Mobility Experience of Trams – Kassel

Term Paper

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Chapter 1: Introduction

Trams have undergone a remarkable transformation over time, adapting to the rapidly changing urban landscape and the technological advancements that have emerged. Initially, trams were horse-drawn carriages that were eventually replaced by steam-powered and electric-powered systems. The introduction of electric trams was a game-changer in urban transportation, providing a more efficient and eco-friendly mode of travel for city dwellers.

Over the years, trams have undergone significant advancements in design, infrastructure, and operational efficiency to meet the ever-changing needs of both cities and passengers. Today, modern trams are equipped with cutting-edge technologies that ensure a safe, comfortable, and sustainable journey. These technologies include state-of-the-art safety systems, air conditioning, and low-floor designs that make boarding and alighting easier for all passengers, including those with mobility impairments. Additionally, modern trams are powered by renewable energy sources, such as solar power and wind energy, significantly reducing their carbon footprint and making them more environmentally friendly.

This paper delves into the experience of a non-native user of tram systems within the urban landscape of Kassel. Trams, initially pivotal as the primary mode of transportation, have significantly contributed to enhancing mobility for residents. However, amidst the backdrop of urban expansion and modernization endeavours, the role of trams may have undergone notable transformations. Shifts in urban planning paradigms and technological innovations likely prompted adaptations in tram utilization within Kassel. Consequently, adjustments in tram routes, service provisions, and infrastructural developments would have been imperative to align with the evolving needs of the city's populace.

The paper is structured into two distinct sections: Chapter 3 intricately delineates the comprehensive procedure entailed in investigating the user experience of the tram system. It meticulously elucidates the methodologies and instruments employed for data collection and analysis, providing a detailed overview of the research methodology. Conversely, Chapter 4 delves into the culmination of the research endeavour, elucidating the final results attained. Additionally, it offers insights into potential

strategies and measures to address identified limitations, thereby enhancing the overall efficacy and applicability of the research outcomes.

Chapter 2 – Theory

To fully comprehend what trams entail, it's necessary to consider their similarities and differences with trains. Trams have a strikingly similar appearance and utilise tracks for their movement, much like trains—however, the key discrepancy between the two lies in the space they utilise. While trains have designated tracks and stations, trams share the road with car traffic and street intersections.

The most notable feature of trams is their right-of-way, which grants them the legal authority to operate on assigned tracks amid roadways and tram corridors without having to yield to other vehicles. This prioritises trams over other modes of transportation and pedestrians at intersections and junctions, allowing them to reach their destinations faster than inter-city bus mobility.

Trams are not only quicker but also a more efficient mode of transportation, making them particularly useful in urban areas where traffic congestion is a common issue. Trams can accommodate a considerable number of passengers, and their frequent stops enhance their accessibility to a wider range of individuals.

In conclusion, trams are a vital means of transportation that provides fast and efficient travel in urban areas. Their right-of-way feature prioritizes them over inter-city bus mobility, and their frequent stops further increase their accessibility to a broader range of people.

This report delves into the historical evolution and contemporary mobility experience of trams in Kassel, Germany, tracing back to the 18th century. The transportation system commenced with the introduction of steam trams and horse-drawn omnibuses, marking the nascent stages of urban mobility in the city. Initially, the tram network comprised merely two horse-drawn trams alongside steam-powered counterparts. Notably, the Kassel steam tram is recognized as Germany's pioneering self-propelled tram system, distinguished by its independence from equine traction.

Over time, the transportation landscape underwent a transformative shift, transitioning from steam-driven to electrified tram systems. However, the aftermath of the Second

World War inflicted substantial devastation upon Kassel, including its tram infrastructure. Amid efforts to rebuild the city, deliberations arose in the 1970s regarding the potential discontinuation of the entire tram system. However, in response to fervent protests from Kassel's residents and trade unions, the proposal was ultimately halted. Instead, initiatives were directed towards the modernization and expansion of the tram network, marking a pivotal moment in the history of Kassel's tram system.

Chapter – 3 Method

3.1 Instruments

Autoethnography is a research method where the researcher uses their personal experiences as primary data. It involves self-reflection and interpretation to understand cultural practices. The approach provides insights into personal identities, relationships, and experiences of power and oppression. Autoethnography is a powerful way of thinking that emphasises the importance of personal experience and interpretation to gain a deeper understanding of the social and cultural context. If I may rephrase the statement using more scientific terminology:

"Autoethnography is an approach to research and writing that seeks to describe and systematically analyse personal experience to understand cultural experience. This approach challenges canonical ways of doing research and representing others and treats research as a political, socially just and socially conscious act. A researcher uses tenets of autobiography and ethnography to do and write autoethnography. Thus, as a method, autoethnography is both process and product."

As a researcher, I chose this approach because it provides an opportunity to gain insights into my own experiences and generate rich data. One of the significant advantages of using this method is that it enables easy access to data. Unlike other research methods that require the researcher to collect data from external sources, Autoethnography relies on the researcher's own experiences, thus eliminating the need for data collection.

However, a limitation of this approach is that it relies on personal narratives for analysis, which can restrict the research's conclusions. This means that the researcher's interpretation of their own experience can influence their analysis and limit the scope of the findings. Therefore, it is essential to take a critical approach to the analysis to ensure

that the findings are objective and valid. However, Bochner and Ellis (1996) consider that this limitation on the self is not valid, since, "If culture circulates through all of us, how can autoethnography be free of connection to a world beyond the self?" (p. 24)."

Despite its limitations, Autoethnography offers a unique perspective that can provide a deeper understanding of the research subject. By using this method, researchers can create a more authentic representation of the research subject, as they can draw on their own experiences to generate rich and meaningful data. This approach enables researchers to explore complex and sensitive topics and provides a platform for marginalised groups to share their experiences.

Another advantage of writing autoethnographically is that it allows the researcher to write first-person accounts which enable his or her voice to be heard, and thus provide him or her with a transition from being an outsider to an insider in the research (Hitchcock and Hughes, 1995).

3.2 Procedure

As an inquisitive international student studying in Germany, I conducted a qualitative research study aimed at exploring the experience of non-native language speakers when travelling on trams. The study was conducted in Kassel, Germany, where I was visiting as a tourist. To capture the nuanced experience of travel, I conducted the study on two separate occasions, one on a weekday and the other on a weekend. The main objective of the study was to gain in-depth insights into the differences in experience between weekdays and weekends.

On the 24th of February 2024, the Deutschland ticket was employed to travel on a tram from Kassel Hauptbahnhof to Kassel-Wilhelmshöhe, which is the second railway station located in Kassel. The scheduled departure time was approximately 10:00 am, and the journey duration was estimated to be around 10 minutes. It is worth noting that the presence of a tram station at Kassel Hbf itself renders the process of taking trams seamless. Additionally, there exist multiple tram lines that one can board to reach the Wilhelmshöhe station, although I opted to board the RT5 line. The decision to opt for RT5 was primarily due to its availability as the first option on the platform.

For the second test, conducted on February 27th, 2024, the ticket was purchased from the machine available on the trams. The route selected for this test was from

Altmarkt/Regierungspräsidium in the city centre to Am Weinberg, four stops away. The tram line that operates on this particular route is Line 6. Departure occurred at approximately 12:35 pm.

Both tram routes were selected to accommodate the maximum number of passengers. Boarding points were strategically chosen based on the locations most likely to be used by tourists. The first stop is in the city centre, while the second is situated at the Hbf station. The time of travel was also chosen with this in mind. Additionally, since I was travelling from another city, the weather was taken into consideration when selecting the day and time of travel. To document the observations made during the testing, the narrator's mobile phone served as a key tool, and, at times, the voice recording application on the phone was utilized to capture any relevant audio observations. In addition to these technological aids, general behavioural observations were made during travel time. A few research questions were also kept in mind while conducting the testing:

- How was the experience of travelling in trams as an international student?
- What challenges were encountered while navigating the tram systems?
- How did the travel in the tram evoke an emotional response?

3.3 Pre-Test

In November 2023, an insightful pre-test was carried out in Hamburg for MOIA to delve into the implementation of autoethnography for research purposes. This pre-test provided a comprehensive understanding of the utilization of autoethnography and highlighted crucial factors that need to be considered in the actual research. The pre-test was an excellent learning opportunity, and some key takeaways from it include:

- It is of paramount importance to carefully and thoughtfully determine the starting and ending points of your research. This will help to ensure that you can effectively and efficiently conduct your research and that you can gather the most relevant and useful data possible.
- Furthermore, it is crucial to take note of any important observations that you make while conducting the test. By doing so immediately, you will be able to ensure that you do not miss any key insights or information that could be critical to your research.

- Another important consideration when conducting testing is to decide which part of the testing you want to focus on in your research. This will help you to stay focused and on track and will enable you to gather more meaningful and relevant data.

- It is important to carefully select the day and time of your testing, as this can have a significant impact on the results of your research. By choosing the right day and time, you can ensure that you can gather the most accurate and useful data possible and that your research is as effective as possible.

- It's always fascinating to be aware of the emotional responses and reactions of individuals in various situations. As an observer, you can pay attention to how people respond to different circumstances. For instance, you can observe their reactions when they encounter an overcrowded tram. It could be interesting to see how people react and behave in such situations, whether they get agitated, frustrated, or manage to remain calm. By observing and analysing people's reactions, you can gain insights into human behaviour, emotions, and psychology.

3.4 Analysis of Data

Autoethnography, being a research method that involves personal reflection and self-narration, faces several limitations while collecting and interpreting data. One of the significant challenges is to "see" or analyse the data collected, which includes personal experiences, emotions, and thoughts. As the data is subjective and self-reported, it often requires a considerable amount of effort to ensure accuracy and objectivity in the analysis. Moreover, the researcher's positionality and subjectivity can influence the analysis, making it challenging to generalize the findings. This is both a strength and weakness of this model, and the ability to operate both on the "balcony" and on the "dance floor" (Heifetz, Grashow, & Linsky, 2009) is a skill that can be developed to help the autoethnographic researcher navigate this challenge.

As I delved into my project of analysing the user experience of travelling on a tram in an unfamiliar country, I felt the need to capture the user's feelings and emotions throughout their mobility experience. To achieve this, I decided to utilize journey maps, a visual tool that helped me to understand the experience of international travellers. (refer to Fig 1 in the appendix).

In essence, a journey map is a graphical representation of the entire process that a person undertakes to accomplish a specific goal. It begins with collecting the user's

actions into a timeline, which is then accompanied by their thoughts and emotions, creating a vivid narrative that tells the story of their experience. With journey maps, I was able to capture the user's touchpoints, pain points and moments of delight, allowing me to gain a deep understanding of their overall experience.

Throughout the next several sections, we will explore the intricate landscape of user experience by delving into the complex realm of emotions and thoughts. Our approach will be to create detailed journey maps that will help us uncover hidden insights into the user's psyche. The utilization of these maps will enable us to gain more in-depth insights into the user experience and thereby devise more user-friendly solutions to enhance the travel experience of foreign nationals.

Chapter 4 Results

4.1 Current state of experience

Let us embark on a thorough exploration of the contemporary tram experience in Kassel through the lens of autoethnography, with a particular focus on the perspective of an international student. Subsequently, the forthcoming chapter will meticulously delve into the intricacies and dynamics defining the present state of tram operations, service quality, and overall passenger experience within the city.

When I embarked on a test journey on trams as an international student, I approached the experience with an open mind, not knowing what to expect. My two-day experience was quite similar in most aspects, with the only noticeable difference being the process of buying a ticket from the machine available on the tram, which I will elaborate on later. Let me first begin by sharing my overall impression of the journey.

The tram's automatic doors were one of the first things that caught my attention. With a push-button to disembark at your stop, the process was quite simple and user-friendly. What stood out to me the most was the low-floor design of the tram, which made it incredibly easy to board with a baby carrier. If there was extra space, there was a button on the door to access a ramp for easy boarding. The seats were of lovely blue-green colour and were quite comfortable. I noticed that there were designated seats for the elderly and pregnant passengers, which I found to be quite thoughtful. Kassel's tram system is unique in that it has a "Stop" button on each handlebar, unlike other public transportation systems. This feature allows passengers to easily communicate with the

tram driver when they want to disembark at the next stop. The tram driver is immediately informed when the button is pressed, and they stop at the next station.

However, it's important to note that the tram may not stop at a specific station if there are no passengers who want to disembark or board the tram. This is a convenient and efficient feature that ensures that passengers only stop at their desired destination, but it's also important to be aware of the tram's behaviour when no passengers are waiting to get on or off at a specific station.

One of the best things about the tram was the ample space between each row, which made the journey quite breathable and hygienic. The frequency of each tram line was quite fast, and I was impressed with the digital display that showed the tram line and the next stop.

Let's delve into the ticket machine experience on the tram and how it works. For non-German speakers, it can be a daunting task to buy a ticket on public transportation. However, the tram ticket machine is a delightful exception. It's designed to cater to a diverse range of people and languages. Upon approaching the machine, you are pleased to find that it offers an option to switch to the English language, making the process of buying a ticket much more comfortable.

The machine offers an extensive range of ticket options, catering to various travel needs. You can choose between single tickets, multi-way tickets, and day tickets. Each option is described in detail, along with its corresponding price, making it easier to decide which option is the best for your travel needs. For instance, a single ticket is ideal for a one-way journey, whereas a multi-way ticket is an excellent option for frequent travellers. Once you have decided on your ticket type, the machine takes you to the payment screen, which shows the final price of your purchase, depending on the number of tickets you are buying.

All in all, the tram ticket machine is an absolute lifesaver for tourists and locals alike, as it offers a seamless and straightforward ticket-buying experience.

Despite my overall pleasant journey, I did encounter a few obstacles while navigating the city using trams.

- It was challenging to find the timetable for trams without prior knowledge of the city's transport system.
- Additionally, while the ticket machines offer English as a language option, I discovered that the language automatically changed to German once I selected my ticket type, which caused some confusion.
- Furthermore, I found it difficult to communicate with the drivers as they didn't speak English, which made it challenging to ask questions or clarify doubts about the stops.
- In case of emergencies, the language barrier could create issues in understanding the situations with fellow passengers and tram staff, which added to my concerns.

4.2 Measure to improve the experience

The analysis of the previous chapter has led to the development of numerous measures aimed at enhancing the experience of international students and foreign visitors.

- One of the most significant measures is the provision of multilingual information. This involves offering comprehensive tram information such as route maps, schedules, fare details, and safety instructions in languages commonly spoken by visitors, including English, French, Spanish, and Arabic. To achieve this objective, we will employ various mediums such as clear and visible signage, informative brochures, easily accessible websites, and user-friendly smartphone apps. This initiative will ensure that visitors have access to vital information in their preferred language, thus making their experience smoother and more enjoyable.
- To enhance the travel experience of non-native speakers, it is recommended to introduce language training programs for transportation staff. It is important to provide language training to drivers, ticket inspectors and customer service representatives so that they can improve their proficiency in languages like English. This will enable them to better communicate with passengers who have limited knowledge of the local language. By doing so, they will be able to offer better assistance, provide clearer directions and create a more welcoming travel environment for everyone.
- One way to improve the convenience and accessibility of tram transportation is by installing interactive touchscreen displays at tram stops and major stations. These displays can offer a range of real-time information, including tram arrival and departure times, updated route information, and alerts about service disruptions. Additionally, interactive maps and tourist information can be provided to help

travellers easily navigate the tram system and discover nearby attractions. With the ability to display information in multiple languages, these touchscreen displays can enhance the experience for all riders, regardless of their language proficiency.

- To ensure that non-German speakers can access important tram-related information and support, it is recommended to implement translation services. This will enable individuals to receive assistance with inquiries related to trams, purchase tickets, and get help during emergencies. The translation services should be available through multiple channels, such as phone, online chat, or in-person at designated locations. This will provide individuals with greater flexibility and convenience in accessing the support they need.
- To ensure that all passengers, including international students and visitors, feel welcome and included, tram staff needs to undergo cultural sensitivity training. This training will equip them with a deeper understanding of the diverse cultural backgrounds and communication styles of passengers. By becoming more culturally aware and sensitive, tram staff can create a more comfortable and inclusive environment for everyone who rides the tram.
- To enhance the experience of international students and visitors using the tram service, it is recommended to implement feedback mechanisms such as online surveys or suggestion boxes. These tools will enable you to gather valuable input about their tram experience, which can be used to identify areas that need improvement. Subsequently, you can introduce targeted interventions to address the issues and ensure that the tram service is meeting the needs and expectations of the users.

4.3 The Use of Persuasive Systems to Foster the Behaviour

Travelling by tram as an international student in Germany is a generally positive experience. However, there are areas where improvements can be made to enhance the overall experience of the users. Given that Germany attracts a substantial number of international students and tourists who may not speak the local language, persuasive systems can be added to existing applications like DB Navigator and NVV Mobil to enhance the experience of the users. Incorporating multilingual support within existing apps is one such way to cater to foreign travellers who may not be proficient in German. The app must provide options to view tram schedules, ticket information, and travel alerts in multiple languages, making it easier for international users to navigate the app and access essential information.

Another way to enhance the user experience is to utilize data analytics and machine learning algorithms to offer personalized travel recommendations to foreign users. The app can suggest popular tram routes, nearby attractions, and cultural events that align with users' interests and preferences, based on their travel history, preferences, and interests. This will enhance the overall travel experience of the users in Kassel.

To educate foreign travellers about Kassel's landmarks, historical sites, and cultural attractions accessible via tram, it would be beneficial to integrate cultural and tourist information within the app. The app should provide interactive maps, audio guides, and virtual tours of popular tourist destinations along tram routes, enriching users' understanding of the city's heritage and culture.

To assist foreign travellers in communicating with tram staff and fellow passengers, it would be advantageous to implement real-time translation and interpretation features within the app. This can be achieved by incorporating speech-to-text and text-to-speech capabilities to facilitate seamless communication in different languages. This will help users overcome language barriers and navigate tram journeys more effectively.

The existing apps can be further advanced to facilitate the tram travel experience of foreign travellers in Kassel. By incorporating social integration features, travellers can connect with locals and fellow travellers to seek travel advice, share experiences, and receive assistance from local experts and enthusiasts. This fosters a sense of community and camaraderie among tram users, making the travel experience more engaging and memorable.

Gamification elements and incentives can also be introduced to motivate travellers to explore the city via tram and engage with the app. These elements could include rewards, badges, and virtual achievements for completing tram journeys, visiting cultural landmarks, and participating in citywide events. These elements encourage users to immerse themselves in the local culture and attractions, providing a more informative, fun, and interactive travel experience.

By incorporating these persuasive systems into the existing DB Navigator app, foreign travellers can enjoy a more immersive and seamless navigation and communication experience. This enhances the overall travel experience and promotes cultural exchange, community engagement, and positive interactions among travellers from diverse backgrounds.

Chapter 5: Discussion

The primary objective of this study was to gain a more comprehensive understanding of the experience of foreign individuals when using the tram system in Kassel, Germany for the first time. To achieve this, the study utilized the autoethnographic research method, which involved the researcher immersing themselves in the experience of using the tram system as a foreigner.

The study focused on three central research questions to gain a detailed understanding of the tram experience for foreigners. Firstly, the research sought to explore the experience of using the tram system for outsiders. This question is thoroughly discussed in chapter 4.1.1, which provides a detailed analysis of the emotions, thoughts, and experiences of foreign individuals. Secondly, the research aimed to identify additional improvements that could enhance the experience of users. This involved a thorough examination of the existing tram system, including the facilities, information, and overall user experience. Chapter 4.2 provides a comprehensive overview of the improvements that could be made to enhance the experience of foreign individuals using the tram system.

Finally, the study explored how persuasive systems and designs could be utilized to promote positive behaviour. Given that German is the dominant language in the country, navigating the tram system can be challenging for tourists who do not speak the language. Chapter 4.3 provides a detailed analysis of the persuasive systems and designs that could be implemented to make tourists feel more included and to foster positive behaviour. The chapter discusses several strategies, including digital applications, signage, and communication methods, that could be implemented to enhance the tram system's overall experience for foreigners.

The experience journey map proved to be a valuable tool in capturing the pain and gain moments of the user during their tram ride. By utilizing this tool, I was able to gain deeper insight into the user's feelings and emotions, allowing for a more comprehensive understanding of their experience. However, while the data collected through autoethnography provided valuable information, it also presented several challenges. Memory data, which played a significant role in the research, can be subjective, leading to potential gaps in the data. Despite this, collecting data through various tools such as journaling, recording with a phone, and accessing external data proved to help

overcome these challenges. To further enhance the accuracy and precision of the data collected, it would've been beneficial to conduct more in-depth interviews with outsiders, providing a more well-rounded perspective on the topic.
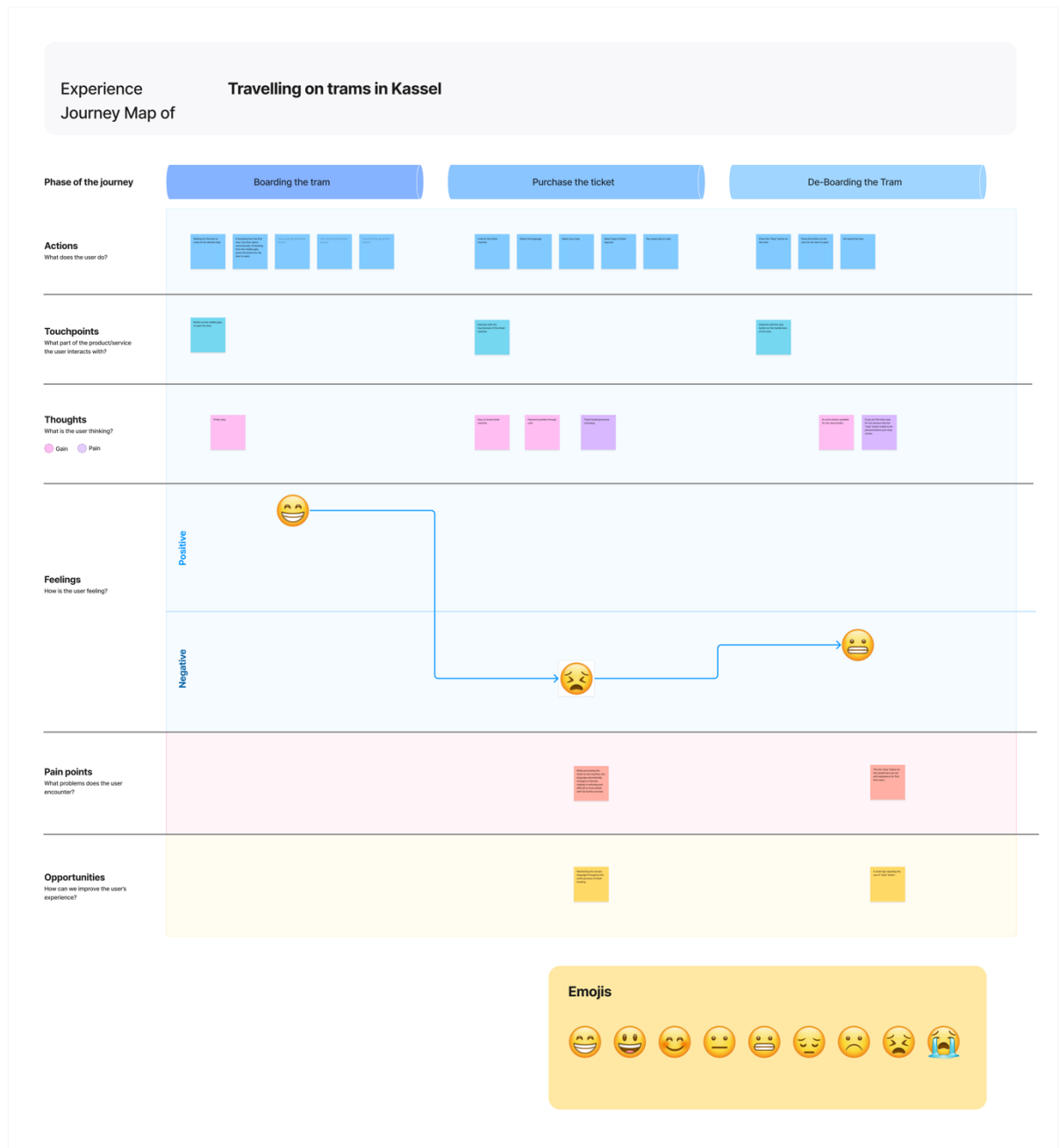
Appendix

Fig 1: Experience Journey Map

Fig 2: Ticket machine on tram

Fig 3: Purchased Ticket

Fig 4: An extra button to access the ramp

Fig 5: Digital display of Line number

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Declaration

I certify that I have written this term paper independently and without the use of any aids other than those stated. All passages taken verbatim or in spirit from publications or other sources are marked as such.

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