phase
- Facilities one has at his disposal during the travel
- Travel experience

The table below summarizes the main differences*:

Needs, wishes and expectations

In general, travelers project their mental model of local public transportation on **KGOV (short distance)**. The implication is that travelers expect the same facilities, use patterns and information provision. KGOV has more frequent travelers (e.g. commuters, students) which also influences expectations and behavior (see previous paragraph).

On **LGOV (long distance)** travelers tend to

- Compare LGOV more to a flight than to national public transport.
- Expect service, WiFi and power points to make their journey as comfortable as possible.

Behavior

For **KGOV** orientation before the journey tends to be limited. Tickets are generally bought right before the journey.

LGOV travelers generally prepare themselves before the journey. Ticket options are compared and bought in advance and the actual journey including interchanging is planned.

"We were helped very adequately at the ticket window on each station. Without that help, we would have sat down in a corner and cry.

Quote from American couple in NMBS traveling from Lille to Den Bosch

Figure 3: Start screen of the DB TVM. Note that on this DB TVM, only the bottom-right button 'Verkehrsverbund' will lead to an actual travel ticket.

- **KGOV** tends to leave from smaller stations with less facilities and service (see next paragraph).
- Travelers are also more likely to encounter old trains in KGOV.

- **LGOV** tends to leave from bigger stations with more facilities and service (see next paragraph).
- Usually high speed and recent trains are used in LGOV. These trains offer more comfort to the traveler.

Travel experience

Travelers in **KGOV** tend to complain more about inconveniences in their journey, possibly because of higher expectation and use frequency.

Travelers in **LGOV** tend to be satisfied with their journey IF there are no delays. They particularly value the speed of the train and the convenient departure and arrival location in the city center.
The journey is generally considered more convenient, probably because of better preparation and different expectations.

* Please note that there is no hard distinction between KGOV and LGOV. The journey international travelers make is a chain of several steps. Many travelers we encountered made a longer journey of which both KGOV and LGOV were part. Travelers can for example take the local NMBS train to Antwerp to catch the Thalys or take the IC to Brussel to catch the Eurostar train to London.

2.2.2 Type of station

The departure, interchange and arrival stations travelers encounters during the journey determines the facilities the international travelers has at his disposal. The presence or absence of the following facilities greatly influences the possibilities for the traveler and with that their experience of the journey:

" Working with interfaces is part of my job. But when I tried to purchase a ticket from the DB machine, I ended up with a time-table.

Quote from Meike Mak

Figure 4: Timetable information from the DB TVM.

- **Presence and availability of service personnel**: International travelers, especially non-Dutch travelers, often request information and/or help from service personnel. Service personnel is expected to be able to answer all sorts of questions. For travelers it is not relevant from what operator the service personnel is. Questions will also be directed at shop personnel, security, cleaning staff or other travelers if no one else is available.
- Open or closed payment borders to enter or exit a train station: the presence of closed payment borders especially when leaving the paid area can cause a range of difficulties for international travelers to leave their arrival station (see chapter 3).
- International service point: the presence of a ticket and service point where changes can be made to bookings of an international journey can greatly influence the smoothness and travel experience, especially when travelers need to alter their journey due to delays (see chapter 3).
- **International TVMs**: the presence of DB TVMs or NMBS TVMs offers travelers the possibility to buy cheaper international tickets but can also cause usability problems if the traveler has no experience operating the machine (see chapter three).

2.3 Journey phases and steps

Within the customer journey of international train travelers four general **phases** can be distinguished that all travelers go through:

1. Pre public transport
2. Pre travel
3. Travel
4. Post travel
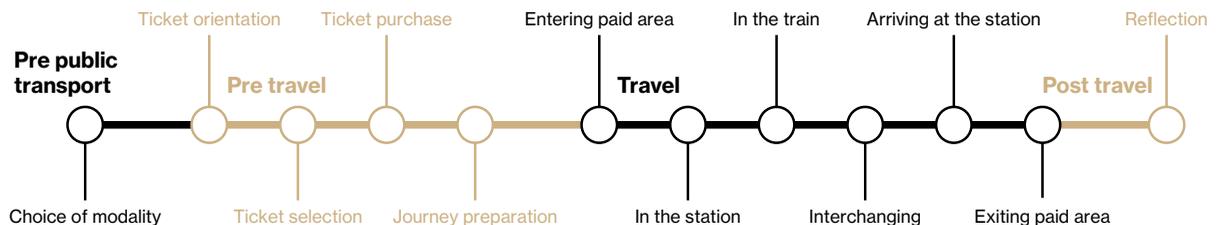
Figure 5: Phases and steps in the customer journey.

**"I travel to Brussels with twelve colleagues. I tried to book online last week but that didn't work so two days ago I went to the international service desk in The Hague to buy the tickets.
I don't want to run into any issues buying the tickets just before leaving with twelve people waiting for me.**

These phases always happen chronologically. Within each phase we distinguish different steps that an international traveler **can** take. However not every traveler takes all the steps and not all steps happen in a chronological manner.

The phases and steps are largely similar to the phases and steps found and described by Larissa Lehr in the report titled "OV-betalen for international travelers arriving at an airport in the Netherlands". Detailed findings per step are specific for the topic of this study.

The following paragraphs will shortly describe all the possible steps per phase.

2.3.1 Phase 1: Pre public transport
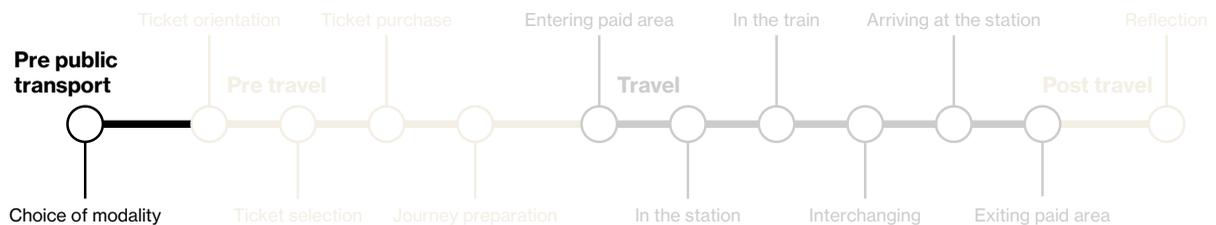
This phase contains one step all international travelers take before their international train journey starts:

- **Choice for transportation modality:** Orientation regarding the journey and possible transportation modalities with the goal of making a choice for the transportation modality (or modalities) e.g. bus, train, plane or car.

2.3.2 Phase 2: Pre travel
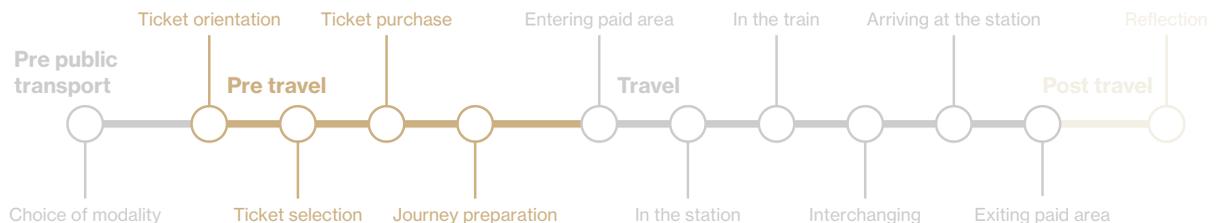
This phase includes all steps travelers can take after they have chosen to conduct (part of) their international journey by train and before they actually enter the paid area at the departure station:

- **Ticket orientation**: Information gathering about available tickets for the journey.

- **Ticket selection**.
- **Ticket purchase**: Payment for the selected ticket.
- **Journey preparation**: Preparation for the journey.

2.3.3. Phase 3: Travel
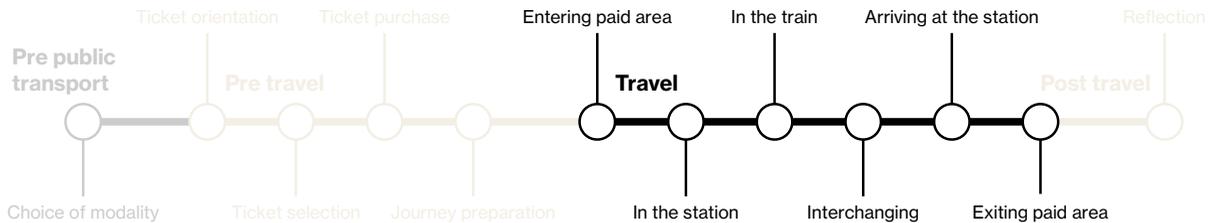
This phase includes the steps travelers can take when actually making their journey.

- **Entering paid area**: Crossing a closed- or open payment border.
- **In the station**: Wayfinding towards the transportation vehicle and platforms.
- **In the train**: The actual time a traveler spends on the train
- **Interchanging**: Switching between lines or sometimes modalities within one journey
- **Arriving at destination**: The moment the traveler reaches the final destination of the journey.
- **Exiting paid area**: Crossing a closed- or open payment border.

2.3.4 Phase 4: Post travel
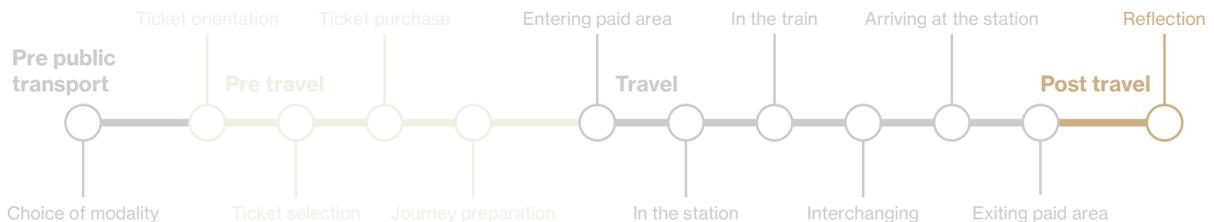
This phase includes all steps travelers can take after having arrived at their final destination:

- **Reflection**: The traveler reflects on the journey that has been made.
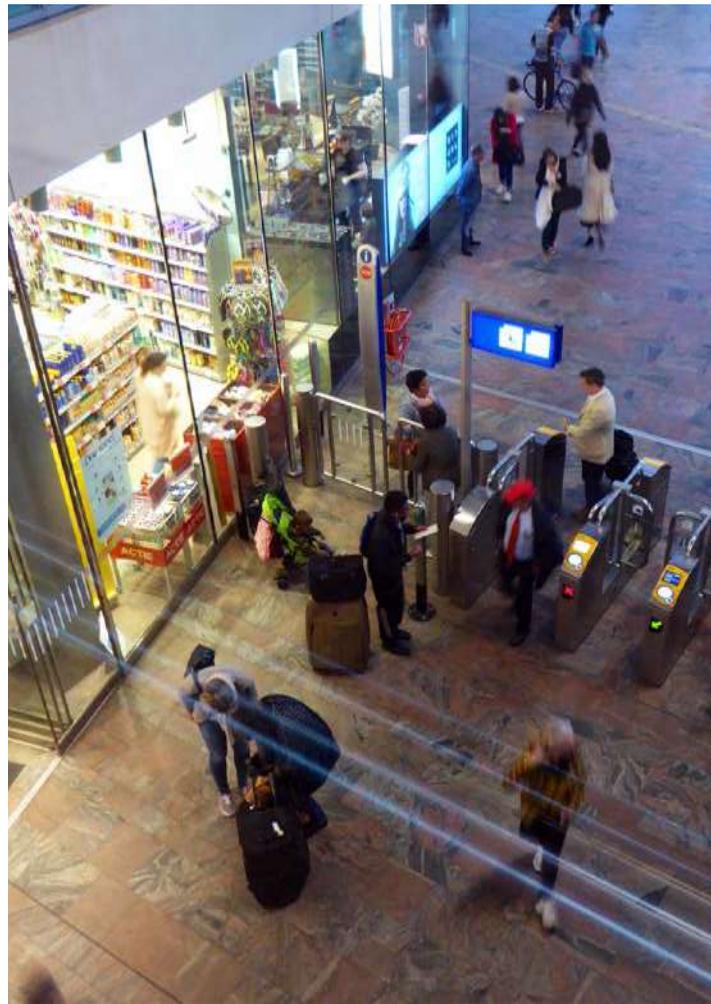
2.4 Touch points

During the international train journey travelers encounter a selection of the following touch points:

2.4.1. Machines
- TVMs from different operators e.g. NS, DB, NMBS.
- Machines to top up your OV-chipkaart.
- Payment borders
  - Open payment borders: validators
  - Closed payment borders: gates
- Information & SOS poles

2.4.2 Online
- Operator websites e.g. NS international, DB, NMBS, etc.
- Other websites: e.g. blogs, travel websites, etc.

2.4.3 Personnel
- Service personnel
  - At NS ticket & service point
  - Walking around the station
- Drivers and / or conductors on the train
- Phone service desks
- Webcare

2.4.4 Information and signage
- Static, among which:
  - Signage
  - Posters / print-outs
  - Timetables
  - Maps, brochures
  - Stickers
- Dynamic, among which:
  - Travel information screens on the platform
  - Verbal announcements and notifications

3

The customer journey

Below the customer journey of international train travelers is described per phase and step. At the end of this chapter on page 68 the customer journey with all issues is visualized. The map also indicates the severity of each issue based on the frequency with which the problem occurs, the impact of the problem if it occurs (will it be easy or difficult for users to overcome) and the persistence of the problem (is it a one-time problem that users can overcome once they know about it or will users repeatedly be bothered by the problem).

3.1 Phase 1: Pre public transport
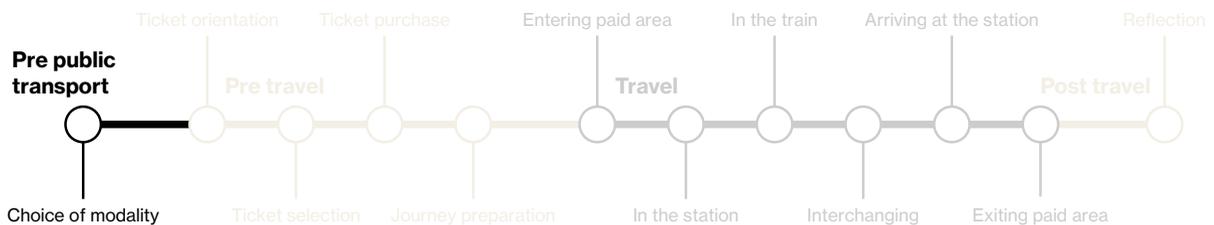
3.1.1 Choice of transportation modality
Use patterns

During this step international travelers search for information regarding the options to make the planned journey. Different transportation modalities are compared with the goal to make a decision regarding the modality (or modalities). The choice for a modality can be influenced by convenience, price and previous experiences.

When making a choice for transportation modality especially LGOV has some aspects that are valued very positively by travelers in comparison to other modalities:

- Efficient traveling: no traffic jams (when compared to the car) and no need to be at the point of departure hours before leaving (when compared to an airplane).

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Welkom op station Enschede

- Convenient departure and arrival locations in the city center.
- High speed.
- Comfortable chairs.
- Low prices, especially when booked in advance.

Issues

Issues a traveler can encounter during this step that can negatively influence the choice for the train for (part of) their journey are the following:

Language hurdles

Some information regarding international train travel is only available in Dutch or English, see for example figure 13 on page 84. This can be a barrier for travelers that don't speak Dutch or English.

Suboptimal information provision

Some travelers indicate that the NS international website does not always offer the best, meaning most efficient or cheapest, travel option. It for example pushes the route to Germany over Arnhem instead of the one over Venlo. This might negatively influence the choice for the train or the location one buys a ticket (e.g. at the DB website instead of NS international).

In addition, some non-Dutch travelers indicate that it is hard to find information online about the OV-chipkaart.

Bad image OV-chipkaart

Some non-Dutch travelers encountered in the KGOV who live relatively close to the Dutch border and are familiar with the OV-chipkaart clearly indicate that the OV-chipkaart poses a barrier for them to use the public transportation in the Netherlands any further than they can travel with the Keolis train. As a result they prefer to take the car for longer journeys into the Netherlands.

In the LGOV the OV-chipkaart doesn't seem to play a role. Non-Dutch travelers in the LGOV buy tickets online or at the TVMs for their journey and don't seem to bother about the OV-chipkaart.

" For each trip I compare the prices on the DB website and the NS international website.

I buy my ticket where it is cheapest.

Figure 6: International train ticket from the DB TVM.

3.2 Phase 2: Pre-travel

Ticket orientation   Ticket purchase   Entering paid area   In the train   Arriving at the station   Reflection

Pre public transport   **Pre travel**   **Travel**   **Post travel**

Choice of modality   Ticket selection   Journey preparation   In the station   Interchanging   Exiting paid area
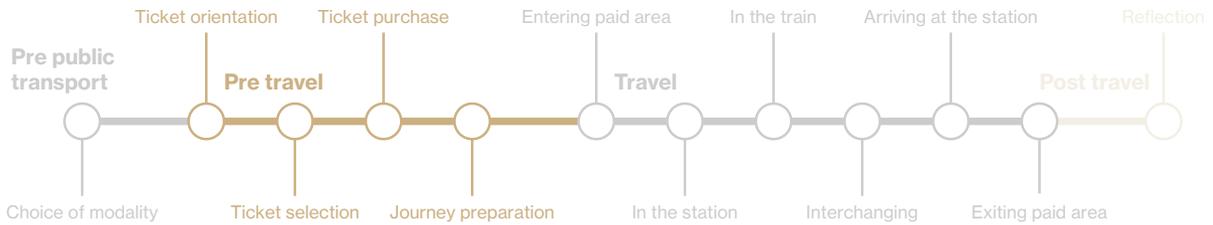
3.2.1 Ticket orientation

Use patterns

During this step travelers search for information regarding ticket options to make the planned journey. This can be done in different ways:

- Especially for longer journeys or when traveling in a group travelers tend to orientate themselves (at least a little while) before actually making the journey. Ticket information is often gathered online (e.g. NS international, NMBS, DB), via the phone helpdesk, via TVM's or at a service desk at the train station.
- Especially for shorter journeys travelers tend to reserve limited time to orientate themselves regarding ticket options. Tickets are often bought a few minutes before the train leaves at a TVM or service desk.
- Frequent travelers tend to skip this step and stick to their habits.

The goal of this step is to have enough information to continue to ticket selection.

Issues

Issues travelers can encounter during this step are caused by:

Wide variety of tickets

Especially in KGOV there is a wide assortment of tickets available for international train travel. This is partly due to local governments introducing specific regional tickets, e.g. Euregio ticket. As a result:

- Some travelers don't know certain ticket forms exist.
- Travelers can be uncertain about whether they have chosen the right, often meaning cheapest, ticket option for their journey.

Unclear ticket naming

International travelers can have difficulties understanding the names for the different ticket options at TVMs, which doesn't help understanding the

" I travel to Antwerp and use my student OV. At Roosendaal I will buy a return ticket Roosendaal - Antwerp from the machine. On my way back I don't know how it works. Officially, I need to check-in with my student OV, but that is not possible in the train.

Quote from student traveling to Antwerp

available options. This specifically goes for travelers buying foreign tickets: Dutch travelers buying tickets from the DB- or NMBS TVMs or non-Dutch travelers buying tickets from the NS TVM.

Inconsistent location of TVMs

TVMs are not at consistent locations per station. Furthermore at border stations where there are also DB- or NMBS TVMs the TVMs tend not to be clustered in one location. As a result sometimes travelers cannot find the right TVM.

Differences in ticket validity

There are differences in the validity of international tickets, for example:

- A Thalys ticket is valid from the departure station to the arrival station. An ICE tickets is valid from every station in NL to the arrival station in Germany. As a result some travelers pay too much for their journey as they buy a separate ticket or use their OV-chipkaart for the upfront or homeward journey next to their ICE ticket.
- DB tickets bought online are valid for a specific train. DB tickets bought at a TVM are valid on a specific day. Travelers have to be aware of these differences to have the possibilities to buy the for them most suitable ticket.

Actual border confusion

Some travelers don't know or are confused about the actual border and the last train station before the border, especially in combination with discount or free travel passes. As a result some travelers unintentionally travel 'illegally' between the last station before the border and the first station after the border and might get a fine for that.

3.2.2 Ticket selection

Use patterns

During this step travelers wage out the differences between tickets. As with the modality the ticket can be selected based on convenience, price and previous experiences. Which ticket is selected also depends on the availability of the ticket type at the preferred point of sales and the available payment options (creditcard, iDeal, cash etc.).

Issues

Issues travelers can encounter during this step are caused by:

> **We receive so many questions about the DB ticket vending machine that we have put up a paper on the machine explaining the flow to help travelers. We are not allowed to go with them to the machine to explain.**

Quote from NS service personnel.
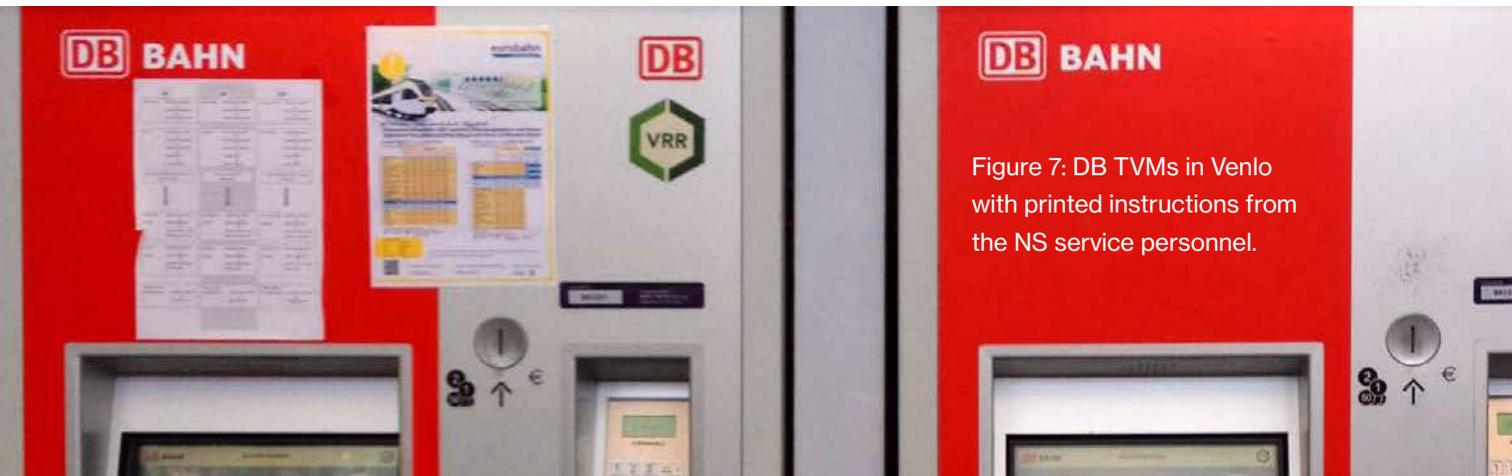
Figure 7: DB TVMs in Venlo with printed instructions from the NS service personnel.

Price differences between tickets

Prices between international train tickets differ. There can be a price difference between:

- The same tickets bought in a different way. For example tickets bought at service desks and phone cost €3,50 more compared to the same ticket bought online or via the TVM.
- The same tickets bought at a different point in time. Thalys and ICE both have discounts on tickets bought well in advance.
    - Some travelers would like to match their journey to a price instead of to a date (e.g. "when can I travel for €19 to Frankfurt?"). This is possible online for Thalys tickets but not for ICE tickets.
- Different types of tickets for the same journey e.g.:
    - between tickets bought in the Dutch TVM compared to the same ticket bought in the NMBS- or DB TVM.
    - tickets bought in on the NS international website or NMBS- or DB website.

The price differences between tickets can be both an advantage and a disadvantage for travelers.

- Frequent travelers who know that prices differ see this as an advantage and shop for the best deal.
- Travelers who don't know the prices differ can get insecure because they don't know how to get the best deal or are disappointed when they find out afterwards they didn't have the best ticket option (see phase 4, reflection).

For KGOV often the cheapest ticket option is a combination of different tickets, especially for frequent travelers this is seen as a disadvantage.

Combining tickets and subscriptions

Dutch, infrequent international travelers who have subscriptions and or discounts for national travel have difficulties understanding how to combine their discount with an international ticket. For example:

- Some users don't know they can indicate they have a discount card when buying tickets online or at a TVM.
- On the NS international website a user can indicate one has a Dutch discount card. However, the discount is not relevant for every ticket option (for example for ICE on the 'flex tariff' the discount is valid, on the 'saving tariff' the discount cannot be used). But no feedback is given to the user what is done with the discount.
- The usage of 'keuzedagen' cannot be selected online. When elderly return from abroad they might have to leave the paid area to go to a TVM to load the 'keuzedag' on their OV chipcard.

45

> **Having the DB line doesn't benefit us.**
>
> **We receive a lot of questions from travelers regarding the line, but we don't have any information for them. This causes frustration for us and the travelers.**

Quote NS Service personnel.

As a result travelers might choose an inconvenient ticket combination for their journey.

(In)availability of ticket types at touch points

Not all ticket types are available at every point of sales:

- International tickets for complex journeys or to small stations abroad are not available online, in TVMs and at train stations without an international service point.
- Subscriptions for KGOV on German trains (Keolis, DB) can only be bought at the bigger German train stations, not at Enschede or Venlo.

As a result travelers might not be aware of ticket options or need to go to another point of sales to be able to buy a specific type of ticket.

Lack of subscriptions on international routes

There are no subscriptions for frequent travelers on international routes. This is also the case for routes that are serviced by one train (e.g. Rotterdam - Antwerp). As a result travelers need a combination of tickets or subscriptions for their journey.

The exception are German trains that cross the border towards Enschede or Venlo; a subscription can be bought at DB service points or TVMs from Germany towards Enschede or Venlo, but not further into the Netherlands.

Difficulties in using foreign TVMs

Especially the DB TVM tends to be hard to understand and very limited help is available for travelers at Dutch train stations for these machines. Issues with the DB TVM have to do with:

- The large amount of starting points to buy a ticket on the starting screen, see figure 3 on page 26.
- The large amount of ticket forms of which some are unfamiliar to the Dutch traveler.
- A different and much longer flow to select a ticket when compared to the Dutch TVM.

The NMBS TVM is clearer than the DB TVM.

Non-Dutch travelers also have issues using the NS TVMs which is described by Larissa Lehr in the report "OV-betalen for international travelers arriving at an airport in the Netherlands".

"Where do I have to check-in for the ICE?

Quote from traveler in Arnhem
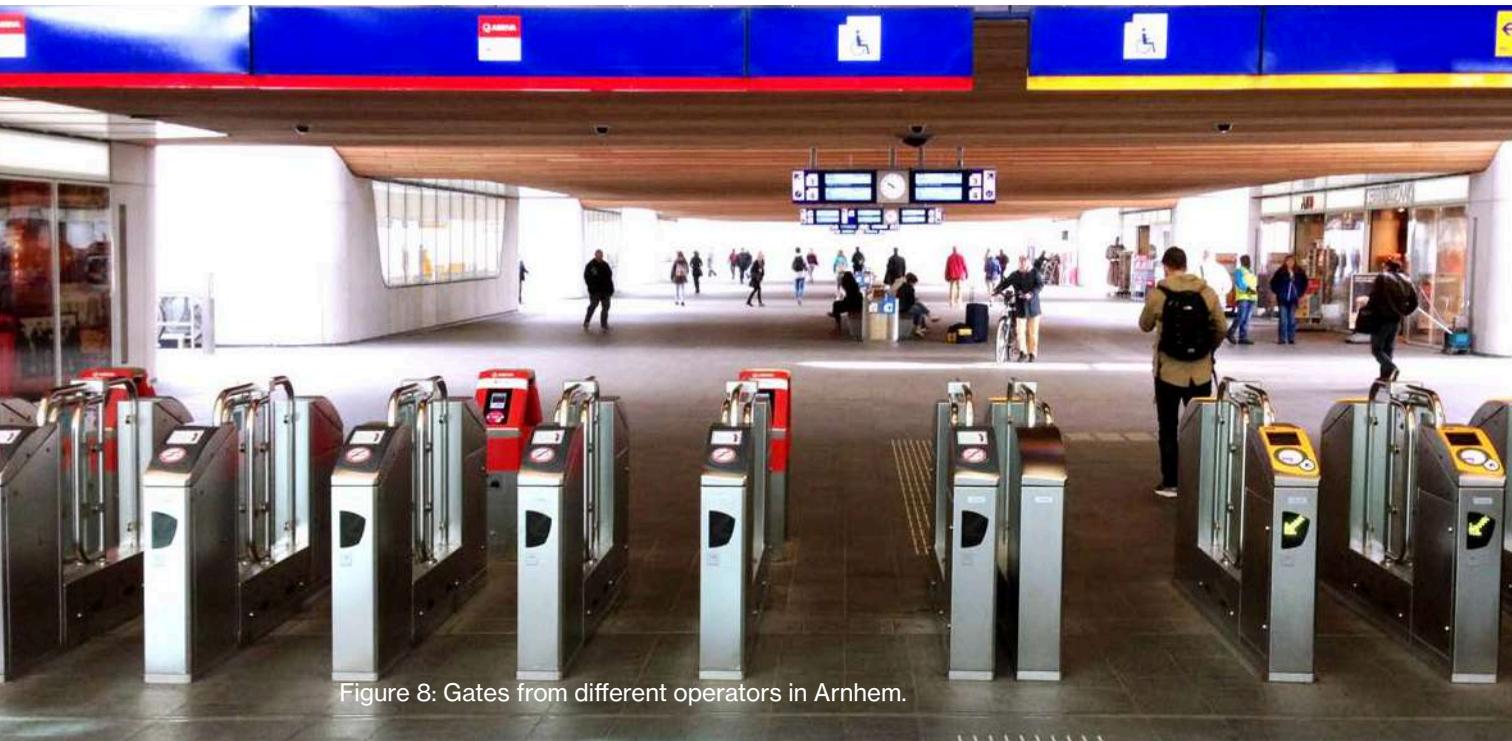
Figure 8: Gates from different operators in Arnhem.

3.2.3 Ticket purchase

Use patterns

During this step travelers pay for the ticket they selected. Preferences for type of payment are generally formed based on

- habits,
- available options at the points of sales,
- personal options the traveler has available, travelers for example cannot have the possibility to pay by creditcard or iDeal, and
- previous experiences.

Issues

Issues travelers can encounter during this step are caused by:

Available payment options not suitable for foreigners

- Some online ticket-purchases can only be paid for with iDeal (e.g. top-up for OV chipcard and Spoordeelwinkel.nl). To be able to use ideal one needs a Dutch bank account.
- It has been observed that foreigners like to pay with cash but the Dutch TVM only offers the option to use coins.
- To buy a personal OV-chipkaart a Dutch bank account is necessary.
- Dutch discount options ('kortingskaarten') can only be bought if one has a Dutch bank account because one needs a personal OV-chipkaart. Discount cards are relevant for foreign commuters or Dutch natives who live just across the border in Germany or Belgium.

As a result some ticket options are not available for non-Dutch travelers.

3.2.4 Journey preparation

Use patterns

During this step travelers prepare themselves for the journey. Part of this step can take place at home when travelers have bought their ticket in advance, online or via the phone service desk.

Issues

Issues travelers can encounter during this step are caused by:

Absence of printing possibilities

Some travelers don't know they had to or didn't succeed in printing the ticket they bought online. At most stations in the Netherlands there is no possibility to print a digital ticket.

" I totally assumed there would be wifi in the Thalys, but there wasn't.

Quote from traveler on the Thalys bound for Rotterdam

" I expected there would be coffee on this train.*

Quote from traveler in the IC Brussel
* Note: there was, but it just hadn't arrived yet for this traveler.

Absence of seat reservation

For some tickets bought on the NS international website it is not possible to make a seat reservation online. Travelers who have no seat reservation and would like to make one go to the ticket and service desk to arrange the reservation.

Presence of multiple operators

Having multiple operators at one station (national and international) can cause confusion for travelers. Travelers tend not to distinguish between operators when approaching service personnel, but often service personnel cannot provide them with accurate information regarding journeys operated by other operators.

3.3 Phase 3: Travel

Pre public transport	Pre travel				Travel				Post travel	
	Ticket orientation		Ticket purchase		Entering paid area	In the train	Arriving at the station			Reflection
Choice of modality		Ticket selection		Journey preparation		In the station	Interchanging		Exiting paid area	
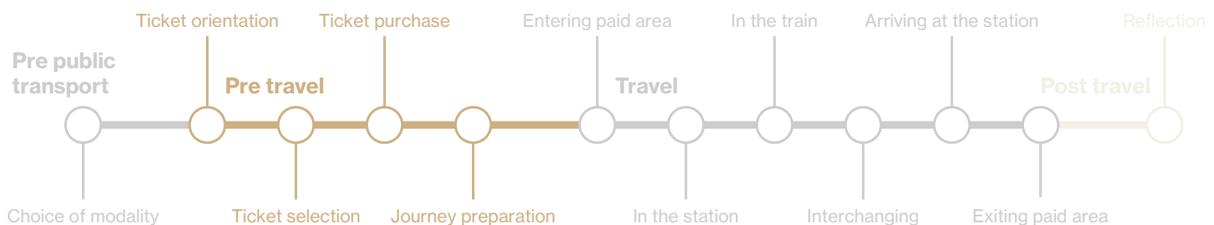
3.3.1 Entering paid area

Use patterns

During this step travelers enter the paid area of the station reserved for travelers with a ticket. The paid area can either be reached via gates (closed payment border) or by passing validators (open payment border).

Issues

Issues travelers can encounter during this step are caused by:

Confusion between validation and activation

For travelers there doesn't seem to be a difference between opening a gate with for example a square barcode or keycard and activating a ticket, e.g. a temporary OV-chipkaart. In addition travelers don't see the difference between gates with barcode readers and without barcode readers.
As a result travelers can get insecure when it is unclear to them whether they need to check-in for a trip.

“ **NS probably makes more money sending me through Arnhem, but it's annoying that this connection from Venlo never shows up in my travel options. It's just faster for me.**

Quote from international traveler

Presence of multiple operators

On some stations multiple train operators are present, both national and international. Travelers are not (always) aware which operator operates their journey (see figure 8 on page 48).

Some travelers, especially international are not even aware that there is a difference in operators. For example in Germany there are different operators but they work together in a 'Verkehrsverbund' per region. Tickets are valid for the whole 'verbund'.

Buying tickets onboard

On some trains (e.g. DB line Enschede - Gronau and ICE) it is possible to buy a ticket onboard of the train. This is positive for those who arrive late and have not been able to buy a ticket upfront. However the option to buy a ticket onboard is no longer possible when gates are closed.

Difficulties with opening gate

Travelers with international train tickets can have various issues with opening closed payment borders (gates). Those are similar to the issues travelers encounter when leaving the paid area. As we observed more travelers having issues leaving the paid area, those issues are described there.

3.3.2 In the station

Use patterns

During this step travelers need to find their way towards the platforms and transportation vehicles.

(Dutch) users of the NS international app tend to be very satisfied with the app as it offers convenience during the whole journey, but specifically during this step. During this step the app helps travelers to find the right location and sends push notifications regarding delays or track changes. For travelers unfamiliar at the specific station signage is of great importance during this step.

Issues

Issues travelers can encounter during this step are caused by:

Absence of service personnel at platforms

Especially non-Dutch, infrequent or elderly travelers rely heavily on service personnel to ask question and confirm they are at the right track. At smaller stations there is no service personnel, or only service personnel at ticket and service points, to help them. As a result travelers can be

> **At Rotterdam I had only five minutes to change from the Thalys to my connecting train to The Hague. The whole journey I was hoping for an 'overstapzone' and enough time to do the check-in.**
> **Despite the reassurance from my fellow traveler that I would make it, I felt insecure.**
>
> **I did catch my connecting train, but only thanks to the overstapzone.**

insecure or ask other people present at the platform for help.

Absence of correct real time travel information
Sometimes (e.g. at Enschede) the digital information signage and verbal notifications at the platform don't (always) provide accurate information. The information provision is arrange by DB. When travelers have questions about the information provision the only available service personnel (from NS) cannot answer the questions. As a result:
- Travelers don't know how or when they can continue their travel
- Service personnel has to deal with frustrated travelers that they cannot help.

Trains driving in reversed order
When an international train with seat reservation drives in reversed direction, travelers can be at an inconvenient location for their reserved seat in the international train. As a result:
- Travelers need to search for their seat in the short time the train stops at the departure station. This can cause stress.
- The train might be delayed because travelers are not lined up in the right locations. To avoid these delays service personnel tries to line-up travelers at the platform before the train leaves.

3.3.3 In the train
Use patterns
This step refers to the actual time travelers spend on the train. Long distance and high speed international trains are considered comfortable by travelers primarily due to convenient chairs and speed. Especially local NMBS trains are considered outdated, slow, dirty and lack travel information on the train. Travelers traveling a longer distance on an international train expect comfort, WiFi and power points.

Issues
Issues travelers can encounter during this step are caused by:

Differences in regulations
Travel regulations differ between countries. For example
- In the Netherlands one can take a dog on the train. In Germany one can only take a dog if it is muzzled or if one has a statement from a veterinarian.

" At station Roosendaal I observed about 9 people tailgating in 15 minutes.

Quote Meike Mak

- When traveling only in the Netherlands a traveler is not allowed to travel on a 'digital ticket', it needs to be printed. When crossing a border (traveling internationally) one is allowed to have a digital ticket (e.g. on mobile).

As a result travelers can get fines for violations of rules they were not aware of.

Absence of check-in control

Conductors of foreign trains in the Netherlands cannot check whether Dutch travelers are checked-in or not for the Dutch part of the route. Frequent travelers who know this can make use of this by not checking-in. This can cause inconvenience for other travelers or frustration for the conductors on the train.

3.3.4 Interchanging

Use patterns

During this step travelers switch between lines or sometimes modalities within a journey. Interchanging can go smoothly when travelers have enough time to change.

Issues

Issues travelers can encounter during this step are caused by:

Checking in or -out during a journey

Some Dutch travelers decide to travel (at least part) of the journey on their OV-chipkaart. The necessity of having to check-in or -out during one journey is considered inconvenient and inefficient by travelers.

To make checking in or -out during the journey easier and more efficient some stations have 'overstapzones' at the platforms which can be both convenient and inconvenient:

- For travelers changing trains at a station which has its gates or validators relatively far away from the train tracks the overstapzones are considered very convenient.
- For travelers who finish their journey and check-out at an 'overstapzone' at the platform reaching closed gates afterwards can be confusing.
- It is also considered inconvenient if the overstapzones are located some distance away from where the train stops and travelers would like to continue with the same train (e.g. in Roosendaal).

> **" The conductor in the IC international asked my destination when he saw my ticket. I told him I would stay all the way to Amsterdam CS.**
> **There I switched to a local train to Den Helder.**
>
> **Since my international ticket did not have a barcode, I was unable to open the gates in Den Helder.**

Quote from Dutch international traveler

Absence of international service desk

Absence of an international service desk at a specific station is inconvenient for:

- A small group of travelers wanting to book an international journey at a service desk with help of service personnel, who don't live close to a station with an international service desk.

- Travelers who encountered delays during their international journey, specifically those who have connections to a train with seat reservations. Service personnel at train stations without an international service desk cannot help (e.g. rebook) travelers who get stuck at their station. Service personnel has to send those travelers through to a bigger station abroad. They use use stamps (Roosendaal) or stickers (Enschede, see figure 11 on page 72) to confirm to their colleagues abroad that there has actually has been a delay in the Netherlands. If the traveler has a mobile ticket they have to write or print a paper that they can stamp or sticker. As a result travelers get insecure and angry, service personnel needs to deal with this frustration without being able to actually help the travelers.

The effect of delays on ticketing

Delays within a journey can result in a (very) stressful context of use regarding ticketing. Delays causes stress because travelers:

- generally need to hurry more than anticipated.
- can get insecure about the effect of the delay on their itinerary and tickets, especially if travelers have a connection to a train with seat reservation that they will or are likely to miss due to the delay.
- can get stuck at stations that lack information and help to get delayed travelers back on track e.g. due to the absence of an (international) service desk (see next issue).

As a result travelers get frustrated and angry.

The effect of bad connections between trains on ticketing

When interchanging, travelers can get frustrated about:

- Limited time for interchanging: Some international train journeys, planned for example with help of the NS international website or the DB TVM, include interchanges with too limited time for changing. Especially long distance international travelers with luggage need more than a few minutes to change trains. Travelers can miss their connecting train due to limited time for interchanging. When they miss the train the same stressful context of use can arise as with delays (see page 55).

" What do you mean I need my ticket to open this gate? I just threw my ticket in the bin on the platform.
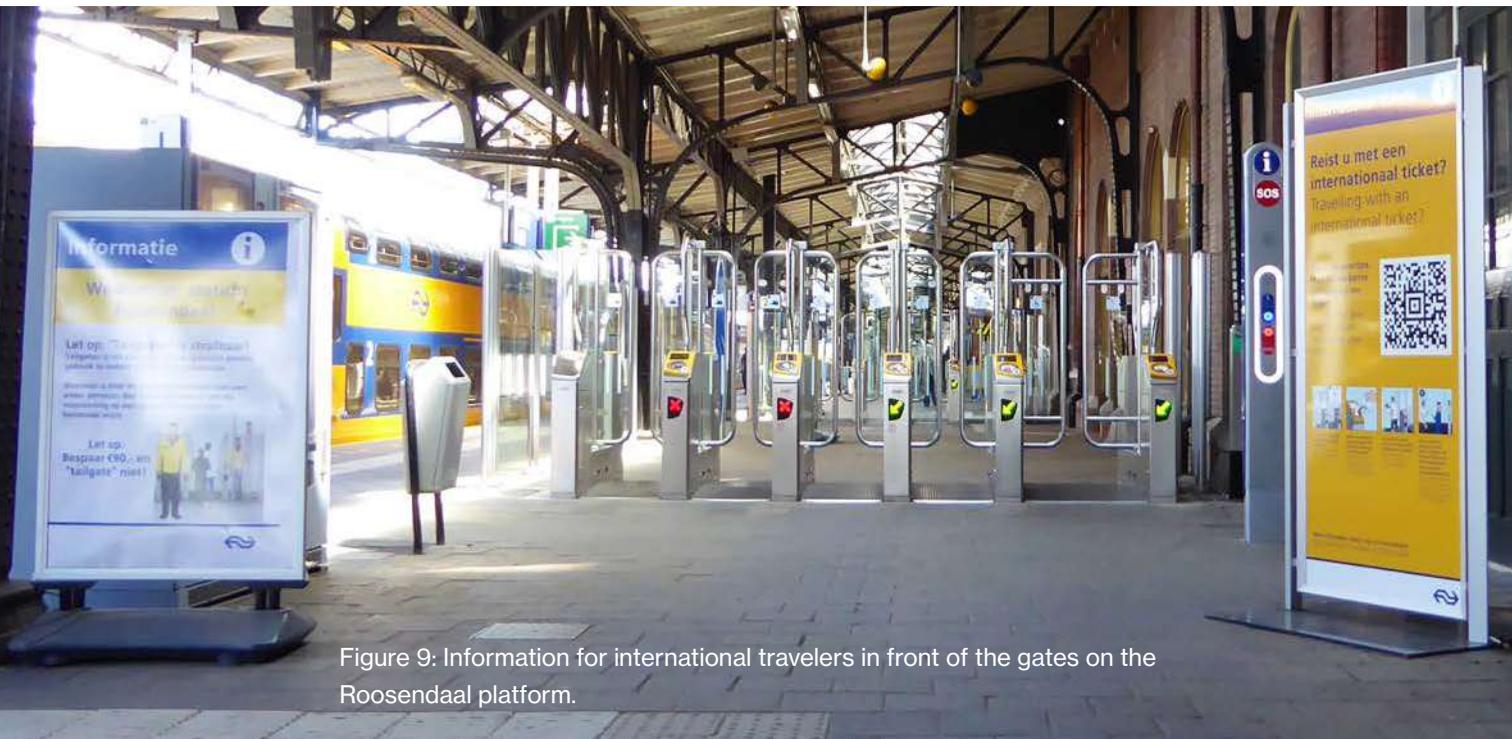
Figure 9: Information for international travelers in front of the gates on the Roosendaal platform.

- Long waiting time between trains: Especially frequent travelers in the KGOV are irritated when there are long waiting times between local and international trains.

The issues above are partly caused by having multiple operators at the same station. Communication between operators doesn't seem smooth and sometimes is non-existent, this doesn't benefit the connection between trains and the service for travelers.

3.3.5 Arriving at station

Use patterns

During this step travelers reach the final destination of their journey.

Issues

Issues travelers can encounter during this step are caused by:

Other observation: Inconvenient arrival location

At some specific train stations the international train has an inconvenient arrival location. For example in Venlo the Keolis train stops outside of the station's roofing while there are other tracks (with roofing) free. As a result regular travelers who observe other tracks are free, feel treated inferior to national trains.

3.3.6 Exiting paid area

Use patterns

During this step travelers cross a closed- or open payment border at their station of arrival. For international travelers ending their train journey in the Netherlands most issues arise at stations with closed gates. Closed gates are like a barrier 'trapping' the international traveler inside when they don't have or see a way to open the gates. To exit the station they need the help of service personnel. When help is not available they tailgate to leave the station (see tailgate observation on page 56).

Issues

Issues travelers can encounter during this step are caused by:

Lacking key to open gate

Some travelers don't have a key to open closed gates when they arrive in the Netherlands. We observed the following reasons for travelers lacking a key:

"When travelers ask for tickets to Germany we always send them to the DB TVM. That machine has the cheapest tickets. Of course it would be better for NS if they bought the ticket at the NS TVM, but chances are the customer later learns from fellow travelers (or a conductor on the train) that he paid more than necessary.

Then we have to deal with the aggression.

- Not all tickets contain a square barcode: For example tickets issued by German service desks don't contain a square barcode to open closed gates in the Netherlands. Note: the plan is to change this next year.
- Not all travelers who do not have a ticket with square barcode receive a key-card: Travelers only receive a key-card to open gates when they meet a conductor AND tell the conductor what their final destination AND this destination has closed gates.
- Some travelers do not have their ticket any more when they reach the gates. We observed a traveler who put his ticket in the trash after leaving the train and reaching the closed gates in Roosendaal (see observation on page 60).
- At some stations (e.g. Venlo and Enschede) the keycard can be collected at the service desk at the stations. For this service to work travelers need to be aware of the procedure and the service desk has to be open. Service desks are usually closed after 17.30.

As a result travelers get stuck inside the closed gates and feel helpless and frustrated. To get out they either need to tailgate or ask help of service personnel.

Unfamiliarity with key to open gate

Some travelers have a key but don't understand that they should use it to open the gates. As a result these travelers also get stuck inside the station. Some are able to learn how to use the key by observing other travelers.

Using key at 'wrong' reader

Some travelers have difficulties understanding what combination between barcode reader and gate is made. They for example:
- scan the ticket at one gate and try to leave the station at the gate next to it. In this case they haven't seen what way the arrow at the gate points.
- scan the their ticket at a gate that operates the other direction. These travelers haven't noticed the red cross indicating that the gate is closed.

As a result travelers get confused and usually try again at other readers. These issues with gates are also observed with national travelers and have been described in detail in the graduation report of Leon Groot Obbink titled "Exploring user experience and efficiency of the closed payment border".

"In Venlo travelers are treated with contempt! The German train stops far beyond the roofed area. I see no legitimate reason for this, since track 1a and even track 1b are completely deserted at the time of arrival.

Difficulties reading mobile tickets.

Travelers can get stuck at closed gates because they have a ticket on their mobile phone. The barcode reader can not read the code from the phone if:

- The phone's brightness is too low. When the phone is on energy saving mode the barcode doesn't work.
- The phone's screen is damaged.
- Travelers haven't zoomed in enough on the square barcode on their phone.
- The barcode reader is damaged.

Most travelers are unaware of these 'restrictions' of the barcode reader to read their mobile ticket and don't know what to do when the reader doesn't read their ticket. As a result travelers get stuck inside the closed gates.

Group tickets providing one key

When travelers travel in a group and have a group ticket they don't know they can use the square barcode to open the gates for everyone in the group.
As a result (part of) the group gets stuck at the closed gates.

Ignorance of information / SOS pole

At all stations it has been observed that travelers with issues trying to exit the closed gates don't use the information / SOS poles. Travelers don't seem to notice the pole or ignore it as they prefer to talk to service personnel. This has also been observed and described by Leon Groot Obbink in this report titled "Exploring user experience and e ciency of the closed payment border". As a result travelers who are stuck don't always get the help they could receive for leaving the station.

3.4 Phase 4: Post travel

Ticket orientation · Ticket purchase · Entering paid area · In the train · Arriving at the station · Reflection

Pre public transport · Pre travel · Travel · Post travel

Choice of modality · Ticket selection · Journey preparation · In the station · Interchanging · Exiting paid area
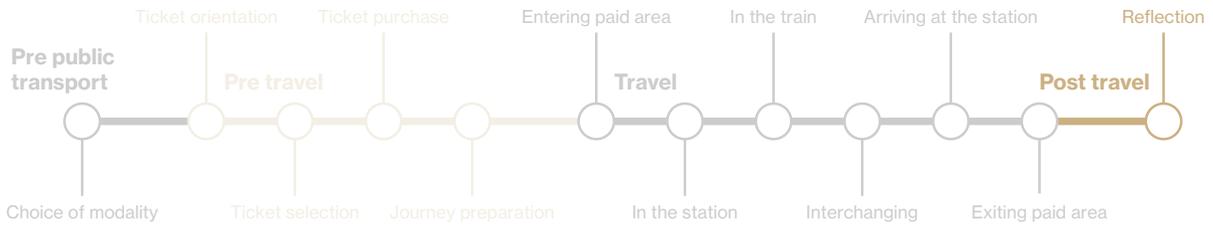
3.4.1 Reflection

Use patterns

During this step travelers can reflect on their journey. Reflection can take place during or any time after the journey has been made. The reflection might influence future behavior.

Issues

Issues travelers can encounter during this step are caused by:

Expensive ticket options

Some travelers find out during or after their journey that they bought the 'wrong', meaning too expensive, type of ticket for their journey. This causes irritation and negatively influences the travel experience, especially if advise of service personnel was requested when buying the ticket.

Dutch refund forms

When an international traveler has experienced delays in the Dutch public transportation, refund forms are only available in Dutch. This is only a hurdle for travelers that are familiar with the option to get a refund when delayed.

Confusion can arise between the actual border and the last train station, especially when travelers have discount or free travel passes.

KGOV INFREQUENT TICKETS

There is a wide assortment of tickets available for international travel, which can be confusing.

KGOV TICKETS

Ticket naming at TVMs can be unclear and confusing, especially at foreign TVMs.

TICKETS

TVMs are not at consistent locations in stations and often not clustered.

KGOV INFREQUENT TICKETS

For different types of tickets, validity can differ.

TICKETS

Payment options for Dutch OV tickets are not always suitable for foreigners e.g. only iDeal or no cash.

FOREIGN TICKETS

Travelers are not always aware which operator executes their journey.

TICKETS

Having gates complicates the option to buy tickets onboard a train.

TICKETS

Ticket orientation

Ticket purchase

Entering paid area

Pre public transport

Pre travel

Travel

Choice of modality

Ticket selection

Journey preparation

In the station

The NS international website doesn't always show the most efficient or cheapest travel option.

DUTCH KGOV

It can be hard to find information online about the OV-chipkaart system.

FOREIGN

Some travelers see the OV-chipkaart as a barrier for traveling in the Dutch OV.

FOREIGN KGOV

Some information regarding international train travel is only available in Dutch and/or English.

FOREIGN

Combining discounts and subscriptions with international tickets can be confusing.

DUTCH INFREQUENT TICKETS

Not all ticket types are available at every point of sales.

There are no subscriptions for frequent travelers on international routes.

TICKETS

Especially foreign TVMs can be hard to understand and no help is available when using the machines.

INFREQUENT TICKETS

Prices for international train tickets differ between operators and touchpoints.

TICKETS

When buying a ticket online, some travelers don't understand they have to print it, or don't have the means to do so.

INFREQUENT TICKETS

Travelers don't distinguish between different operators when approaching service personnel. However service personnel is often not empowered to provide accurate information for all operators.

SERVICE

Conductors at foreign trains in the Netherlands cannot check whether Dutch travelers are checked-in or not for the Dutch part of the route.

DUTCH KGOV FREQUENT TICKETS

On smaller stations there is limited help available for travelers with questions, since service personnel can be absent or only available at the service point.

FOREIGN KGOV INFREQUENT SERVICE

Travelers have difficulties continuing their journey when digital information signage and verbal notifications at the platform are absent or inaccurate.

KGOV

When a train drives in reversed order travelers can be at an inconvenient location which might cause delays.

LGOV

TUDelft

Delft University of Technology
Faculty of Industrial Design Engineering

FOREIGN
DUTCH Origin

LGOV
KGOV Distance

FREQUENT
INFREQUENT Travel frequency

border crossing train ticketing

This customer journey map lists the main issues that arose from the analysis of international train travel into and out of the Netherlands.

Issues that are specific for a certain group of travelers (based on origin, travel frequency, distance and theme) are tagged accordingly.
All issues are color-coded to indicate their (negative) impact on the experience of international train travelers.

Finding out that cheaper tickets are available, causes frustration with travelers who already purchased a ticket. Especially if they received help when buying.
INFREQUENT TICKETS

Travel regulations differ between countries. This can cause international travelers to act 'illegally' without being aware of it.

Travelers can feel inferiorly treated to national travelers when arrival locations are inconvient
KGOV FREQUENT

Delay refund forms are only available in Dutch.
FOREIGN TICKETS

In the train

Arriving at the station

Reflection

Post travel

Interchanging

Exiting paid area

The absence of an international service desk is inconvenient for travelers experiencing delays in their journey that requires rebooking.
SERVICE

Both limited time for interchanging and long waiting times can cause frustrations.
DELAYS

The necessity of having to check-in or -out in the middle of a journey is considered inconvenient and inefficient by travelers.
DUTCH TICKETS

Delays within a journey can cause a stressful context of use regarding ticketing, especially if they have a connection to a train with seat reservation.
DELAYS

Travelers don't distinguish between activating a ticket and opening a gate.
GATES

Travelers don't see the difference between gates with and without barcode readers.
GATES

Not all tickets have a square barcode and not all travelers receive a keycard. As a result some travelers cannot open closed gates when they arrive in the Netherlands.
FOREIGN INFREQUENT GATES

Some travelers have a key but don't understand that they should use it to open the gates.
GATES

Some travelers use the barcode reader that correponds with the gate next to them. Others try to open gates that are only accessible in the other direction.
GATES

Some travelers don't understand that the barcode on a group ticket opens gates for everyone in the group.
GATES

When travelers get stuck, they tend not to notice the information / SOS pole. Or ignore it.
INFREQUENT GATES

The barcode reader can only read mobile tickets if the brightness is high, the screen of the phone and barcode reader are undamaged and it is zoomed in on the barcode.
LGOV GATES

TICKETS SERVICE
GATES DELAYS Theme

Issue impact: Very low   Low   Medium   High   Very high

mbstudio

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Conclusions & discussion

In this project the journey of long- and short distance international train travelers has been studied with a focus on the role of OV-betalen in the journey.

4.1 The customer journey

As described in chapter 2 & 3, this study shows that there is no such thing as <u>the</u> customer journey of international train travelers. All travelers go through the main customer journey phases. However the steps travelers take within these phases, how they behave, what their needs, wishes and expectations are during the journey and what issues they encounter depend greatly on the type of traveler, the route and train stations encountered during the journey.

The larger part of the international train travelers is quite satisfied with their international journey, especially the travelers traveling with high speed long distance trains. There are however issues in international train journeys that can make travelers insecure, irritated or angry.

4.1.1 Themes

We identified the following recurring themes (clusters of issues) that negatively influence the travel experience of international travelers. We focus on clusters of issues with a negative impact as our goal is to find options to improve the system. The themes below have been observed to influence the experience of international travelers the most and occur most often in the journey.

Tickets options

International train travel generally has a wide assortment of ticket options and ways to buy those tickets, especially in KGOV. In addition ticket

"What do you mean you can put a stamp on my ticket so I can make new reservations in Brussels?

I have an e-ticket on my phone.
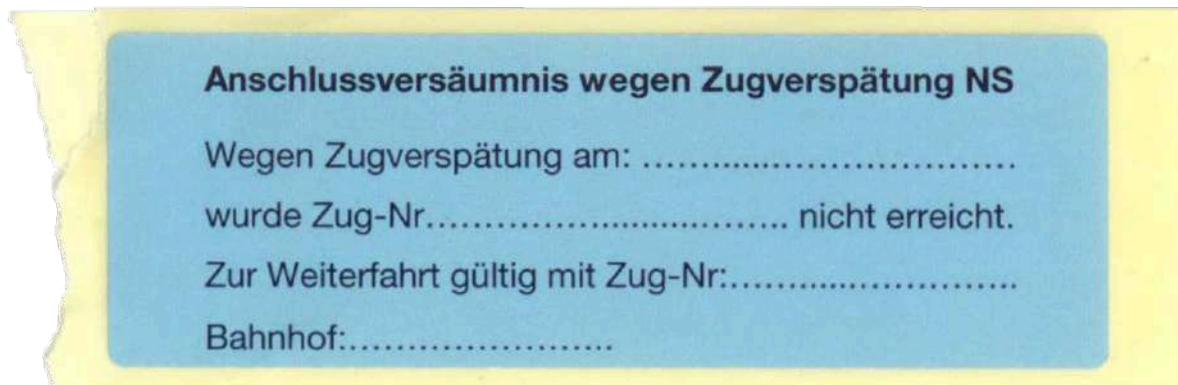
Figure 11: A sticker form NS to inform service personnel along the journey about a delay. The sticker is applied to the train ticked.

naming can be unclear, prices for the same journey can differ between different points of sales and ticket options can be unavailable at a specific points of sales. For Dutch travelers having an OV-chipkaart, possibly with subscriptions and discounts, complicates the situation because they have the option to combine this with an international ticket. Having so many options can make travelers feel insecure and confused about what to choose and whether they have chosen the right option.

Closed payment borders

Having gates at stations can form a physical barrier for international train travelers entering and specifically exiting the train station. Travelers might for example not know how to open a gate, can lack the possibility to open the gate or have difficulties using their key (e.g. on mobile because they don't know the conditions for using the medium).
Not being able to open a gate can make travelers feel helpless, insecure and irritated. International travelers heavily rely on the presence of service personnel or other people present to help them exit the station. The information / SOS poles are generally not used for help. If there is no help present or the traveler is impatient, travelers were observed to display illegal behavior to exit the station, e.g. tailgate.

Service personnel

The perception of the presence or absence of personal help when needed during the journey greatly impacts the experience, this also goes for ticketing issues. As also found by Larissa Lehr, international travelers rely heavily on the presence of service personnel. Adequate help of service personnel has a huge positive impact on the experience of the journey. However when service personnel is not able to help this also has a huge negative impact on the travel experience. The service personnel encountered during this research was very willing to help (international) travelers, however sometimes they lack:

- the **tools** to help the traveler: they might nog have international service desk facilities which makes it impossible for them to rebook reservations,
- the **knowledge** to help the traveler: service personnel might lack information about cancelations, delays or alternative travel options for example due to limited communication between operators.

Delays and cancellations

The primary cause of irritation, dissatisfaction, anger and frustration during an (international) journey are delays. In the context of OV-betalen delays

"Dutch and German personnel often say different things. One says it is allowed, the other says it is not.

Always a bit uncomfortable.

Quote from German frequent traveler

within a journey can result in a (very) stressful context of use. Travelers can get insecure about the effect of the delay on their itinerary and tickets, especially if travelers have a connection to a train with seat reservation that they will or are likely to miss due to the delay.
The following aspects increases the frustration for delayed travelers:
- Lack of travel information regarding their journey and the effect of the delay on their journey and tickets,
- Absence of service personnel to direct their questions regarding their journey and tickets too,
- Service personnel that is present but cannot help them with their questions e.g. due to the absence of an international service desk.

The negative effect on the journey is even greater when trains are cancelled. This causes the emotions mentioned above to sometimes result in aggressive behavior towards services personnel and negatively influences the brand loyalty.

4.1.2 Influencers

In the themes of issues above we see that information provision and guidance, specifically provided by service personnel, has a huge impact on how international travelers experience issues they encounter. Transparency of ticket options, how to open gates and what the options are when delayed will greatly benefit the experience of international travelers in a positive way. Having all information to make decisions, knowing what to do next and confirmation one is on the right track makes the traveler feel secure and in control. To summarize, when information provision and guidance is present and arranged well, issues will be experienced as less severe or might even not be experienced at all.

4.2 OV-chipkaart system

Stakeholders, service employees and travelers agree that the Dutch OV-chipkaart system does not facilitate international train travel.
In addition, having an OV-chipkaart is not necessary to make an international train journey; for all journeys other ticket options are available.

We see that:
- Non-Dutch travelers generally do not use a personal or anonymous OV-chipkaart due to various reasons (described in chapter 2). They sometimes use a disposable OV-chipkaart when they buy a ticket at a

Figure 12: 'Overstapzone' in Arnhem.

Dutch TVM or at a Dutch service desk.
- Dutch travelers actually seem to prefer to use their OV-chipkaart, especially in KGOV, for (at least part of) their journey. This can result in buying inconvenient combinations of tickets for a journey.

Having the OV-chipkaart system in place creates issues in the journey for those using the OV-chipkaart and those not using the OV-chipkaart:
- For those not using the OV-chipkaart the gates can be their main problem during the journey. Travelers can also be insecure about whether or not they should use the OV-chipkaart which can even result in travelers not taking the train into the Netherlands.
- For those using the OV-chipkaart the main issue is combining their OV-chipkaart with the available international ticket options.

The larger part of the international travelers (both Dutch and non-Dutch) seem quite understanding that the OV-chipkaart is a national system that is designed for national traveling and doesn't seamlessly fit with international traveling. However especially Dutch travelers express their wishes for a better fit of adjoining systems (Belgium and Germany) for example by:
- The possibility of international subscriptions,
- The possibility to check-in or -out abroad or in the train while crossing the border, or
- an international OV-chipkaart.

4.3 Discussion

While studying international train travel into and out of the Netherlands it became evident that international train travel, especially KGOV, is not a separate, self-contained system but part of the national transportation system. Regularly international train journeys consist of a chain of linked trips that can be national trips, KGOV and/or LGOV. This has the following implications:
- Issues international travelers encounter do not necessarily arise at border train stations or larger station where high speed trains arrive. They can arise throughout the system because the international journey can start from anywhere in the Netherlands or end anywhere in the Netherlands. For example:
  - Travelers relying on the IntercityDirect from Breda to Rotterdam to catch the Thalys from Rotterdam can get stuck in Breda if the

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IntercityDirect is cancelled.

- International travelers traveling by ICE to Amsterdam and from there to for example Den Helder encounter closed gates there.

- Solving one issue for (international) travelers implies an interference with the system. Changing one aspect of the system can solve an issue for one group but can create new issues for other groups. For example:

  - Having 'overstapzones' for international travelers benefits those changing from international transportation to local transportation or the other way around. However they can create confusion for national travelers who check-out there and reach a closed payment border afterwards.

  - Placing foreign TVMs at border stations benefits travelers who know they provide cheaper ticket options. However the TVMs can be a problem for those send to the machine by service personnel (because of the cheap tickets), but who don't know how to operate the machines.

The above implies that when solving issues in the journey of international train travelers, the impact on the system as whole should be taken into consideration. In addition, when the system is changed, the impact of the changes on the journey of international train travelers should be taken into account as well. To summarize, international train travelers should be seen as one of the user groups (personas) using OV-betalen, not as a separate group.

4.4. Limitations

The data on which the conclusions in this study are based were collected using different sources: observations, interviews with travelers, stakeholders and service employees, personal experiences and analysis of complaints filled to the OV-loket. Most issues described in this report were found through different sources increasing the validity of the findings.

However, in qualitative research issues are not quantified and sampling might not be representative for the whole population of international travelers. Factors that might have influenced the findings:

- Sample locations: although sample locations were carefully chosen and spread throughout the country, including different types of stations, spread in operators and LGOV and KGOV, the chosen

" There's a lot of things we cannot do for the customers. We can only do that at an international desk.

location might have influenced findings and <u>not</u> visiting locations might have made us overlook certain issues. We believe this effect to be minimal as towards the end of this study almost no new issues were encountered.

- **Sample period**: data was collected in the field in the months april and may which may not have been the most intense months for e.g. pleasure travelers (tourists). However we believe that also including interviews with service employees who are present throughout the year at the station tackles this issue as they were able to tell the differences between time periods in a year.
- **Travelers sample**: both researchers approached travelers during the train travel and at platforms. Although both researchers tried to approach different types of travelers, findings depend on the willingness of travelers to talk to the researchers and share their experiences.

Recommendations and opportunities

Although the larger part of the international train travelers are quite satisfied with their international journey, issues were identified that can influence the overall travel experience. By removing or trying to minimize those issues, the journey for international train travelers can be made more pleasurable and enjoyable.

5.1 Communication is king

When looking at the issues that can arise for international travelers in the context of the Dutch OV-system in general and OV-betalen specifically the easiest and largest improvement in the experience of the journey can be realized by improving communication: information provision and guidance throughout the journey. This will increase transparency of the system and available ticket options and with that the understanding and confidence of the traveler in all phases of the customer journey.

Recommendations to improve the information provision and guidance and with that the travel experience have been clustered per theme:

Ticket options

Ideally the amount of ticket options would be limited, only one ticket would be needed for one journey and price differences between points of sales would be minimal.
However, taking the wide assortment of tickets as a given it would help if travelers have a clear overview and understanding of the available options and validity of each ticket so they can make informed decisions.

- **Proactive information provision regarding the combination of the OV-chipkaart and international tickets**: As specifically Dutch travelers experience problems combining their OV-chipkaart with international tickets consider helping them by communicating the OV-chipkaart is not necessary for an international train journey, and that discounts and subscriptions can be settled in other ticket options.

"The OV-chipkaart system is a national system. Not created for international train travel.

Quote from a stakeholder

Figure 13: Instructions in the 'overstapzone' on the Heerlen platform.

Actively recommend tickets from starting station to final destination in case of international travels.

For example: As soon as an international destination is selected in the TVM, the user could be noted that he can select his point of departure in the Netherlands and that all OV-chipkaart related discounts and subscriptions will be taken into account in his international ticket. This could avoid the embarrassing situation of people running down the platform at Roosendaal (due to a very questionable positioning of the 'overstapzone') to check-out because they travel to Roosendaal on their OV-chipkaart and have another ticket from Roosendaal to their international destination.

- **Clearly communicate the validity of an international ticket**, for example with the ICE ticket that can be used from each station in the Netherlands.

Closed payment borders

International travelers can get 'trapped' inside a station when they are not able to open a gate. We propose the following to offer them guidance on how to use the gates:

- **Obvious signage for barcode reader**: Clearly mark the gate with barcode reader as the exit for international travelers in gate lines in which not all gates are equipped with barcode readers. This can for example be done with a sign mentioning "exit for international travelers".
- **Pro-active information provision**:
  - Clearly mention on every ticket with barcode, that the barcode is needed to open the gates in the Netherlands to avoid travelers throwing away the ticket.
  - On group tickets add an explanation that the barcode should be used to unlock gates for every member of the group.
  - For travelers with a mobile ticket using an app automatically increase the brightness of the screen when the ticket is opened. When a PDF ticket is used on mobile clearly indicate on the pdf that the brightness needs to be high when using the barcode to exit the gates.
- **Improve the visibility and approachability of the information / SOS poles** by:
  - Making the pole visually stand out more in its context. Currently it is not very visible due to its slim shape and neutral coloring.
  - Add a screen on which a service employee is visible to emphasize that there is personal help on the other side of the of

" There is a price-difference between the NMBS website and the NS website.

That's bizarre, because it is exactly the same journey.

Quote from Belgium frequent traveler

line. The pole should be recognized and experienced as a digital service window rather than a piece of well-blended furniture.

- Clearly state 'Assistance' on the top of the pole to indicate it offers help to travelers, instead of 'SOS' and an 'i' for information.
- Consider placing the pole close to the gate through which the international travelers exit. Or consider placing the pole in the (middle of the) line of closed gates to emphasise it can help travelers exiting or entering the station.
- Place the poles in a position that ensures travelers approaching the gate line notice their position and function, so it is clear to the travelers where assistance can be obtained in case they realize they need it.

Service personnel

Because the availability and ability of service personnel to help (international) travelers greatly influences the travel experience, it is important that the personnel has the right tools and knowledge to help the traveler. To ensure this we recommend the following:

- **Service personnel should represent all operators**: Travelers in need of information regarding their journey or tickets are not helped when they receive information from only one operator at the time. Especially when their travel includes services of multiple operators, proper service is hard to obtain in the current model. Therefore we recommend to remove this limitation and empower the service personnel at stations to provide service for all operators. Since the need with travelers for information regarding the journey rather than the operator is so strong and clear, service personnel at stations is already trying to fill this more holistic service role. We recommend to further strengthen this initiative by changing the role from operator-based to station-based service personnel.
  Having service personnel that belongs to the station that represents all operators has the following benefits:
  - It better fits with travelers perception as they don't distinguish between service personnel from different operators.
  - It benefits the traveler if they can direct all questions to one person who has adequate information regarding all operators.
  - It would make the work for service employees more enjoyable as they are better able to help travelers which will lead to less angry and frustrated travelers at their desk.
- A precondition for this to work is that all operators make sure the service personnel at the station is well informed.

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- **International desks should not be limited to a few station**: every station, and specifically border stations, should be able to inform international travelers about their journey and rebook them if needed (e.g. when delays or cancellations occur). To facilitate this ideally all service personnel should be able to use the international service desk system. Alternatively, there could be a help line (e.g. service desk for service employees) that service employees can use to help the international travelers. This will enable service personnel on stations without an international desk to help the customer. This will lead to increased satisfaction with both local service personnel and the travelers.

Delays and cancellations

Pro-active information provision: When delays occurs, or are expected to occur, operators can immediately start to inform (international) travelers of their options using the dynamic signage on the platform, sending app notifications or using the broadcasting system in the train or at the stations. The pro-active information provision of the NS international app is experienced very positive by those who use it. If the delay happens on a line that is frequently used by international travelers, they can for example be informed of their options to continue their travel to a train station with an international desk to alter their journey or rebook their tickets (e.g. continue to Brussels instead of stopping at Roosendaal).

Improved communication between operators: Improved communication between trains and operators can:

- Minimize the effect of the delays for example if there is the possibility for a train to wait a few minutes, this can reduce the necessity to rebook tickets or remake reservations.
- Improve quality and completeness of information provided to travelers.

Improved connections between trips: Delays in the journey for travelers can also be minimized by improving the connection of trips within a journey. The (online) journey planner can for example add extra time for interchanging on international journeys because experience shows that people with luggage take longer changing platforms. If less travelers miss their connecting train this also reduces the amount of tickets and reservations that need to be rebooked. Please note that when this is done it important to notify the user so he can undo the measure if he wants to, and understands why the system suggests more comfortable interchanging periods than he is used to.

" I don't think we have to check-in or out with these tickets. It is not written on the ticket, so I don't know.

We just show the tickets and they make holes in it.

5.2 Other recommendations

- **Diminish language hurdles**: Make sure relevant information and forms are available in several often used languages like English, German, Spanish, Chinese and Arabic.
- **Easy to use TVMs**: When placing an foreign TVM at a Dutch station ideally the TVM should be straightforward to use. If this is not the case make sure there is adequate guidance for travelers trying to use the TVM, especially when they are send to the TVM by service personnel.
- **Cluster TVMs**: Make sure the position of a foreign TVM in a Dutch station is inline with the placement of other TVM's, e.g. not hidden in some obscure corner outside the station.
- **See payment as an integral part of ticketing**. Foreign travelers are used to different ways of paying for their ticket than Dutch travelers, they for example often use cash or creditcards. Therefore all points of sales should offer types of payment that can be used by international travelers, for example:
  - Having only iDeal as a payment option online is not suitable for international travelers,
  - Not being able to pay with cash at TVMs can be cumbersome for international travelers.
- **International subscriptions**: Consider providing international subscriptions for international train journeys for frequent travelers so they don't need to combine different types of tickets for their journey.

5.3 OV-betalen in its context

This study shows that international train travel is not a separate system but integrated in national transportation systems. Therefore we recommend to consider international train travel not as a separate type of journey and international travellers not as a separate group of users.

Instead, we advise to aim for an optimal customer journey in general. It helps if the customer journey is overlooked by one customer experience manager overseeing the experience for all users of the system. Different user groups (personas) can be distinguished within the customer journey. International train travellers should be seen as one of these user groups in the system.

In case of adjustments to the system, the consequences for all user groups should be taken into consideration.

Appendices

Method

To answer the research questions data was collected in the following ways:

Stakeholder interviews

Interviews with relevant stakeholders were conducted. Stakeholders were selected based on their knowledge and experience regarding the topic of this study. Each interview lasted for about 1 hour and was conducted face to face or via remote conferencing software.

The following stakeholders were involved:

NS:
- projectmanager KGOV
- business analyst NS international

ICE:
- alliantie manager DB
- product marketeer NS international

Arriva:
- regio manager Groningen

AVV:
- project manager responsible for international train- and bus travel

Interviews with NS service personnel

At various stations in the Netherlands NS service personnel was interviewed and observed while working. Service personnel has been interviewed at the following stations:

- Rotterdam
- Arnhem
- Roosendaal
- Venlo
- Enschede

At most stations we talked to several employees. Interviewing service personnel was extremely insightful as they are present at a station on a regular basis. In addition they are the first ones international travellers turn to when in need of help. This long time experience with international travellers provides insight into issues and the frequency in which they occur.

First person experiences

Both researchers also made several international train journeys themselves - including finding travel information and buying tickets. Experiencing international train journeys provides great insight into the experiences international train travellers have while making the journey. Participatory research is especially valuable in combination with observations and interviews with other users, because it provides a different perspective on those findings.

Observations

At the stations visited and while traveling both researchers observed the behavior of international travelers. Observations are relevant because people might act differently then they say they act or they forget how they actually acted.
Interviews with international travellers
During train journeys and at stations both researchers interviewed international travellers about their journey and experiences (see interview guide). Interviews were conversational of nature and were video recorded if the participant permitted. Interviews differed in topics and length dependent on the journey of the participant and what they would like to share. Interviews provide insight into motivations and behavior of travellers.

OV loket complaints

OV Loket (ovloket.nl) is an organization that aims to helps travelers who have experienced issues in public transportation. OV loket provided a list with 51 complaints regarding international train travel filled to the loket between january 2014 and march 2016. In addition 31 complaints regarding international travel were distilled from a longer list with 645 complaints about payment borders filled between january and september 2015. The complaints gave insight into issues travellers encounter during international train travel. However, as the complaints tend to be filled by

Dutch travelers only, and only by travelers that are severely bothered, the complaints are compared to data collected in other ways.

Sample locations

The visited stations were selected based on the overall coverage of the following:

- International train connections: All stations have international train connections arriving and/or leaving from the station.
- Size: Bigger and smaller stations with international train connections
- Gates: Open and closed payment borders and whether the international train arrives inside or outside of the closed payment borders.
- Distance: KGOV and LGOV
- Location: both at the actual border and further into the country.
- Crowd: both peak and off-peak times.

Interview guides

All interviews in the context of this project were conducted in a semi-structured way. Lists of topics and questions to ask were composed (see next paragraphs) serving mainly as checklist for the interviewer. During the conversation free discussion is stimulated so that participants could freely express what they considered important. The interviewer made sure that all topics were addressed during the interview.

Stakeholder interviews

Formal introduction

Thank you for making the time for this interview!
Researcher introduces him/herself

- Emphasize: independent researcher - hired by TUDelft for this project.

Explain topic & goal to the participant:

- I'm here today because I would like to talk to you about international train travelling.
- This project aims to analyze the journey of long- and short distance international train travellers. The focus of the project is on the role of:
    - OV betalen (ticketing) in the journey, and

- the OV-chipkaart and OV-chipkaart facilities (e.g. gates) in the journey.
- For the research we will be observing international train travellers behavior on different stations and lines (e.g. R'dam, Arnhem, Enschede, Limburg, etc.)
- In addition we would like to talk to stakeholders from different railway companies (NS, Arriva, DB, NMBS, ICE) to learn what information they have regarding international train travelling. That's the reason I'm here today.

Procedure of the interview
- Please note that
  - it is all about your opinion today. I have a long list of questions, there are no right or wrong answers and it is no problem if you don't know the answer to all of my questions.
  - The interview is 'anonymous' we will report the insights we collect and won't connect them to you in the report.
- The interview will take about 1 hour.

Audio recordings – ask for permission
- The audio recordings are for internal use only.

Do you have any questions before we start?

Informal introduction
- To start with, can you please shortly tell a bit about yourself?
  - What is your job?
  - Can you please describe your responsibilities?
  - In case not clear from previous questions: Can you please explain your involvement / responsibilities regarding international train travelling?

Current situation
Introduction: First I would like to talk with you about the current situation regarding international train travelling.
- To get some context, can you please explain to me roughly how the system regarding international train travelling currently works
- Note: focus on lines into and out of the Netherlands.
- Check:
  - Routes: what lines are operated?
  - What are the differences / similarities between those lines?

- Ticket options: what are the main ticket options for international train travellers on those lines? (no need to get the complete overview, just a general idea). Check:
  - Paper tickets, Chipcards, E-tickets, etc.
  - To main station in NL
  - including onward journey?
  - subscriptions
  - etc.
- Payment types: In what ways can customers pay for the tickets?
- OV chipcard facilities: what is the role of other OV-chipcards facilities on your line? (gates, ticket machines, check-in & check-out poles, etc.)
- Information:
  - How do international train travellers get information on the system and ticket options to international train travellers?
  - How do you currently address international travellers?
- For NS specifically:
  - Where exactly is the border in NL for international train travelling?
    - If you have 'vrij reizen in NL' does it work until the actual border or to the last station?
  - How do international tickets work in combination with a 'voordeelabonnement'?
- DMU: Within your company, how is decided on how the system for international train travelling / for international train travellers works?
  - Who is involved?
  - How do you / your company decide on the options that international train travellers have?
  - To what extend is there any social or political pressure regarding the topic of international travellers?
  - Do you (as a company) encounter any issues regarding international train travelling?
- Future changes: Will anything change regarding the system in the future?
  - If so, can you please explain what will change and why?
  - Do you foresee any technical developments?

Current traveller behavior:

Introduction: I would like to talk about what you know about current international train travel behavior.

- To what extend do you distinguish different types of international train travellers?.
    - First spontaneous,
    - then check: do you notice any difference regarding:
    - Frequent and in-frequent travellers?
    - Dutch travellers and travellers from abroad?
    - Age differences?
    - Long distance and short distance travellers?
    - Etc.

Let's discuss the journey of international train travellers together.

- Pre-travel: Can you please share what you know regarding pre-international train travel behaviour?
    - How do people collect information regarding the journey?
    - How do travellers generally buy tickets? What ways do they use?
    - First spontaneous then check:
        - Ticket machines
        - Online (NS international, DB, NMBS…)
            - If relevant check if they are familiar with any issues regarding the online purchasing of tickets.
        - Service points on the stations
        - Etc.
- Travel: Can you please share what you know regarding the actual travel behavior?
    - Getting in the train:
    - How do travellers usually get to the their departure station?
    - Where do they usually wait for their train?
    - How do they find their train?
    - How do they get inside the station?
    - In what ways do they collect the necessary information?
    - During the train journey:
    - How do travellers generally experience the actual train ride?
    - Do you offer any specific facilities during the train ride?
    - Arriving at the destination:
    - How do travellers generally arrive at their destination station?
    - How do they get of the train?
    - In what ways do they generally continue their travel from there?
- Post travel: Does anything happen after the international travel? Do you for example get in contact with the travellers or ask for evaluations?

- If relevant discuss for each topic:
    - Do you see any difference regarding the types of travellers we discussed?
    - What goes well regarding this point in your opinion?
    - What issues do travellers encounter? What could be improved?

Future situation from a user's perspective: Are you aware of any wishes, needs and expectations international train travellers have regarding international train travelling?
- If so, ask stakeholder to elaborate:
    - how do you know they would like this?
    - What will be done about it?
    - Etc.

Role of the OV-chipcard and OV-chipcard facilities
If not discussed during previous questions get on the topic of the OV-chipcard.
Introduction: I would like to talk to you about the role of the Dutch OV-chipcard in international train travelling.
- For international stakeholders: to what extend are you familiar with the Dutch OV-chipcard? If not: explain.
- First of all, from your point of view, what is the role of the OV-chipcard in the 'international train travellers journey'?
    - First spontaneous then check:
    - Pre-travel: e.g. purchasing tickets, discounts, website, etc.
    - Travel: e.g. getting towards the station, getting inside the station, transferring to other ways of transport, etc.?
- If not discussed yet: and what is the role of OV chipcard facilities in the international train travellers journey?
    - Check: ticket machines, gates, poles, etc.?
    - Check: to what extend do you foresee any issues with gates at border stations? Why?
    - What if the gates close?
- In your opinion:
    - To what extend does the OV-chipcard and/or the OV chipcard facilities facilitate international train travel?
    - Does it in some way make it easier / quicker for the traveller?
    - Does it in some way make it more easier / quicker for you?
        - If so: please explain
        - If not: why not?

- To what extend does the OV-chipcard and/or its facilities hinder international train travel?
  - If so: can you please explain in what way?
  - If not: why not?
- To what extend do you see improvements in the international train travellers journey?
  - In general
  - In regard to the OV chipcard & OV chipcard facilities?

Expectations regarding this project

Introduction: at the beginning of this conversation I explained that I will be studying international train travel. For this I will visit some stations and international train lines to observe and ask travellers their experiences. I'm curious regarding your expectations regarding this project.
Emphasize: time is limited so I cannot promise that we will follow up all your suggestions, but I'm curious to hear them.

- Do you have any focus areas, blind spots in your knowledge regarding the international train travellers journey, or issues that you would like to see studied?
- Do you have any train stations, international train lines etc. that you expect would be specifically interesting to include during the fieldwork phase?

Materials for sharing

- Do you have any material available regarding international train travels that you could share with me?
  - E.g. statistics demographics, usage, common issues/problems, regarding the usage of tickets / products offered?

Closing

- This was all I wanted to ask.
- Is there something you would like to share with me regarding international train travelling or travellers that I haven't asked?
- Any tips?
- Thank you for your time

Questions for international travellers

Introduction: I work for the technical university of Delft. We are doing research regarding international train travel crossing the border with the Netherlands. In this context we specifically focus on payment methods / e-ticketing for the train journey across the border.

- Are you crossing the border on this train?
- If so: Do you mind if I ask you a few questions regarding your experiences with international train travel?

Questions:

- The journey: where are you coming from and where are you going?
- Frequency: Do you make this journey more often? If so: check frequency.
- Ticket:
    - What kind of ticket do you have for this journey?
    - How did you purchase this ticket?
    - How did you inform yourself regarding your ticket options?
    - How did you experience purchasing the ticket?
    - If they encountered any issues regarding the purchase process: ask them to explain the issue in detail.
    - To what extend are you familiar with the Dutch OV chipcard system?
    - If so: to what extend did you consider using the OV chipcard in your journey? Why (not)?
- Pre and post journey:
    - How did you travel to your departure station?
    - How do you continue your journey when you arrive at your destination train station?
- Experience: How do you experience international train travelling in general?
- Points of improvement: How could your international train journey be improved? Do you see any specific improvements regarding payment methods?

Questions for service personnel at the stations

- What is your job?
- How long have you been working here?
- To what extend do you encounter travellers at this station that cross the border by train?
  - How is this going for them?
- What different types of international train travellers do you distinguish? Please explain.
- To what extend do you see differences between Dutch travellers and non-Dutch travellers? If so, what are the differences?
- To what extend do you see differences between frequent and infrequent travellers? If so, what differences do you see?
- Are there specific issues that international train travellers encounter during their journey in your opinion?
- Are there any specific questions that international train travellers ask you? If so, what type of questions?
- Are there any specific things that you need to help international travellers with? If so, please explain?
- To what extend do you see changes for international travellers since the introduction of the OV-card?
  - If so, what changes do you see?
- In your opinion, to what extend does the OV-chipcard and its facilities (e.g. gates) facilitate international travelling? Why (not)?
- How could the journey for international travellers be improved in your opinion?
- How could your job be made easier for you regarding international train travelling?

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