To Ride or Not to Ride?

A thesis on behavioural intention to use demand-responsive transport in rural areas

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Colophon

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Preface

This document contains my Master's thesis on the intention to use demand-responsive transport in Zeeland, the Netherlands. This thesis could not have reached this point without the help of several people. Firstly, I would like to thank those who shaped this thesis, namely the inhabitants of Zeeland and experts. I thank them for the time and effort they offered to help me with this thesis. Secondly, I would like to thank my colleagues at MuConsult who answered any questions I had. Thirdly, I would like to thank my supervisors, Arnoud, Jeroen, and Tom, for their guidance, support, and patience. Lasty, I would like to thank my fellow students from the Dual Mode for their feedback, specifically Anya, Finn, and Freddie. Without their (emotional) support, this thesis would not have been what it is today.

Abstract

Rural areas often struggle with traditional public transport systems due to their sparse density and low demand, which results in a financially inviable system. A solution to this problem could be demand-responsive transport (DRT). However, many systems over the years have failed due to various reasons, including low ridership. This thesis aims to understand the reasons why (potential) users (do not) opt for this service, using the novel DRT system Flex in Zeeland (NL) as a case study. Three aspects were included in this research, namely the rural spatial context, personal characteristics of (potential) users, and aspects of transport. This research conducts a document analysis and interviews to understand to which extent these aspects are important in decision-making.

This thesis concludes that reliability, comfort, and accessibility are the most important aspects, whereas social influence has a lesser effect on DRT adoption. However, it should be noted that the relations between indicators should not be ignored: some aspects might be unimportant on their own, but (in)directly influence other, more important indicators. Moreover, the rural spatial context and personal characteristic of rural users could both negatively and positively influence the use of DRT: the lack of public transport in rural areas can stimulate inhabitants to opt for DRT – mainly women, the elderly, and those with lower education and lower income – whereas a cultural aversion towards new modes of transport and high levels of car ownership can inhibit the adoption of DRT. This thesis ends with policy recommendations to combat these negative influences on the adoption of DRT.

Key words: demand-responsive transport, mobility, public transport, behavioural intention, modal choice

Abbreviations

DRT	Demand-responsive transport
ITM	Initial Trust Model
PoCN	Pyramid of Customer Needs
PT	Public transport
PZC	Provincial Newspaper of Zeeland (*Provinciale Zeeuwse Courant*)
RMS	Regional Mobility Strategy (*Regionale Mobiliteitsstrategie*)
TA	Thematic Analysis
TAM	Technology Acceptance Model
TPT	Traditional public transport
UTAUT	Unified Theory of Acceptance and Use of Technology

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1 Introduction

1.1 Motivation

In October of 2023, it was announced that transport company Connexxion would cease to facilitate bus transportation in the rural and sparsely populated province of Zeeland, the Netherlands[1]. No other companies were interested in taking this task upon them at the time, meaning Zeeland was to be without a bus provider in 2026. Connexxion made their decision based on their negative outlook on the province's new mobility plan outlined in the *Regionale Mobiliteitsstrategie* (RMS: tr.: Regional Mobility Strategy) (NOS, 2023). This plan focuses on the transition towards smart mobility, which includes the introduction of a hub-centred, demand-responsive transport (DRT) system called Flex (Provincie Zeeland, 2022).

Coincidentally, I was looking for a topic for my thesis in October. The solution to integrate DRT into a public transport (PT) system intrigued me to delve into this topic. I started my internship at the consultancy MuConsult to research this topic due to their experience with mobility in Zeeland. During our first meeting, they expressed interest in understanding why inhabitants would opt for DRT, with the aim of stimulating the use of the system.

From the start, I understood it would be a challenge to familiarise myself with the spatial context and local challenges, given that I am not from Zeeland myself. Therefore, it was important for me to understand these matters by reading news articles and literature, talking to inhabitants and traveling through the province.

Ironically, I had to resort to travelling by car when visiting areas that were far from train and bus stations. This experience is one I shared with a significant share of the inhabitants whom I talked to. One inhabitant mentioned they did not travel with PT because the nearest bus stop is c. 3 kilometres from their village (Potential User #1). Another mentioned they were often forced to use the car because the bus did not operate between 09.00 and 14.30 (Potential User #5). Furthermore, it was mentioned that people

[1] It was later announced that Connexxion would renew the contract for two more years, but would not continue afterwards (Provincie Zeeland, 2024).

who should use PT instead of the car – be it due to physical impairments or old age – would sometimes opt for the latter because of the (perceived) lack of accessible PT (Expert #3).

These statements not only exemplify the lack of PT in Zeeland, but also illustrate the different reasons why inhabitants opt for their current mode of transport. Therefore, there are arguably certain indicators that influence people's intent to behave a certain way. With this thesis, I investigate this *behavioural intention* to uncover which aspects are important when choosing a mode of transport, using Flex as a case study. Before delving into the research, the following section provides the necessary background information to fully grasp the situation.

1.2 Background Information

1.2.1 Mobility in Rural Areas

Traditional public transportation (TPT) – fixed route service – is often successful in cities because of high demand. However, rural areas struggle with such a system due to being sparsely populated and having less economic activity in comparison (Filippi et al., 2023; Potter et al., 2024). Here, bus transportation is usually characterised by a few lines with mid- to high-capacity vehicles, running on a low frequency. However, a high-frequency service covering a large area is necessary to make PT successful (Filippi et al., 2023). Unfortunately, this is financially inefficient due to the low demand: an empty bus operating is not a rare sight in the countryside (Martí et al., 2023). This leads to a vicious cycle where the costs per passenger rise as the demand diminishes and the operator is forced to reduce the frequency of buses in order to remain financially viable. However, passengers might refrain from using the services in response, as it does not fit their needs anymore, which further feeds the cycle (Bar-Yosef et al., 2013). This only puts those who might rely on PT – elderly, youth, and disabled people – in a more vulnerable position.

A consequence of insufficient PT is a higher dependency on private vehicles. However, those who cannot or do not want to opt for the car are forced to either drive or live a life with little mobility. This is problematic in two ways: (1) the former could lead to

more accidents on the road, as e.g. elderly people might not be able to drive safely yet feel forced to do so, and (2) the latter could negatively impact an individual's quality of life due to (social) isolation (Knierim & Schlüter, 2021). Therefore, an alternative to fixed bus transportation has to be implemented to ensure an adequate quality of life for all demographics in rural areas.

1.2.2 Demand-Responsive Transport

TPT in rural areas could be improved by implementing new technologies better suited for the aforementioned travel patterns. DRT is discussed as one of these improvements (Takeuchi et al., 2003; Knierim & Schlüter, 2021). DRT is widely seen as a mode of transport that has characteristics of both a bus and a taxi: journeys going into a similar direction are pooled, but rides often have to be booked beforehand to request where and when to be picked up and dropped off (Mageean & Nelson, 2003; Jittrapirom et al., 2019). Each DRT system is implemented differently. Currie and Fournier (2020) proposed a number of service typologies, ranging from a predefined route and timetable to a flexible service with stops determined right before or during operation.

DRT has been utilised for many decades (Nutley, 1998; Mehlert & Schiefelbusch, 2018). Initially, these systems commenced locally, e.g. as community-based services for people with impaired mobility (Brake et al., 2004). Over time, commercial DRT services have been established to improve PT (Sörensen et al., 2021), but the concept is still relatively new to the general public (Expert #8).

It seems that there are two main reasons – that are not necessarily mutually exclusive – why DRT is implemented. Firstly, some DRT services operate as an *addition* to the existing PT lines, serving the first/last mile of a trip. They operate in low-demand areas where traditional PT (TPT) – bus and train – is not feasible. Here, DRT acts as a 'feeder' by transporting travellers to the high-demand lines. In this instance, DRT could improve the mobility of those living in areas where there is little to no PT (Kjærup et al., 2020).

Secondly, DRT could also be a *replacement* for the bus in areas where there is little to no demand. In this instance, DRT maintains the mobility in the area rather than letting it

decline while also being more financially viable. An example is the DRT system Vlinder, which replaced a low-demand bus line in the city of Zutphen, the Netherlands (Expert #4).

There are several sources that state DRT is able to improve mobility in rural areas. Navidi et al. (2018) report that replacing bus systems with DRT improves mobility by decreasing the perceived travel time without any extra costs under certain circumstances[2]. This is in line with Takeuchi et al. (2003), who found that DRT increases mobility in low-demand areas where traditional public transport systems operate with difficulty, whilst also providing mobility for those who cannot or do not want to drive.

In other cases, DRT has popularised the use of public transport. The aforementioned system Vlinder replaced a bus line that operated once an hour, often empty. Vlinder eventually gained significant popularity, which led to the reinstatement of the bus line that would now run twice an hour (Expert #4). However, not all DRT systems have reached the same success as Vlinder.

1.2.3 Intention to Use DRT

A significant share of DRT systems cease to exist: about 50% last less than seven years. There are various reasons that could be attributed to this. In some cases, external factors, such as a lack of support from stakeholders or hostile competition, could contribute to the end of a DRT system. In other cases, services cease due to internal problems, such as poor planning, technical problems, or high costs (Currie & Fournier, 2020; Enoch et al., 2006). The latter is closely linked to another issue DRT faces, namely low ridership (Currie & Fournier, 2020; Schasché et al, 2022). As mentioned before, fewer passengers lead to higher costs per passenger, which forces the operator to lower the frequency and reinforces the negative feedback loop. Therefore, it could be said that low ridership is at the heart of the survival of a DRT system.

[2] The waiting time of DRT systems was perceived as longer compared to traditional public transport. However, waiting on the former is typically experienced comfortably from the user's home. Therefore, the paper argues that providing communication tools that inform the users about their waiting time could decrease the perceived waiting time, as users could do other activities in the meantime.

An example of low DRT ridership in the Netherlands is the system *Mokumflex* in Amsterdam, which replaced a low-demand bus line. Despite operating longer and being completely free as opposed to the bus line it replaced, the number of travellers decreased by 72%. Likewise, the system *Bravoflex* in the Dutch province of Noord-Brabant saw a 75% decrease in ridership when a bus line was replaced by DRT (MuConsult, 2023).

Papers on the use of DRT have found a variety of reasons why DRT is (not) used. Firstly, it seems certain aspects of transport influence the use of DRT. An evaluation of *Mokumflex* and *Bravoflex* showed that there were two main reasons why travellers did not use these systems: (1) travellers were not sure if they would be on time due to possible delays in a previous mode of transport and (2) planning a trip was seen as inflexible and a hindrance, especially on the way back (MuConsult, 2023).

These two findings correlate with papers that researched the intention to use DRT, using the Unified Theory of Acceptance and Use of Technology (UTAUT). König & Grippenkoven (2020), Pak et al. (2023), and Schasché et al. (2023) discussed the influence of several dimensions on the intention to use DRT: they found significant results for dimensions such as reliability and insignificant results for dimensions such as a good reputation. From these findings, it can be concluded that certain aspects of transport have an effect on the adoption of DRT and should therefore be considered when discussing the intention to use DRT.

Secondly, the spatial context a system operates in could potentially influence the use of DRT, as some systems have (partly) failed due to dispersed low-density land use, a general cultural aversion towards sharing vehicles, or a lack of (financial) support (Enoch et al., 2006). Therefore, the spatial context should be considered when discussing the intention to use DRT.

Thirdly, personal characteristics seemingly influence the use of DRT. Several papers (see Chapter 2) discuss the effect of factors such as age or gender on the adoption of DRT. Therefore, (potential) user characteristics should also be taken into consideration when investigating the intention to use DRT.

Although DRT is prone to fail, it is becoming an increasingly popular mode of transport in the Netherlands for increasing mobility in low-demand areas (Coutinho et al., 2020; Jittrapirom et al., 2019), including the aforementioned system Flex in Zeeland. The following section discusses this case further, commencing with a brief introduction of the area.

1.2.4 Mobility in Zeeland

Zeeland is a relatively low-density and rural area in the Netherlands, unique due to its geography of peninsulas and islands (see Figure 1) (CBS, 2021). Following the aforementioned travel patterns in rural areas, inhabitants of Zeeland often opt for the car, whereas PT use is relatively low (Provincie Zeeland, 2022). There are several factors that could contribute to this.

Figure 1: Map of Zeeland (Kaarten & Atlassen, n.d.)

Firstly, the spatial context of Zeeland plays a significant role in the intention to use certain modes of transport. Aside from the great distances between towns due to the low density, inhabitants mention the regional differences between living on peninsulas and

islands such as Schouwen-Duivenland or Zeeuws-Vlaanderen and “the other side” (Ettema & Cornea, 2019, p.8), meaning Walcheren and Zuid-Beveland. The former regions experience less mobility as they have to rely on bus transportation and private vehicles: train transportation is only available in the latter two regions. Furthermore, it was also expensive for inhabitants of Zeeuws-Vlaanderen to travel to other parts of Zeeland until recently, as they either had to travel via a ferry or a toll road. On a local level, particularly inhabitants living in smaller villages mention how travelling by PT is difficult due to the lack of PT and the many transfers one would have to take, which naturally leads to a longer trip (Ettema & Cornea, 2019).

Secondly, it seems different demographics struggle more than others. Briefly mentioned before is that the elderly and youth often struggle more with mobility compared to adults due to their limited options. This is no different in Zeeland and bears several consequences for these groups. For one, the insufficient PT reflects badly on children’s education levels, as their preferred school option could not be available due to long travel time. On the other hand, elderly inhabitants describe travelling with PT as being too laborious and long (Ettema & Cornea, 2019). The latter could be exacerbated by the fact that Zeeland has one of the biggest shares of elderly people in the Netherlands (AlleCijfers, 2024). The consequences of limited PT are a lack of freedom and general frustration that there are no adequate PT options (Ettema & Cornea, 2019).

1.2.5 DRT in Zeeland

Fortunately, the province is currently in the midst of reworking their traditional public transport system: a combination of their current system and a DRT service named Flex. Flex operates in areas with little demand (such as villages or residences in the countryside), while high-demand bus lines remain. Users are able to travel from one stop to another or to a hub. The latter is essentially a node where several modes of transport meet. Therefore, hubs are able to connect different modes of transport to ensure a seamless transfer. In the case of Zeeland, this is where DRT and the aforementioned high-demand bus lines meet. The result is a network of several high-demand lines and a DRT system that either ‘feeds’ these lines or transports users between low-demand areas,

which essentially means Flex is both an addition to and a replacement for the bus in low-demand areas.

Although the province is positive about the system's potential to provide mobility to its inhabitants, many parties worry about the effectiveness of DRT. This worry is not unfounded due to the aforementioned failed systems, which are often mentioned in arguments against the use of DRT in Zeeland (Muconsult, 2023; Omroep Zeeland, 2023a).

1.4 Research Problem

The previous section has illustrated the diminishing mobility in rural areas – in particular for the vulnerable groups – and the role DRT could play in providing that mobility. Although research has shown that DRT could be the solution to this problem (see Chapter 1.2.2), the significant share of failed systems showcases that these services are not attractive enough to garner a sufficient amount of users, which further diminishes said mobility.

It is, to a certain extent, unclear what (potential) users want from DRT services. There are several studies where surveys have been conducted, but there is a limited amount of research that specifically utilises in-depth interviews with (potential) users to fully grasp what individuals desire. Furthermore, the spatial context and personal characteristics of (potential) users are often not taken into account in these studies.

The failure of previous systems has eventually led to the situation in Zeeland, where several parties question if and how a DRT system could function and improve mobility rather than diminish it. An answer to how DRT may succeed could potentially unburden these parties and make way for the implementation, acceptance, and use of DRT services, which could enhance the mobility in rural areas and ultimately improve the quality of life.

1.5 Research Aim

Therefore, the objective of this research is to uncover what stimulates the use of DRT by understanding why people opt for a certain mode of transport. The aforementioned system Flex in the province of Zeeland is used in this thesis as a case study.

Five sources of data were utilised for researching this topic. Firstly, a document analysis was done to gain information on the rural spatial context, personal characteristics of rural DRT users, and the aspects of transport that might influence the use of DRT. Secondly, interviews with inhabitants of Zeeland – and thus potential users of Flex – were conducted. The aim of these interviews was to uncover which aspects are important for potential users and what constitutes their modal choice. Thirdly, interviews with experts were conducted. The aim of these interviews was to gain knowledge on the spatial context of Zeeland, DRT, and the methodology of this research. Fourthly, interviews with users of Flex were conducted. The aim of these interviews was to understand why they chose Flex and what aspects they (dis)liked. Fifthly, I wrote down my observations during my time in Zeeland (see Appendix A). For me, these observations were essential in understanding the context of Zeeland; for this thesis, the observations were added when relevant to findings from the interviews. The next paragraph discusses how these methods are used in combination with this thesis' research questions.

1.6 Research Questions

The main question of this thesis is the following: **What stimulates the intention to use DRT in the province of Zeeland?** Several sub-questions have been formulated to answer this question:

1) **To what extent do certain aspects of transport influence the intention to use DRT?** The aspects were formulated based on a literature review and several models. The methods used to answer this question are interviews with potential users, experts, and users of Flex, and my observations.

2) **How do personal characteristics influence the intention to use DRT?** The personal characteristics are based on a literature review. The methods used to answer this question are the document analysis and interviews.
3) **How does the rural spatial context influence the use of DRT?** A literature review on the rural spatial context forms the basis of the answer to this question. The methods used to answer this question are the document analysis and interviews.

1.7 Relevance

This thesis aims to be both scientifically and socially relevant. The following sections discuss the relevance of this research.

1.7.1 Societal Relevance

Rural areas in the Netherlands have increasingly become more reliant on private vehicles due to a declining population, workforce, and amenities. Naturally, this negatively impacts the viability of PT in rural areas, as previously mentioned in Chapter 1.2.1, which puts those who rely on PT in a more vulnerable position (Jorritsma et al., 2023). This trend continues in Zeeland. Here, residents who do not own a car experience a lack of mobility within their region and when travelling outside of it. During the week, buses are often full and uncomfortable, especially for those with disabilities; on the weekends, small bus lines – which generally serve low-demand areas – operate with limited frequency (Ettema & Cornea, 2019).

The decline of PT services in such areas could negatively influence the quality of life of those who rely on it. Several studies have illustrated the importance of mobility across all demographics, but in particular the non-drivers – the younger and older generations, and individuals with a disability. Marottoli et al. (1997) found that driving cessation is a strong predictor of increased depressive symptoms, which decreases the quality of life as mobility is needed to fulfil essential and social needs (Musselwhite & Shergold, 2012). Furthermore, a study by Kullman (2010) states how mobility is a vital part of childhood, e.g. achieving travelling needs and independence. A lack thereof can have negative consequences. This correlates with a study done by Berg & Ihlström (2019), who found

that poor PT restricts children's and adolescents' mobility due to their inability to purchase a private vehicle, which plays an important role in the daily life of rural inhabitants. This trend is also present in Zeeland, where children sometimes do not opt for their preferred educational institution due to a lack of mobility (Ettema & Cornea, 2019).

1.7.2 Scientific Relevance

Jorritsma et al. (2023) argue the implementation of small-scale PT – such as DRT – could positively influence the mobility in rural areas. However, as previously mentioned, there is a limited amount of research on how to design a DRT system and, subsequently, several gaps in knowledge. Firstly, there are few studies that seek out what aspects are needed to stimulate DRT use. A significant share of studies on DRT in rural areas are surveys on the personal characteristics and satisfaction of travellers of DRT (Avermann & Schlüter, 2019; Gkavra et al., 2023; Kersting et al., 2021; Yang & Cherry, 2016). However, a significant share of these surveys do not go into depth on what the system should look like according to potential DRT users in rural areas. Secondly, during my search for literature, I found merely three articles that studied the behavioural intention to use DRT, namely König & Grippenkoven (2020), Pak et al. (2023), and Schasché et al. (2023). Furthermore, all three articles used surveys as their main method. Surveys could potentially hinder the respondent from sharing their truthful answer, as they are bound to the preconceived answers written on the survey (Van Thiel, 2014). Thirdly, I found that research on specifically rural as opposed to urban DRT users is fairly limited. It is important to distinguish rural and urban DRT, as Schasché et al. (2022) found that users' needs might differ based on their setting being urban or rural: some aspects were more important to the former, whilst others were more important to the latter.

This thesis contributes to the current body of knowledge on DRT and fills the aforementioned gaps by implementing the following aspects. Firstly, this thesis is more holistic by focusing on several aspects surrounding DRT use instead of merely one. Secondly, I opted to utilise interviews in this thesis to gain a fuller understanding of this phenomenon and to address the lack of interviews used in research on DRT use. Thirdly, this thesis provides more knowledge on DRT use in a rural context. This means that literature on urban DRT systems has been consciously used.

2 Literature Review

This chapter provides a discussion of literature on rural areas and the three factors that could influence the use of DRT as mentioned in the previous chapter. The first section covers the definition of 'rural areas' used in this thesis. The following sections discuss literature on effects of the rural spatial context, personal characteristics of (potential) users, and aspects of transport.

2.1 Typology of Rural Areas

It is important to determine what constitutes a rural area before discussing the subject. The Dye Management Group (2001) discusses three types of rural areas. Firstly, the *basic rural areas* are dispersed regions with little or no centres of 5000+ inhabitants. They are mainly characterised by agricultural and natural resource-based economies, stable or declining populations, and localised transport. Secondly, *developed rural areas* are dispersed regions with one or multiple centres of 5000+ inhabitants. Their economies tend to be industrial and service-based in cities and agricultural and natural resource-based in rural areas. Their population is either stable or growing and experiences more diverse transportation. Thirdly, the *urban boundary rural areas* are highly developed regions that border metropolitan areas. They are characterised by economic growth, population growth, and transportation tied to an urban centre. These definitions reappear in this thesis when discussing the types of rural areas in Zeeland (see Chapter 5).

2.2 Rural Spatial Context

Literature points towards several spatial characteristics of rural areas that could influence the adoption of DRT. The following section covers three aspects that are often mentioned, namely (1) population density and distribution, (2) existing transport infrastructure, and (3) public support and awareness. These aspects are briefly discussed before stating their role in the adoption of DRT. Table 1 visualises the literature on DRT systems used in this section.

System	Place of Operation	Rural / Urban	Source(s)
BART	San Francisco, United States	Urban	Anspacher et al. (2004)
CallConnect	Lincolnshire, United Kingdom	Rural	Wang et al. (2015)
Dailan CB system	Dailan, China	Urban	Wang et al. (2023)
EcoBus	Lower Saxony, Germany	Rural	Avermann & Schlüter (2019)
Local Link	Greater Manchester, United Kingdom	Rural	Wang et al. (2013)
Mybuxi	Herzogenbuchsee & Emmental, Switzerland	Rural	Imhof & Blättler (2023)
Pewsey Wigglybus	Wiltshire, United Kingdom	Rural	Laws (2009)
Multiple systems	Scotland	Both	Scottish Executive (2006)
	International	Both	Enoch et al. (2006)
	United Kingdom	Both	Brake et al. (2004)
Hypothetical DRT situation	New South Wales, Australia	Urban[3]	Daniels & Murray (2012)

Table 1: DRT systems mentioned in Chapter 2.2

2.2.1 Population Density & Distribution

Rural areas are characterised by their low population density (McDaniels et al., 2017), which is strengthened by their general population decline. Therefore, travel distances in rural areas are greater compared to urban areas (Pucher & Renne, 2005). This effect is increased by the closure of facilities due to less economic activity. The result is that a share of individuals experiencing a higher level of mobility, as their primary response is to purchase a personal vehicle. However, mobility diminishes for those who are unable to purchase or drive a car. Subsequently, this group depends on the provision of PT (Banister, 1983).

[3] Focuses on low-density urban areas and has therefore been included in this section.

Results vary between papers on whether population density and decline have a significant impact on the use of DRT. Some studies found that low-density areas are more prone to use DRT services, both in rural (Wang et al., 2013) and urban areas (Kaufman et al., 2021; Wang et al., 2023). However, others state the opposite, concluding that a dispersed land-use pattern is not beneficial for DRT (Enoch et al., 2006; Wang et al., 2023). Imhof and Blättler (2023) found that the most important spatial characteristic to predict DRT use in rural Switzerland is a growing population size, as an increasing number of inhabitants expands the number of potential users. Furthermore, higher levels of car ownership in dispersed areas (due to the aforementioned increased distances between facilities) could negatively impact DRT use. The effect of car ownership and DRT use is further discussed in Chapter 2.3.6.

2.2.2 Existing Transport Infrastructure

Rural areas usually have less PT compared to urban areas. This is partly due to the declining population that characterises rural areas, as a population decline results in higher expenses of public transport provision per passenger (Sörensen et al., 2021). As mentioned briefly in Chapter 1.2.1, when a bus line is faced with a lower demand, the operator tends to cut expenses instead of improving the service, e.g. by reducing the frequency of buses. In response, some passengers might refrain from using the bus as it does not fit their schedule or needs any longer. Instead, they opt for a different route or mode of transport. This leads to a vicious cycle: fewer passengers continue opting for the bus as the provider has to continue cutting expenses (Bar-Yosef et al., 2013). Again, this only puts those who rely on public transport in a more vulnerable position.

A lack of adequate public transport in rural areas could have a positive effect on the adoption of DRT, as poor public transport networks seem to stimulate the adoption of DRT. Anspacher et al. (2004) found that residents who live more than half a mile (c. 0.8 km) away from the nearest station were more prone to use the DRT system BART. This is in line with Wang et al. (2023) and their research on the Dailan CB System. Furthermore, Avermann & Schlüter (2019) found that those who experience poor public transport in their area tended to appreciate the EcoBus more.

2.2.3 Public Support & Awareness

Inhabitants of rural areas might be less interested in new forms of transport. Although literature on this topic is limited, a study by Pot et al. (2020) found that local norms in rural areas – which are partly shaped by habitual car use – negatively influence the acceptance rate of novel transport types.

This lack of public support and awareness negatively influences the adoption of DRT. Daniels and Mulley (2012) found that some individuals experienced the service as "a loss of independence and dignity" (p.70). This was mainly due to certain preconceptions non-users had, such as a preference for fixed-route services because of its certainty – even if they do not use it – or feeling opposed to the idea of using a 'special' service that is commonly used by disadvantaged or disabled people. This is in line with Enoch et al. (2006), who state some users experienced a certain psychological barrier to request shared rides. The paper states that this could partly be due to a lack of understanding about the system.

Based on these sources, it could be argued that providing knowledge on DRT could increase its acceptance rate, e.g. by means of marketing. Enoch et al. (2006) found that ineffective marketing was one of the reasons why some DRT schemes ceased to exist, which reinforces the idea that marketing is essential to the success of a system. However, it should be kept in mind that DRT is less marketable than a traditional bus service due to the aforementioned general cultural aversion towards DRT (Enoch et al., 2006; Laws, 2009; Scottish Executive, 2006). Methods on how to provide knowledge on DRT are further discussed in Chapter 2.4.6.

2.3 Personal Characteristics of Rural DRT Users

The following section covers the influence of personal characteristics on the use of DRT. Characteristics that were mentioned most often in literature are discussed below, which include gender, age, education, income, household size, car ownership, and the use of public transport. Table 2 visualises the literature on DRT systems used in this section.

System	Place of Operation	Rural / Urban	Source(s)
CallConnect	Lincolnshire, United Kingdom	Rural	Wang et al. (2015)
EcoBus	Lower Saxony, Germany	Rural	Avermann & Schlüter (2019)
			Nyga et al. (2020)
MK Connect	Milton Keynes, United Kingdom	Both	Potter et al. (2024)
Plustur	Jutland, Denmark	Rural	Kjærup et al. (2020)
WalsieBus & W3Shuttle	Salzburg, Austria	Rural	Gkavra et al. (2023)
Hypothetical DRT situation	Košice, Slovakia	Rural	Džupka et al. (2024)
Multiple systems	Europe	Both	Mageean & Nelson (2003)
Unknown DRT system	Tennessee, United States	Rural	Yang & Cherry (2016)

Table 2: DRT systems mentioned in Chapter 2.3

2.3.1 Gender

Women are generally more inclined to utilise DRT services[4] (Gkavra et al., 2023; Kjærup et al., 2020; Mageean & Nelson, 2003; Potter et al., 2024; Wang et al., 2015; Yang & Cherry, 2016). This could be due to low car ownership among women (Mageean & Nelson, 2003), which would be consistent with the results regarding DRT use and car ownership discussed in Chapter 2.3.6.

However, some studies show a similar or higher percentage of men using DRT. Džupka et al. (2024) state that men in a rural area in Slovakia had a greater acceptance of DRT and higher willingness-to-pay values. Furthermore, Avermann & Schlüter (2019) conclude that the EcoBus in Germany did not attract more women than men. This is in line with a study by Kersting et al. (2021), who also researched the EcoBus.

[4] It should be noted that women are more likely to participate in surveys than men, which might skew the results slightly (Smith, 2008).

2.3.2 Age

Elderly people tend to use DRT more than younger people. Wang et al. (2015) found that the majority of users of CallConnect (c. 60%) were above the age of 60, with the majority of them being above the age of 70 (c. 70%). This is in line with Gkavra et al. (2023). However, Džupka et al. (2024) found that a higher age correlates with diminishing acceptance of DRT and a lower willingness-to-pay, except when the older person has a disability. The study states that this might be due to a greater sense of risk aversion, a preference for established routes over exploring new, flexible ones, and a relative lack of technology adoption and adaptation. Mageean and Nelson (2003) argue that these differences between papers could be due to some DRT systems being targeted towards certain demographics.

2.3.3 Education Level

Those with a lower education level tend to opt for DRT more often than those with a higher education level. Nyga et al. (2020) found that a completed apprenticeship affected the willingness-to-pay positively, while a university degree reduced it. While Džupka et al. (2024) concluded that users with primary education tended to have one of the highest DRT acceptance rates and willingness-to-pay values, the paper also mentioned that the latter is similar across all educational degrees. However, these papers are not in line with Yang & Cherry (2016), who state that those with a higher level of education tend to utilise DRT more often.

The relation between DRT and lower education might be because those with a lower education also earn less compared to those who obtained a higher education (Torpey, 2018), which could influence car ownership (Linn & Shen, 2023). This is further discussed in the following section.

2.3.4 Income

Generally, DRT is more used by lower-income households. Yang & Cherry (2016) concluded that users generally had a lower personal and household income. A report by Nyga et al. (2020) and Potter et al. (2024) are in line with these results. As stated previously,

this could also be due to the relationship between income and car ownership, as households with a lower income tend to have lower car ownership (Linn & Shen, 2023).

These results are similar to a paper by Džupka et al. (2024), as the report concluded that users with a lower annual income were more inclined to accept DRT compared to middle-group income. However, it differs from other literature when stating that the low annual income group is followed by the highest income bracket instead of the medium income. Gkavra et al. (2023) also slightly differ from literature, as mostly the medium-income group appears to be using DRT, closely followed by the lower-income bracket. However, the article also states that the income level seems insignificant to the odds of choosing DRT.

2.3.5 Household

Generally, single households have a higher probability of using DRT compared to households with more members. Nyga et al. (2020) reported a 30% higher acceptance rate of DRT among single households. This is in line with Gkavra et al. (2023). This paper also argues that people with children have a lower probability of using DRT. However, Džupka et al. (2024) found that single-person households have a lower willingness-to-pay than households with more members.

2.3.6 Car Ownership

Most papers on DRT agree that car ownership negatively influences the use of DRT: Avermann & Schlüter (2019) found that car ownership might have a negative impact on satisfaction with DRT services[5] and Džupka et al. (2024) conclude there is a negative relation between car ownership and willingness-to-pay for DRT.

2.3.7 Use of Public Transport

Results vary when it comes to the attitude towards and use of public transport. Gkavra et al. (2023) argue that the frequency of other public transport services seems unrelated to the probability of choosing DRT. Therefore, it is argued that it is more important to focus on creating a positive image for public transport, which might improve (non-)users views

[5] Research also states the sample is too small to verify.

on DRT as well. However, Avermann & Schlüter (2019) argue that poor public transport can result in higher levels of satisfaction with DRT services. This is in line with the sources mentioned in Chapter 2.2.2.

2.4 Insights From Other DRT Systems

In the following section, six insights from literature on DRT systems or hypothetical DRT systems are discussed. Table 3 visualises the literature on DRT systems used in this section.

System	Place of Operation	Rural / Urban	Source(s)
Anruf-Auto Rodenberg & RufBus Nuthe-Urstromtal	Lower Saxony, Germany	Rural	König & Grippenkoven (2020)
EcoBus	Lower Saxony, Germany	Rural	Avermann & Schlüter (2019)
			Kersting et al. (2021)
			Knierim & Schlüter (2021)
Mybuxi	Herzogenbuchsee & Emmental, Switzerland	Rural	Imhof & Blättler (2023)
Plustur	Jutland, Denmark	Rural	Kjærup et al. (2020)
Hypothetical DRT situation	Skåne, Sweden	Both	Jevinger & Svensson (2024)
	New South Wales, Australia	Urban[6]	Daniels & Murray (2012)
	Carinthia, Styria & Upper Austria, Austria	Rural	Schasché et al. (2023)

Table 3: DRT systems mentioned in Chapter 2.4

[6] Focuses on low-density urban areas and has therefore been included in this section.

2.4.1 Different Methods of Booking

It is important to implement different methods of booking to reach different demographics. Jevinger & Svensson (2024) studied the acceptance rates of methods of booking across three demographics – children, adults, and elderly – and noted significant differences between them. The paper found that booking via a human operator is the preferred method for the elderly, whereas adults and children would rather book via an app or webpage.

Furthermore, it is interesting to note that Jevinger & Svensson (2024) found a difference between the acceptance rates of an already existing app and a new, dedicated app for DRT services: the percentage of children and adults who would book with an existing app (r. 68% and 50%) is significantly lower than the percentage of children and adults who would book with a new, dedicated app (48% and 41%, respectively). However, the elderly prefer the latter with a 15% difference. Therefore, operators should consider whether to create a new app, as it possibly could hinder the use of DRT for some demographics.

2.4.2 Margin of Delay

Some studies concluded that the timeframe in which a vehicle has to arrive should be as small as possible. Jevinger & Svensson (2024) found that the majority of their respondents did not mind a delay of 5 or 10 minutes (respectively c. 93% and 79%). The acceptance rate drops significantly when the margin of delay is 20 minutes (c. 31%). Therefore, the margin of delay for DRT services should be minimised to c. 10 minutes. The importance of minimising this margin is emphasised by Avermann & Schlüter (2019), who state that the waiting time is a strong variable determining satisfaction with the EcoBus.

2.4.3 Importance of Updates

Users receiving updates on their ride is important for several reasons. For one, Jevinger & Svensson (2024) found that the aforementioned margin of delay is c. 5 to 10% higher when the user is updated on the delay. Furthermore, Kjærup et al. (2020) mention that receiving updates on the arrival and departure time of the vehicle could increase the reliability of DRT. The paper also states that updates could improve the integration of DRT with other

modes of transport, as users could then estimate their transfer time. This topic is further addressed in the following section.

2.4.4 Integration With Traditional Transport Services

Some studies concluded that it is important to integrate DRT with other modes of transport. Kjærup et al. (2020) found that some users of Plustur noted that the service should be integrated well with other transportation options because their trips would include multiple modes of transport. If the waiting time between DRT and another form of transport is too large, users would often opt to be driven by family or friends. Furthermore, a study done by Imhof & Blättler (2023) highlights the importance of integrating DRT with transport services, as it could potentially be a feeder for other modes of transport. The paper found that the demand for Mybuxi is greater closest to a train station, as there were more drop-offs and pick-ups there compared to other areas.

2.4.5 Accessible Vehicles

Research shows how an accessible DRT vehicle is important to ensure the satisfaction and arguably the subsequent use of DRT. Avermann & Schlüter (2019) found that the ease of entry is a strong variable determining satisfaction of the EcoBus. This correlates with a study by Kersting et al. (2021) on the same system, who found that vehicles with a low entrance were experienced positively. The importance of accessible DRT systems is highlighted by Knierim & Schlüter (2021), who note that those with physical impairments favoured the EcoBus. The paper concludes that a high social benefit is to be expected from this group, which means that there has to be easy access to the vehicle and a door-to-door pick-up service for those who need it.

2.4.6 Providing Information

As established in Chapter 2.2.2, individuals could feel a certain aversion towards DRT due to it being relatively unknown. König & Grippenkoven (2020) and Schasché et al. (2023) argue that a way to increase the familiarity of DRT services is to implement the tariffs and operating systems of existing local public transport services. Furthermore, Daniels and Mulley (2012) discuss how DRT calls for more marketing, as flexible services often have

less of a presence in a community. Moreover, a new system should be designed with the car user's perspective in mind due to the local norms described in Chapter 2.2.2.

2.5 Conclusion

This chapter commenced with a brief description of rural areas and denoted three types of areas, namely the *basic rural areas*, *developed rural areas*, and *urban boundary rural areas*. The distinction between the areas is mainly in their economies, modes of transport, and population. The latter two were further discussed in the following section, which discussed the literature on the rural spatial context and its effect on the adoption of DRT.

Three aspects of spatial context were covered, namely the population density and distribution, the existing transport infrastructure, and the public support and awareness of new technology in rural areas. Although the lower quality of public transport could be beneficial for DRT services, the lower acceptance rates of other modes of transport (and habitual car use) could inhibit the use of DRT. Studies differ on whether the density of an area positively or negatively influences the adoption of DRT.

Seven personal characteristics were discussed, namely gender, age, education level, income, household, car ownership, and use of public transport. It seems that women, older people, those with lower education, those with a lower income, and those living in a single household are more likely to opt for DRT. Car ownership seems to negatively influence the use of DRT. It is unsure to what extent the use of PT influences the use of DRT.

Six insights from other DRT systems were covered. Firstly, papers mentioned how different methods of booking should be available to reach a wider audience. Secondly, the margin of delay should be c. 10 minutes, as a greater waiting time could negatively affect satisfaction. Thirdly, it is important for users to receive updates on their ride, as this increases the reliability of the service, ensures understanding of passengers when their ride is delayed, and enhances the integration with other modes of transport. Fourthly, DRT should be integrated with other modes of transport since the demand for DRT is greater near stations. Furthermore, users could possibly opt out of using DRT if they have

to wait too long during their transfer. Fifthly, door-to-door pick-up and a low entry level should be available to increase accessibility. Lastly, DRT should be marketed in a similar manner to TPT to gain understanding and limit the cultural aversion.

3 Theoretical Framework

This chapter presents the theoretical basis of this thesis. Chapter 3.1 provides the necessary background information by briefly discussing habitual behaviour and its effects on modal choice. This information is necessary to understand the chosen theories, which are discussed in Chapter 3.2 to 3.4. Chapter 3.5 combines these theories into the conceptual model of this thesis.

3.1 Habitual Behaviour

Ajzen's (1991) theory of planned behaviour states that behaviour is guided by attitude, beliefs, and perceived behavioural control. According to this theory, an individual's behaviour is reasoned, controlled, or planned. There is no such thing as a habit: an individual chooses the most optimal option for each situation.

However, other researchers argue that human behaviour is indeed habitual. Oullette & Wood (1998) define habits as "*tendencies to repeat responses given a stable supporting context*" (p.55) that can both be intentional and unintentional, which goes against Ajzen's (1991) theory that the individual is aware of all decisions. Moreover, the authors found that past behaviour helps to predict future behaviour, which is in line with Zailani et al. (2016). Bagozzi (1981) presented similar findings, stating that past behaviour tends to reduce the impact of behavioural intentions. Moreover, Bagozzi (1981) states that behaviour acts more as a learnt response rather than a rational evaluation as a habit increases.

Developing habits can have consequences for future decision-making. Verplanken & Aarts (1999) found that habits weaken the processing of new information about the context in which choices are made, as well as the information about choice options. It seems that individuals prefer information and courses of action that are in line with their habits, which might lead to behaviour that is substandard when a new situation arises (Bamberg et al., 2003). In relation to modal choice, Domarchi et al. (2008) found that it is difficult to get individuals to switch modes of transport when they habitually opt for the car. This line of thinking could have implications for DRT, as it might be more difficult to stimulate people in rural areas to switch their mode of transport (see Chapter 2).

3.2 Unified Theory of Acceptance and Use of Technology

In order to predict and subsequently stimulate behavioural intention, Venkatesh et al. (2003) introduced the UTAUT by combining multiple technology acceptance theories. Four factors form the basis of this theory: (1) performance expectancy, (2) effort expectancy, (3) social influence, and (4) facilitating conditions. Venkatesh et al. (2003) describe these factors as the following:

1) **Performance expectancy** is defined as the degree to which an individual believes that using a system would enhance their performance.
2) **Effort expectancy** is the perceived ease of use of a system.
3) **Social influence** is defined as the degree to which an individual is influenced by others to use a system.
4) **Facilitating conditions** is defined as the degree to which an individual believes that organisational and technical infrastructure is in place to support using the system.

Venkatesh et al. (2002) found that the UTAUT model is predictive of behavioural intention and flexible enough to adapt to various contexts and technologies. Therefore, this model could be used in studies on the behavioural intention of DRT use, which is why this thesis follows this conceptual model. The following section elaborates on past research using DRT and the UTAUT model.

3.2.1 UTAUT in DRT research

Although rarely, UTAUT has been used in research on DRT. Three papers found significant results between DRT and UTAUT: König & Grippenkoven (2020), Schasché et al. (2023), and Pak et al. (2023)[7]. These papers are discussed in the following section.

[7] It should be noted that Pak et al (2023)'s research was conducted in metropolitan areas. However, I chose to use their research due to the already limited amount of papers combining UTAUT and DRT. Results with rural areas might differ.

The results between the papers were similar but differed slightly. All papers found that *performance expectancy* and *effort expectancy* had a significant impact on *behavioural intention*. However, results differed between studies when it comes to *social influence* and *facilitating conditions*. Pak et al. (2023) found a significant relation between the former and *behavioural intention*, whereas König & Grippenkoven (2020) and Schasché et al. (2023) did not. This difference could be explained by Venkatesh et al. (2003), who argue that the role of social influence might be more important when it is mandatory. This could not be the case for DRT, as this is mainly voluntary (with the exception of captive users) (König & Grippenkoven, 2020). Furthermore, Pak et al. (2023) and König & Grippenkoven (2020) found that *facilitating conditions* had a significant impact on the behavioural intention, which is not in line with Schasché et al. (2023).

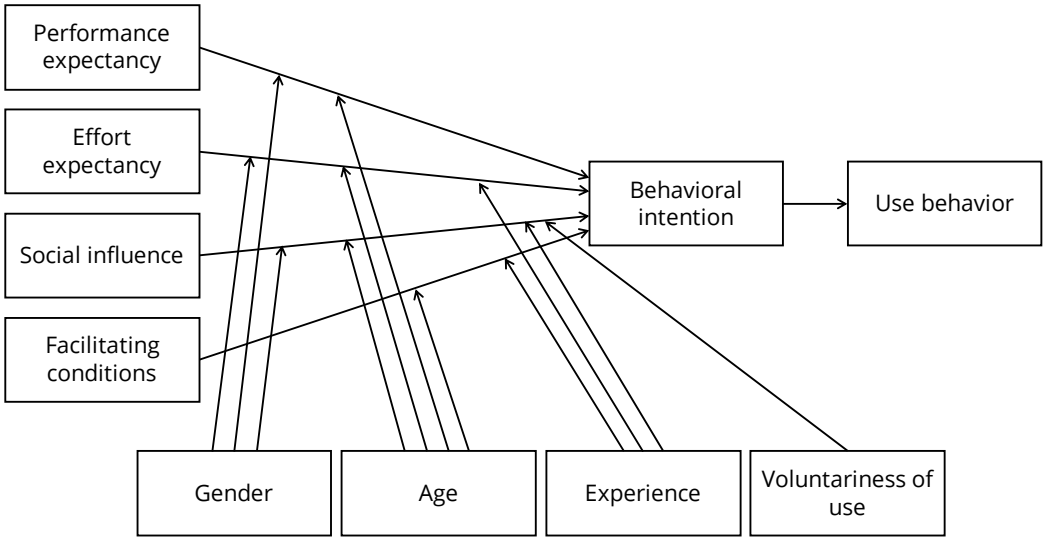


Figure 2: UTAUT model (based on Venkatesh et al. (2002))

All papers added variables to the original model. König & Grippenkoven (2020) and Schasché et al. (2023) both added the variables *attitude towards public transport* and *attitude towards car*. König & Grippenkoven (2020) found that the former was insignificant and the latter significant, while Schasché et al. (2023) stated the opposite. Furthermore, Pak et al. (2023) added the element *environmental concerns* and concluded that it has a positive influence on behavioural intention. This paper also added the Initial Trust Model (ITM), which is discussed in the next section.

3.3 Initial Trust Model

Chapter 2.2 mentions the influence of trust on the acceptance of new modes of transport in relation to the rural spatial context. The ITM by Afshan & Sharif (2015) builds upon these ideas and uses the variables *familiarity* and *structural assurance* to explain the initial trust a user might have in technology. The ITM is visualised in Figure 3.

This theory is in line with Kim & Prabhakar (2004), who state that trust in technology is a crucial factor that influences adoption behaviour. Initial trust is defined as "an individual's reliance on another party under conditions of dependence and risk" (Currall & Judge, 1995) and presumes that risk and uncertainty are associated with technology. It is assumed that potential users of novel technologies might form initial trust by weighing the characteristics of technology and the context it operates in, including security perception, provider reputation, government support, social influence, and service quality (Pak et al., 2023). Pak et al. (2023) added one more variable to this model, namely *perceived safety*. The paper found that initial trust had a significant influence on behavioural intention.

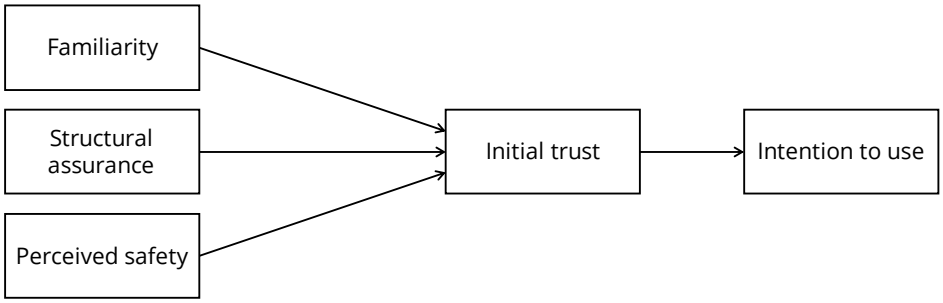


Figure 3: ITM (based on Pak et al. (2023))

3.4 Pyramid of Customer Needs

The previous theories have mostly discussed why a (potential) user might opt for a mode of transport based on dimensions such as performance expectancy and safety. However, what has not been discussed yet is the importance of comfort and the general experience a traveller might have. The following theory explores these topics further.

In the Netherlands, the pyramid of customer needs (PoCN) is widely used to measure PT satisfaction. Based on Maslow's pyramid of needs, the PoCN ranks the

importance of certain needs (see Figure 4). The pyramid is based on several studies of the Dutch railway company NS on travellers' needs, which found that travellers often use similar words when describing their wishes and ranked them in a similar manner (Van Hagen & Govers, 2019).

The PoCN consists of five layers, the bottom three of which are the *dissatisfiers*. The base of the pyramid consists of *reliability* and (*social*) *safety*. The former indicates the degree to which travellers experience what they expect, whereas the latter is a prerequisite for travellers to use a station: if the station is not perceived as safe, travellers will avoid it. *Speed* makes up the second tier. This principle assumes that a majority of travellers opt for the mode of transport with the shortest travel time. When *reliability*, (*social*) *safety*, and *speed* have been met, customers want a certain level of *ease* during their trip, meaning that the trip is convenient without much hassle (Van Hagen & Govers, 2019).

The fourth and fifth tiers consist of *comfort* and *experience,* respectively. The former assumes travellers expect a certain degree of *comfort* before and during their trip. This can take the form of sheltered waiting areas or refreshment facilities. There are several aspects that can influence the latter, such as the design, cleanliness, materials, and colours. Less tangible factors such as smell, music, and light can also play a part (Van Hagen & Govers, 2019).

There are several similarities between the PoCN and the aforementioned models. Firstly, *reliability* and *speed* are arguably the same as *performance expectancy*, since these dimensions cover the reliability of a mode of transport. Secondly, *(social) safety* is similar to the ITM, as both encompass safety. Thirdly, *ease* could be compared to *effort expectancy*, as both are about the convenience of travelling.

However, the *satisfiers* are not explicitly part of the UTAUT model and the ITM. The *satisfiers* are an important part of stimulating travellers to continue using PT, which is why it is implemented in this thesis.

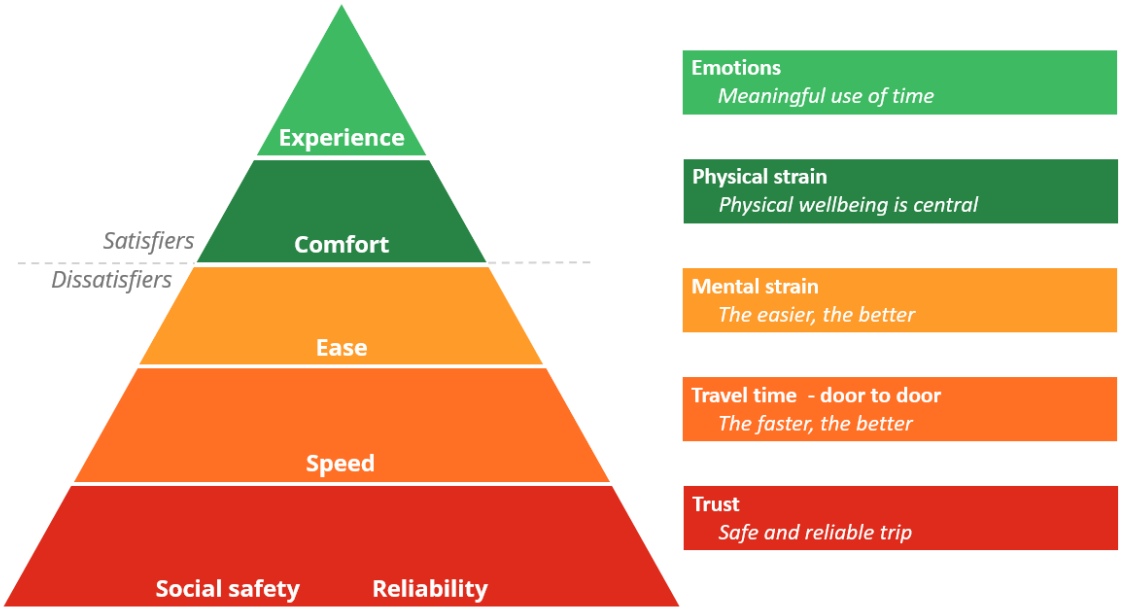


Figure 4: Pyramid of Customer Needs (Van Hagen & Govers, 2019)

3.5 Conceptual Model

The theory and literature mentioned in the previous two chapters have been summarized in the conceptual model, which is shown in Figure 5. This thesis is centred around ten dimensions that could explain the intention to use DRT. The model includes the ITM, the UTAUT model, the satisfiers, and the dimensions *attitude towards car* and *PT*. The dimension *environmental concerns* and indicator *structural assurance* by Pak et al. (2023) have been omitted from this research to limit the scope or avoid possible overlap with *attitude towards PT*[8]. The dimensions are encompassed by personal characteristics and the rural spatial context, as they could potentially influence the use of DRT. This thesis poses several hypotheses based on the results of previous literature shown in Chapter 2 and Chapter 3. The following hypotheses have been formulated:

H1) This thesis expects that *initial trust* has a significant and positive effect on the intention to use DRT. However, it has to be acknowledged that this is based on merely one study. Therefore, it is not unexpected if the results from this thesis differ.

[8] Based on feedback provided by Expert #6.

H2) This thesis expects that *performance expectancy* has a significant and positive effect on the intention to use DRT, as all studies deemed this dimension to be a strong predictor.

H3) This thesis expects that *effort expectancy* has an insignificant but positive effect on the intention to use DRT, as none of the studies found a significant effect.

H4) This thesis expects that *social influence* has an insignificant but positive effect on the intention to use DRT. It is uncertain if *social influence* has a significant and positive effect on the intention to use DRT, as two out of three studies found an insignificant effect. However, Pak et al. (2023) did find significant and positive results.

H5) This thesis expects that *facilitating conditions* have a significant and positive effect on the intention to use DRT. Although Schasché et al. (2023) found an insignificant effect, Pak et al. (2023) and König & Grippenkoven (2020) both found a significant and positive effect.

H6) This thesis expects that *costs* have a significant and positive effect on the intention to use DRT, as Pak et al. (2023) found positive and significant results.

H7) This thesis expects that *comfort* has a relatively insignificant but positive effect on the intention to use DRT because this dimension is high on the PoCN. However, it is uncertain what effect *comfort* will have on the use of DRT, as previous results on this matter are based on current users of TPT.

H8) This thesis expects that *experience* has a relatively insignificant but positive effect on the intention to use DRT because this dimension is this dimension is high on the PoCN. However, it is uncertain what effect *experience* will have on the use of DRT, as previous results on this matter are based on current users of TPT.

H9) This thesis expects that *attitude towards car* has a significant and negative effect on the intention to use DRT. Although Schasché et al. (2023) found an insignificant effect, König & Grippenkoven and several other sources (see Chapter 2.4.6) state the opposite.

H10) This thesis expects that *attitude towards PT* has an insignificant but positive effect on the intention to use DRT. However, it is uncertain, as Schasché et al. (2023) and

König & Grippenkoven (2020) found opposing results, which is in line with other sources (see Chapter 2.4.7).

There was no original research done on the personal characteristics or the spatial context of the respondents[9]. Therefore, their potential impact on the use of DRT in Zeeland is measured in Chapter 5 based on the literature discussed in Chapter 2.

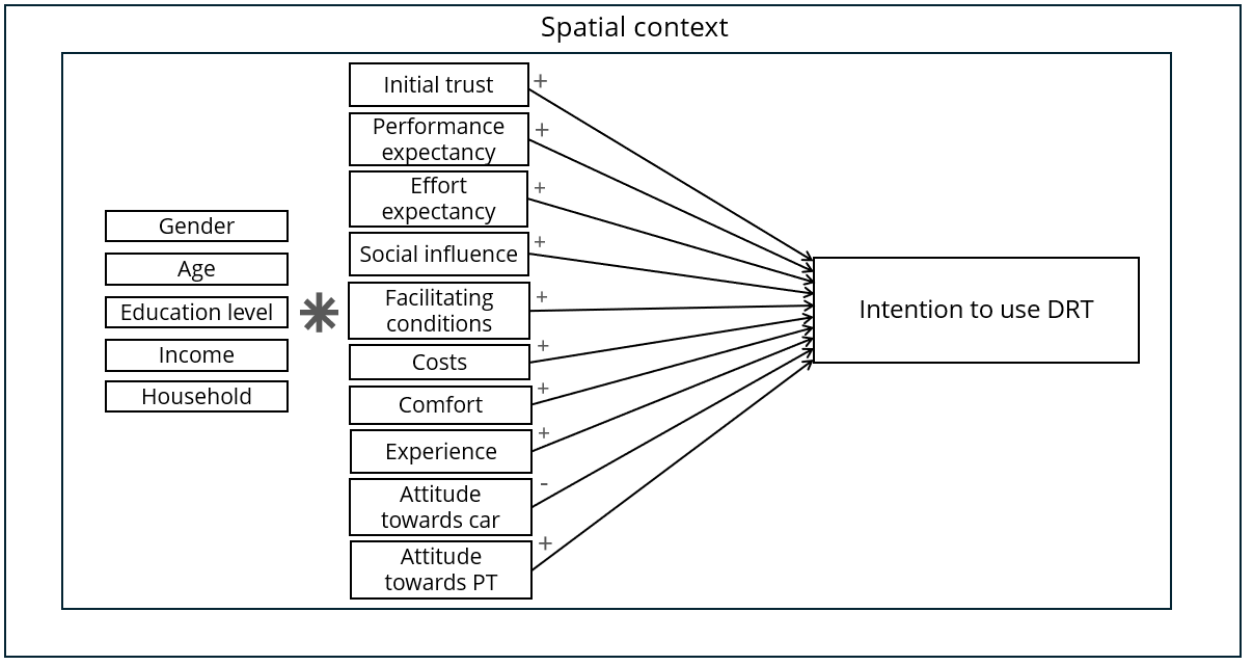


Figure 5: Conceptual model of thesis

[9] However, based on respondents' answers and the literature in Chapter 2, I speculated on the effect of the spatial context and personal characteristics in Chapter 6.

4 Methodology

This chapter discusses the methodology of this research. Chapter 4.1 establishes the research philosophy. Chapter 4.2 discusses the operationalisation of the aforementioned dimensions and indicators. Chapter 4.3 and 4.4, respectively, discuss the strategy and methods used for this research. Chapter 4.5 lays out the data analysis. Chapter 4.6 focuses on the trustworthiness of this research.

4.1 Research Philosophy

The philosophy of science refers to the views a researcher has of the notion of science, how scientific research ideally should be conducted, and the contribution science can make to society (Van Thiel, 2014). A paradigm guides scientific inquiry, which is why it is important to establish the research philosophy of this thesis. Guba and Lincoln (1994) developed four different research paradigms which are briefly described below:

1) **Positivism** assumes there is one objective truth. It sees the researcher and researched as individual entities that should be studied without influencing each other. Biases are prevented by following procedures rigorously. Findings that are replicable are the truth.
2) **Post-positivism** assumes there is one true reality, but thinks it is impossible to find it due to flawed human behaviour. Subjects can therefore be researched more to get closer to reality, but it will never be fully understood.
3) **Critical theory** assumes that reality has over time been shaped by "social, political, cultural, economic, ethnic, and gender factors" (Guba & Lincoln, 1994, p.110). The researcher and the researched are linked, with the researcher being able to influence the researched.
4) **Constructivism** assumes there is not a single truth. Rather, there are multiple realities formed by mental constructions based on experience and social factors. None of these are more or less true than the other. The researcher and the researched are linked, which means the findings are created by the researchers.

This thesis follows constructivism and positivism for the following reasons. The former appears in this thesis due to the interpretive nature of this research and its focus on the individual experiences of the respondents. The latter is present as I attempt to minimise any subjectivity from my side by applying several methods, laid out in Chapter 4.6. Furthermore, this thesis attempts to answer the question of how DRT use could be stimulated. This is arguably based on 'one' truth, albeit shaped by individual experiences.

4.2 Operationalisation

The conceptual model mentioned in Chapter 4.6 was operationalised in order for it to be measurable. This is visualised in Table 4. The dimensions are situated on the left, with the indicators of each dimension in the centre column. The sources which these indicators were based on are mentioned in the column on the right.

Although most indicators are based on literature, the indicators for *comfort* and *experience* are mostly based on feedback. The PoCN measures *experience* by asking about the sound in the vehicle, behaviour of staff, the cleanliness of the vehicle, and the design of the vehicle. Expert #4 and MuConsult did not fully agree with the definition given by the PoCN. The latter suggested two other indicators: *other age groups in vehicle* and *feeling burdened*. Firstly, my supervisors at MuConsult were curious about the possibility of travellers not utilising a service because of other age groups or those with disabilities, as Flex would include transport for elderly and disabled people as well. Research on this topic is limited, but Neves et al. (2022) mention how negative encounters with bus drivers led to people with disabilities to stop catching the bus[10]. Therefore, the indicator *other age groups in vehicle* was added to the dimension *experience*. Secondly, MuConsult was interested in the chance that travellers of DRT would feel burdened during the trip – be it due to a disability or the fact that the vehicle would have to take a detour, possibly being an annoyance to other passengers. Therefore, the indicator *feeling burdened* was added to the model. As of writing this, there is no literature on this topic.

[10] This paper does not mention if those who stopped traveling by bus had other modes of transport or if the bus was their only form of transportation, making them captive users.

Moreover, the PoCN measures *comfort* with the following indicators: *driving styl*e, *behaviour of travelle*rs, *chance of seating*[11], *ease of access*, and *temperature in vehicle*. These indicators[12] were also used in this thesis, adding the indicator *sound in vehicle,* which was originally measured for *experience* by CROW (n.d.).

Table 4 forms the basis of the interviews with potential users (see Appendix B), experts (See Appendix C), and users (see Appendix D). The latter two do not follow the structure as strictly as the former due to their more open nature. The questions for the former were run past some of the experts. Expert #3 mentioned the questions were too difficult for the general public, which is why they were simplified[13].

[11] *Chance of seating* might seem redundant when talking about DRT, as most DRT systems guarantee seating. However, this thesis looks further than merely DRT and includes car and PT transportation as well. When important, this indicator could possibly explain why some respondents travel by car rather than PT, as the latter does not guarantee seating.

12 Except *ease of access*, as I thought this had more to do with the accessibility of the vehicle and therefore falls under the dimension *facilitating conditions*.

[13] The interviews are discussed in detail in Chapter 4.4.

Dimensions	Indicators	Source
Initial Trust	Familiarity	• Pak et al. (2023)
	Physical safety	
	Social safety	• Van Hagen & Govers (2019) • Pak et al. (2023)
Performance Expectancy	Speed	• König & Grippenkoven (2020) • Pak et al. (2023) • Schasché et al. (2023)
	Reliability	• Pak et al. (2023)
Effort Expectancy	Effort before trip	• König & Grippenkoven (2020) • Pak et al. (2023) • Schasché et al. (2023)
	Effort during trip	• Schasché et al. (2023)
Social Influence	Use of family/friends	• König & Grippenkoven (2020) • Pak et al. (2023) • Schasché et al. (2023)
	Good reputation	• König & Grippenkoven (2020)
Facilitating Conditions	Knowledge available	• König & Grippenkoven (2020) • Pak et al. (2023)
	Accessibility	• Schasché et al. (2023)
	Ease of payment	• Van Hagen & Govers (2019)
Costs		• Pak et al. (2023)
Comfort	Driving style	• *Feedback* • CROW (n.d.)
	Presence travellers	
	Behaviour travellers	
	Seating	
	Temperature	
	Smell	
	Sound	
Experience	Other age groups in vehicle	• *Feedback* • Neves et al. (2022)
	Feeling burdened	• *Feedback*
Attitude Towards Car	-	• König & Grippenkoven (2020) • Schasché et al. (2023)
Attitude Towards PT		
Intention to Use DRT	-	• König & Grippenkoven (2020) • Pak et al. (2023) • Schasché et al. (2023)

Table 4: Operationalisation

4.3 Research Strategy

This thesis is exploratory due to the limited amount of literature on rural DRT users (see Chapter 1.7.1) and therefore qualitative, as this type of research is generally geared towards exploration. The strategies chosen for this research are desk research and a single case study, as these are more appropriate for exploratory research (Van Thiel, 2014). These strategies are discussed below.

With desk research, the researcher studies existing literature ranging from official government documents to scientific papers (Van Thiel, 2014). An advantage of this strategy is the ease of controlling the volume of data. However, there are disadvantages to desk research that need to be kept in mind: the literature that is collected might not be relevant enough to be of use, it might not be intended for research purposes, or the data might be of poor quality (Bassot, 2022). This could heavily impact the validity and reliability of the research. Therefore, it is important to be selective when searching for literature. This is further discussed in Chapter 4.6.

Case studies study one or multiple phenomena in great detail, which provides extensive descriptions of the situation. A case study is highly contextual, meaning that it is a useful strategy to understand how context has an impact on social processes (Cassell & Symon, 2004). Therefore, the context in which Flex takes place is discussed in Chapter 5. Case studies are often difficult to generalise due to the importance of context, as the case could be unique or only apply to the context of the phenomenon. This specifically impacts the external validity of the research. A solution to improve the validity is to study multiple sources of data – triangulation (Cassell & Symon, 2004; Van Thiel, 2014). This thesis employs several methods, which are discussed in the following section.

4.4 Research Methods

This research utilises three methods, namely document analysis, interviews, and observations. The following paragraphs discuss why these methods are chosen and how they were used throughout this research.

4.4.1 Document Analysis

A document analysis is the procedure of reviewing or evaluating material, which can provide background information, historical data, and supplementary research data. Document analyses are particularly applicable to qualitative case studies, as they are highly subjective due to the chance that texts and images are being interpreted differently (Bowen, 2009).

There are several advantages to document analyses. Firstly, it is an efficient method due to being relatively less time-consuming compared to methods, such as interviews. Secondly, there are many documents available. Thirdly, it is more cost-efficient than other research methods, as document analyses can be done from home (Bowen, 2009). However, document analyses also come with limitations: there is a certain biased selectivity present when searching for documents and some documents are not meant for specific research. This could negatively impact the trustworthiness of the research, as a document that is not compatible with the research could give wrong information and presumptions. Therefore, it is important to be mindful when choosing documents (Bowen, 2009). This is further discussed in Chapter 5.6.

In this thesis, document analysis is mostly used for theoretical and contextual background information. Therefore, it forms the basis for the research questions and assists in finding the dimensions and indicators that could explain the intent to use DRT.

4.4.2 Interviews

Conducting an interview is a flexible way of gathering information. During an interview, the interviewer is able to ask the respondent supplementary questions to gain a better understanding of the answers that have been given, such as background information or asking for further explanation (Van Thiel, 2014). Therefore, it is a suitable method for exploratory research.

The interviews conducted for this thesis were done in a semi-structured manner. This entails that the interviewer has guidelines that they wish to discuss. An advantage to semi-structured interviews is that the interviewee is free to answer as they like. However, a disadvantage is that the lack of structure negatively impacts the reliability of the

research, as the interviews could differ (Van Thiel, 2014). In Chapter 5.6, I discuss how to mitigate these effects. For this research, three groups were interviewed: experts, potential DRT users, and DRT users. The following sections describe these interviews in detail.

Expert Interviews

Although the meaning of 'expert' is heavily debated, social scientists generally agree that experts are those who have knowledge of a particular subject and are known for their specific knowledge, their community position, or their status (Döringer, 2020). It can be beneficial to talk to experts during the exploratory phase of the research, as they could offer the researcher inspiration and information due to their experience and knowledge (Bogner et al., 2009).

Eight experts were interviewed for this research. Most respondents were found via LinkedIn or my internship. About half of the expert interviews conducted took place during the exploratory phase. The interview protocol for the expert interview differs per expert due to their specialised knowledge (see Appendix C). The experts were chosen on the basis of selective random selection due to the aim to have multiple perspectives coming from multiple places in society. Therefore, all experts are on a certain spectrum: Some experts – such as Expert #1 and #2 – come into contact with users of DRT systems and experience it first-hand, whilst other experts – such as Expert #6 and #7 – have a more general view on the use of DRT due to their research on this matter.

The experts are anonymised to protect their identity. However, the following section covers a brief summary of why the experts were chosen, their field of interest, and how they contributed to this research to give some context to their interview and answers:

- I spoke to **Expert #1 and #2** – bus drivers operating in Zeeland – in the beginning of my research. The interviews were conducted during their workday driving for a DRT system in Zeeland. Their information is valuable for this research due to their experience driving for both TPT and DRT. Therefore, pros and cons of both systems were identified early on in the research.
- The interview with **Expert #3** took place before the interviews with potential users, as I wanted more information on Zeeland and its inhabitants, and feedback on the interview questions. The expert was able to inform me on

these matters due to being in close contact with various households because of their job, which includes aiding them with their mode of transport. Expert #3 was able to inform me on why certain modes of transport are (not) chosen and how to possibly make Flex a more attractive option. The expert also commented on the interview questions, which ensured that people who are not familiar with Flex were also able to understand it .

- **Expert #4 and #7** both contributed to this research by sharing their knowledge on DRT – specifically the system Arriva Vlinder. The experts shared which factors led to the success of the system, but also what ended up not working. The interview with Expert #4 took place before the interviews with potential users and was therefore able to provide feedback on the interview questions for this group.
- **Expert #5** informed me on how Flex has progressed since the publication of the RMS and which changes were made to the system to be a good fit for Zeeland[14].
- **Expert #6** was asked for an expert interview, as they also did research on Flex. This interview was also done before the interviews with potential users and was mainly for feedback on the interview questions.
- **Expert #8** was asked for an interview due to their fast knowledge on mobility, including DRT. The expert contributed to this research by informing me on concerns regarding DRT and providing sources on the success factors and the different types of users.

The expert interviews were either conducted in real life or online via Teams. Notes were taken during the interview and sent back to the experts to ensure that what I wrote down was factual and indeed what the expert meant. These notes were then analysed, which is discussed in Chapter 4.5.

Potential User Interviews

Interviews with potential users were conducted to understand what drives people to (not) opt for DRT. The respondents were chosen based on selective random selection, as the

[14] The interview with Expert #5 was conducted with three people at the same time. Due to the nature of their interview, I decided to group them together as 'Expert #5'.

research would benefit from interviewing people who use various modes of transport and perhaps have different views on DRT.

Eleven interviews with potential users were conducted for this thesis, with most of them being residents of Zeeland[15], ranging from those who relied on DRT systems to those who rarely used public transport and only used the car. Several methods were used to find respondents. Firstly, c. 25 emails were sent to municipalities, councils, and people on LinkedIn who might be interested. Six respondents were recruited through this method, which proved to be relatively successful. Secondly, flyers about this research were distributed across Zeeland using bulletin boards in supermarkets, community centres, and local buses. Potential respondents were instructed to contact me via email to show interest in the research. This method ended up being unsuccessful, as no one responded. An explanation could be that taking the time to write out the email is too much effort for most people. Scanning a QR code might have proven to be more successful, as respondents would then only have to fill in their email address. Thirdly, I asked respondents after their interview to ask people in their surroundings if they were interested in contributing to this research. This resulted in three respondents, all of which came from the same respondent. Fourthly, two respondents were found via colleagues and family members.

The respondents were able to choose where the interview took place. Most interviews were in real life; two interviews were conducted online via Teams. The interviews were recorded after informing the respondent about their anonymity and the aim of the interview, ultimately asking for their consent to be recorded. The recordings were transcribed and analysed, which is discussed in Chapter 4.5.

User Interviews

Interviews with users were conducted near the end of this research. The aim of these interviews was to investigate the concerns potential users had, as I noticed that most were rather negative about the system. The interviews with users ended up shedding a

[15] There are two exceptions: 1) One respondent does not live in Zeeland, but does reside near and works in the province, and 2) another respondent had lived for 35+ years in Zeeland, but moved c. one year ago. I decided to include these respondents due to their experiences with transport in the province.

different and more nuanced light on the reception of Flex. This is further described in Chapter 6.

Fourteen users of Flex were interviewed for this thesis. The user interviews were semi-structured, although more open than the interviews with potential users due to the short span of time in the vehicle and varying experiences of users. The users were interviewed as they were travelling with Flex. I took notes on these conversations during and after the interview and discussed them afterwards with the driver to ensure that what I wrote down was complete and accurate.

4.4.3 Observations

User interviews were a way to gather experiences, but at the same time forced me as the researcher to also experience the system. Observing what goes well and wrong added to the context that is needed to write about this topic, but also brought the concerns some (potential) users and experts mentioned during their interviews to life.

I noted down what I experienced during my time in Zeeland. These notes are used to add another perspective to situations, but also add information that might not have been mentioned by the respondents. I explicitly mention when my observations are used to avoid confusion with anything respondents might have said.

4.5 Data Analysis

4.5.1 Thematical Analysis

The analytical framework that is used for this research is the Thematical Analysis (TA) by Verhoeven (2020). TA is an instrument that is able to process qualitative data. It is fairly flexible, meaning that the researcher chooses which steps of the analysis they adopt in their research. TA consists of six steps (see step 1-5 & 8) (Verhoeven, 2020). This research adopts all six steps and adds two more to fit the scope of this research (see step 6 & 7). This leads to the following protocol that is used for this thesis:

1) **Fragmenting** – By fragmenting the data, the researcher reads and rereads the data – usually text – and divides it into individual sections of text.

2) **Coding** – The researcher derives a term (code) for each section that describes the text the most.
3) **Categorising** – The codes generated are categorised.
4) **Revise and refine** – The categories are revised and edited where needed to then organize the codes yet again.
5) **Determine and structure** – The connections between the categories are established and the answers to the research questions have begun to be formulated.
6) **Calculate** – The quantitative data collected during the interviews is processed and connections are made between the numerical and textual data from steps 1 to 5.
7) **Triangulate** – All data methods are cross-referenced.
8) **Present** – The results from steps 1 to 7 are presented.

The execution of steps 1 to 7 is discussed in the following sections. Step 8 is essentially the conclusion of this thesis, to which I refer you to Chapter 7.

4.5.2 Fragment & Code

Before being able to fragment and code the texts, the potential user interviews had to be transcribed. This was done manually due to lacking results with programs and to ensure the quality of the transcript. The transcripts and notes were coded using the software ATLAS.ti.

The first step to coding is open coding, which is essentially step s1 and 2 of TA. This involves labelling pieces of text and providing small summaries of said text. The goal of open coding is to create similar codes across different transcripts, which allows the researcher to compare the respondents' answers. Codes can be formed in several ways. In deductive studies, codes are created beforehand, as they are based on the operationalisation, whereas inductive studies gradually develop codes during the analysis process (Van Thiel, 2014). This thesis uses a mixture of both, as some categories – such as *reliability* or *safety* – were expected to be coded beforehand. However, codes on how the indicators may be perceived were not generated in advance, as uncovering these matters is the aim of this thesis. A large amount of codes were generated during the first phase, which is when the second phase commences – axial coding.

4.5.3 Categorise, Revise & Refine

The aim of axial coding is to ensure (1) the analysis is concise and (2) the codes are comparable enough to be used in new theories and interpretations (Van Thiel, 2014). The former was executed by merging similar codes, the latter by creating categories that encompass the meaning of codes that are similar but cannot be merged. As previously mentioned, most code groups were created based on the indicators. These categories would answer the first research question. However, several other categories that were not expected – but could potentially help answer the aforementioned question – were uncovered during this process as well.

4.5.4 Determine & Structure

The last step of the coding process is selective coding, in which the researcher attempts to generate theories based on the codes (Van Thiel, 2014). For this thesis, the network option in Atlas.ti was utilised. This function allows the researcher to link codes and visualise the connections between them. The codes generated from this data form the codebook, which is visualised in Appendix E.

4.5.5 Calculate

Although the majority of this research is based on qualitative data, some of it is based on quantitative data. Potential users were asked to rate the indicators on a scale of 1 to 5 based on how important they are when choosing their mode of transport. This was done to prevent comments such as 'fairly important' or 'not really', which are more up to interpretation than numbers.

At the end of the interview, the respondents were asked to rank the fifteen indicators from 1 to 15, based on how important they are when choosing their mode of transport. This was done with two reasons in mind. Firstly, the respondents could decide if they still had the same opinions after hearing and discussing all the indicators. Secondly, it is a method to see which indicator is truly the most important (if a respondent rated all indicators with a 4, I would be unable to conclude which indicator is the most important). This information was processed in Excel to create an overview and calculate the average rating and ranking of all indicators.

The importance of the aspects is concluded from this data. Based on the notion that 1 = unimportant, 3 = neutral, and 5 = important, the following system was created:

- 1 – 1.99 = unimportant;
- 2 – 2.99 = relatively unimportant;
- 3 – 3.99 = relatively important;
- 4 – 5 = important.

These terms are used when discussing the importance of the indicators in the remainder of this thesis.

4.5.6 Triangulate

This thesis utilises several methods to answer the research questions – triangulation. Table 5 visualises how this was executed.

The document analysis is the basis for all of the sub-questions, although it is more intensively used to answer sub-questions 2 and 3. The interviews are the main source for answering sub-question 1, but could also apply and give context to the other sub-questions. Furthermore, my own observations are used for the first sub-question but should be regarded as an addition to the information given by respondents and literature.

Sub-question	Research method				
	Document analysis	**Expert interviews**	**Potential user interviews**	**User interviews**	**Observations**
1	x	x	x	x	x
2	x	x			
3	x	x	x	x	

Table 5: Use of methods

4.6 Trustworthiness of the Research

Several times throughout this chapter, the subject of validity and reliability has come up. Compared to their quantitative counterpart, qualitative papers are often criticised for their subjectivity and lack of justification. However, using criteria such as validity and reliability is seen as unfit, as they would not be able to assess qualitative research. (Lincoln & Guba, 1985; Krawczyk et al., 2019). Lincoln & Guba (1985) propose four measures that

assess the trustworthiness of qualitative research, which are used to measure the trustworthiness of this thesis.

Credibility recognises that reality is subjective and the researcher bears a responsibility when interpreting results. Williams & Morrow (2009) propose several ways to ensure the trustworthiness of qualitative research. Firstly, the researcher should reflect on the suitability of the data for interpretation. Therefore, this thesis focuses on literature about users of DRT *in rural areas* and dismisses literature on urban DRT projects, as the context and therefore the preferred aspects of transport might differ in urban areas[16]. Secondly, the article proposes asking for feedback from participants to ensure the researcher's interpretation honours the participant's answer. This step was carried out by recalling answers from participants during interviews, ranking the indicators at the end of the interview, and sending experts their answers to ensure the information is factual. Thirdly, clear communication is important when building a compelling research. Therefore, the thought process behind the decisions made during the analyses and the protocol are explained in Chapter 4.5.

Dependability refers to the trust the reader has in the research. One way to ensure dependability is by providing a step-by-step guide on how the analysis was carried out (Forero et al., 2018). Therefore, Chapter 4.5 lays out the protocol of the data analysis. Furthermore, reflexive auditing – describing the identity and involvement of the researcher – could enhance dependability. This has been done in this thesis with first-person narration and Chapter 1.1. The former could stimulate reflexivity, meaning a higher level of trustworthiness (Mauthner & Doucet, 2003; King, 2006).

Transferability refers to the application of the research in other contexts or settings. Although qualitative research is often not completely replicable, certain patterns could be present in other cases. Increasing transferability means including descriptions of the process and results (Stahl & King, 2020). Therefore, Chapter 4.4 and 4.5 have attempted to be as transparent as possible regarding these matters.

[16] Exceptions to this rule are noted in footnotes.

Confirmability relates to the confidence other researchers would corroborate the research. It is similar to dependability, as reflexivity is an important factor: the researcher has to be as transparent as possible to be able to garner trust from other researchers (Forero et al., 2018). Therefore, I utilise the same methods explained in the paragraph on dependability: providing the reader with my views in Chapter 1.1.

5 Case

This chapter discusses the spatial context of Zeeland and its demographics, following the structure of the literature review (see Chapter 2). Chapter 5.1 introduces Zeeland by describing the region and how its mobility has developed in its rural spatial context. Chapter 5.2 discusses the demography of Zeeland.

5.1 Spatial Context of Zeeland

5.1.1 Rural and Urban Areas in Zeeland

The province of Zeeland is located in the southwest of the Netherlands, bordering the North Sea and Belgium. It consists of six regions: Schouwen-Duiveland, Tholen, Noord-Beveland, Walcheren, Zuid-Beveland, and Zeeuws-Vlaanderen. Out of its thirteen municipalities, only two are classified as urban: Vlissingen and Middelburg (CBS, 2021). These two municipalities are both situated in Walcheren and lie relatively close to each other. Therefore, they can be seen as the 'metropolitan of Zeeland'.

Subsequently, eleven municipalities in Zeeland are classified as rural. Based on the definition of the Dye Management Group (2001) (see Chapter 2.1), four of these municipalities could be classified as basic rural areas – namely Noord-Beveland, Veere, Borsele, and Sluis – due to the limited number of towns of 5000 or more inhabitants, their agricultural or natural resource-based economies, and a stable or declining population. Hulst, Schouwen-Duiveland, Kapelle, Reimerswaal, and Tholen could be regarded as developed rural areas, as they have bigger towns and a mixture of industrial and agricultural industries. Lastly, the municipalities of Goes and Terneuzen could be characterised as urban boundary rural areas since they are more developed than the other municipalities and lie relatively close to Vlissingen and Middelburg.

5.1.2 Population Density and Distribution of Zeeland

The population density in Zeeland is among the lowest of the Dutch provinces, with c. 220 inhabitants per square kilometre. As reference, the national density is at c. 533 inhabitants per square kilometre (CBS, 2024a). Therefore, the accessibility of villages and towns in

Zeeland is under pressure. This sprawl is worsening due to the closure of facilities, in particular the small-scale facilities in villages and towns. Therefore, inhabitants of these areas are forced to travel outside of their area to run their errands. This, again, negatively influences the quality of life for the elderly, who often rely on nearby facilities due to their limited mobility (Omroep Zeeland, 2023c).

As explained in Chapter 2.2, papers disagree on whether rural areas are more or less prone to use DRT services. However, as also stated in that section, density and car ownership are inherently tied together. Research generally agrees that car ownership negatively affects the adoption of DRT. Therefore, it could be concluded that inhabitants of low-density areas who own a car are less prone to use DRT. However, the accessibility of those living in those areas who do not or cannot own a car – such as the elderly, children, and/or those with disabilities – could perhaps be enhanced with DRT.

5.1.3 Existing Infrastructure in Zeeland

Zeeland differs from other Dutch provinces due to its geographical challenges, as all regions (aside from Walcheren and Zuid-Beveland) are divided by rivers which create islands and peninsulas. These natural borders make it more demanding to connect regions in comparison to the rest of the Netherlands. Efforts are made by creating tunnels and bridges, most notably the *Oosterscheldekering* and the *Westerscheldetunnel*. However, Zeeland's unique geography still greatly influences the mobility of its inhabitants. The following sections provide an overview of the use of different modes of transport in the province, namely the car, train, bus, and DRT[17].

The majority of Zeeland's inhabitants opt for their private vehicle when travelling. This is facilitated by Zeeland's vast network of roads, which also connect the islands and peninsulas. Unsurprisingly, the car is the fastest way of travelling through Zeeland: it is three to four times faster than travelling by bus, train and/or ferry (Provincie Zeeland, 2022). Figures 6 and 7 illustrate these differences in mobility between the car and PT.

[17] The bicycle as a mode of transport in Zeeland has been omitted in this thesis to limit the scope of the research. However, this does not mean that the bike is unimportant to inhabitants. Multiple respondents stated they used the bike as a mode of transport in their daily lives.

Visualised are the mobility of three villages (Kerkwerve, Nisse & Slijkplaat) and cities (Zierikzee, Middelburg & Terneuzen)[18].

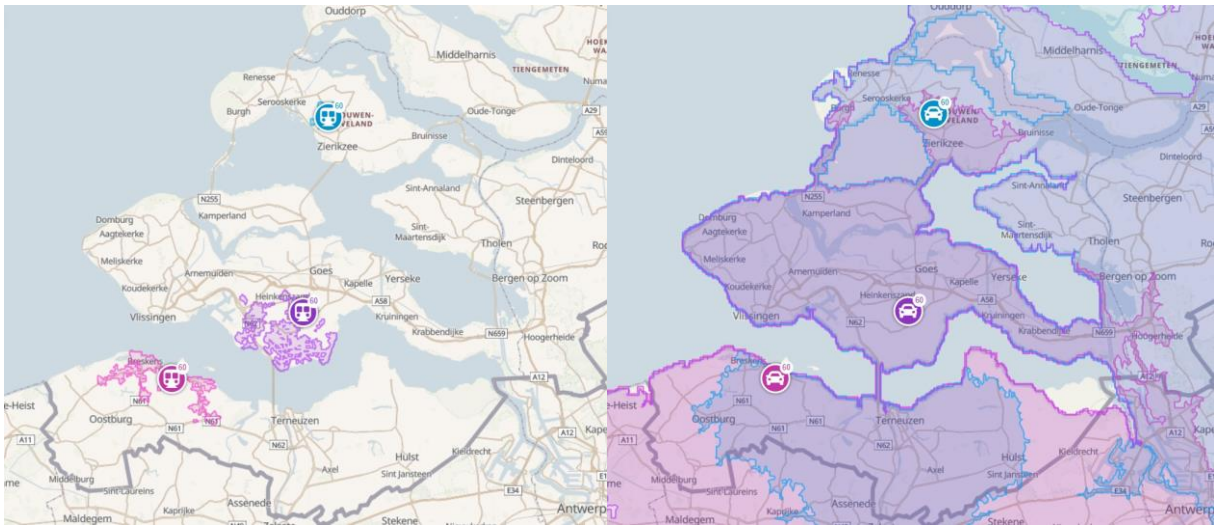


Figure 6: Comparison of accessibility of the train (left) and the car (right) in the countryside

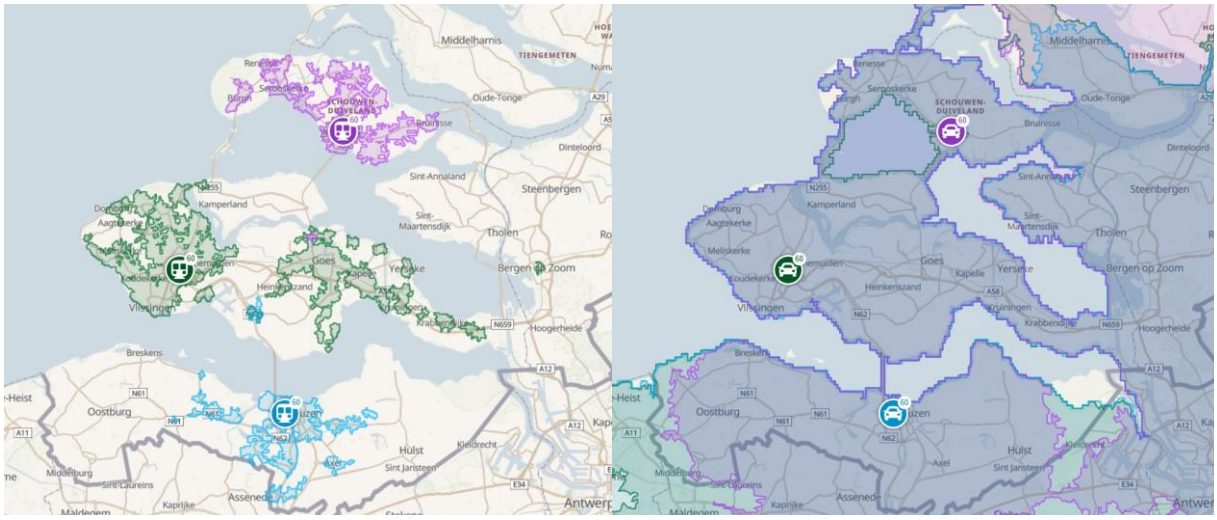


Figure 7: Comparison of accessibility of the train (left) and the car (right) in urban areas

Travelling by train in Zeeland is somewhat limited, as there is merely one trainline that only serves Walcheren and Zuid-Beveland. The train line connects these two regions and Zeeland to other parts of the Netherlands: users can take either a train from Vlissingen to Roosendaal or from Vlissingen to Amsterdam. The former runs once an hour, whereas the latter runs twice an hour, meaning that three trains depart and arrive in

[18] The former were chosen based on the (lack of) bus stations, which illustrates the lack of mobility in these villages for those who rely on PT. The latter were chosen based on the fact that they are the biggest cities on their islands/peninsulas,

Zeeland every hour. However, PT in the remaining four regions consists exclusively of the bus. The lack of PT could be part of the reason why only a small portion of Zeeland's inhabitants opts for PT (Provincie Zeeland, 2022).

The use of the bus has diminished over the years. Therefore, PT is gradually scaled down by removing bus lines in low-demand areas. Buses that previously drove through villages are redirected and now only stop at hubs on the outskirts of town. High-demand lines remain. Figure 8 illustrates the new situation[19]. Bus lines that were removed are to be replaced by a DRT system called Flex, which is discussed in the following section.

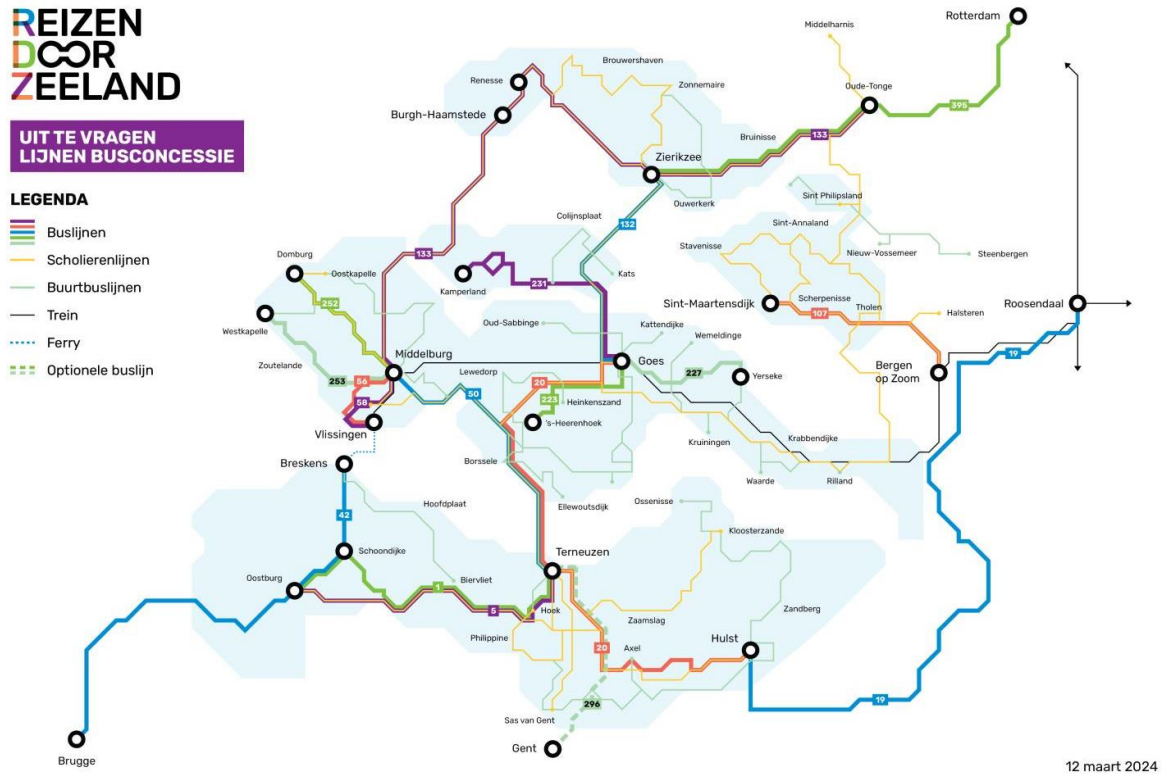


Figure 8: Map of proposed bus system Zeeland (Provincie Zeeland, 2024)

Chapter 1 briefly mentions that there are several reasons why DRT could be implemented, namely as an addition to and/or a replacement of the bus. Flex' role is seemingly both: it replaces bus lines that experience low occupancy rates, but also acts as a feeder by transporting travellers to hubs, where they are able to continue their trip with the high-demand lines. As previously mentioned, Flex is a hub-centred DRT system. Passengers are able to travel from stop to stop, some of which act as a hub where several

[19] This map could change.

modes of transport meet[20]. Therefore, Flex could both improve the mobility of low-demand areas and increase the use of other PT due to its hub-centric system.

As established in Chapter 1, each DRT system is different. Table 6 provides a brief overview of this DRT system based on my own experiences travelling with Flex.

Characteristic	Description
Capacity	Flex operates with vans that can transport up to eight people or regular cars, which can comfortably pick up three people.
Seating	The service includes guaranteed seating. The van is wheelchair accessible, whereas the car is not.
Ease of access	The vans are relatively high off the ground and less accessible than the car, as users have to climb a couple of steps in order to enter the vehicle. The regular car is naturally more accessible due to its lower entry level.
Booking	Rides can be booked by calling or via the app *ReizenDoorZeeland*, which only serves trips for Flex.
Waiting time	There is no minimal waiting time between booking and pick-up. Users are guaranteed to be picked up within an hour.
Proximity	Within towns, there is a stop available every 500 metres. Those who live outside of city limits can be picked up from anywhere.

Table 6: Details of Flex (based on own observations)

This section has illustrated the preference of inhabitants of Zeeland to opt for the car, presumably partly due to the lack of adequate PT in the majority of the regions. The accessibility levels of towns and villages as seen in Figures 5 and 6 further visualise this. According to the sources mentioned in Chapter 2.2.2, the lack of adequate PT in Zeeland could stimulate the adoption of DRT, especially in areas where there is little to no PT.

[20] In Zeeland, all stops for DRT are confusingly called 'hubs'. These stops merely function to pick up and drop off travellers and do not necessarily bundle multiple forms of transport. In this thesis, the term 'stop' is used for these 'hubs' to avoid confusion with the wider and arguably more accepted definition of a hub (see Chapter 1).

5.1.4 Public Support and Awareness for DRT in Zeeland

Although the province argues Flex could provide more mobility within the province, the service has been met with some criticism. Firstly, political parties are hesitant about the effectiveness of the project (Omroep Zeeland, 2023c). A report from MuConsult (2023) states that two other Dutch areas where DRT had replaced traditional bus transportation have shown a significant decrease in travellers. Secondly, several inhabitants have also voiced their doubts. Oost-Souberg, a village in Walcheren, might lose their only bus line due to the new concession. The plan was met with resistance from its inhabitants, who questioned the logistical side of Flex (drivers and staffing of call centers), but also the accessibility, digitalisation, and costs of the system (Urbanus, 2024).

Furthermore, there is seemingly a general resistance towards Flex from many inhabitants. This is shown by a poll at the end of an article in the PZC (*Provinciale Zeeuwse Courant*; tr.: Provincial Newspaper of Zeeland), where readers were able to vote on if they would use Flex. 47% said they would not use it, whilst 29% and 23% said they respectively might or would use it (PZC, 2025).

This resistance is in line with the sources mentioned in Chapter 2.2.3, which state that rural areas often react negatively towards new modes of transport, partly due to a lack of understanding. This is reflected in this section, as many parties simply question the viability and mechanics of the system. Providing inhabitants with answers to their questions through marketing could potentially provide understanding on how Flex works.

5.2 Personal Characteristics in Zeeland

The following section discusses the aforementioned personal characteristics in the context of Zeeland. The national and provincial averages for all factors have been denoted in the tables as a reference.

5.2.1 Gender

Table 7 illustrates that there are slightly more women than men in Zeeland, which is similar to the national average. Although gender does seem to have an effect on the use of DRT (see Chapter 2.3.1), there are not any significant differences between men and

women in the province. Therefore, it could be speculated that the effect of gender on DRT use is minimal in the context of Zeeland.

Region / gender (%)	Female	Male
Borsele	49.3	50.7
Goes	50.9	49.1
Hulst	49.1	50.1
Kapelle	50.5	49.5
Middelburg	51.3	48.7
Noord-Beveland	50.0	50.0
Reimerswaal	49.6	50.4
Schouwen-Duiveland	50.7	49.3
Sluis	50.5	49.5
Terneuzen	50.0	50.0
Tholen	50.0	50.0
Veere	50.6	49.4
Vlissingen	50.0	50.0
Zeeland	50.3	49.7
Netherlands	50.3	49.7

Table 7: Gender ratio in Zeeland, per municipality (based on CBS (2024b))

5.2.2 Age

Table 8 visualises that most municipalities have a larger elderly population. There are two exceptions, namely Tholen and Reimerswaal. The fact that Zeeland houses a significant share of elderly people could have an effect on the adoption of DRT, as Chapter 2.3.2 concluded that those above the age of sixty could be prominent users. However, the older population should be taken into account when designing DRT as it seems that the system should be targeted specifically towards the elderly and take their needs into consideration in order for them to utilise it. This could possibly lower risk aversion and stimulate the use of new technology.

Region / age (%)	<5	5-10	10-15	15-20	20-25	25-45*	45-65	65-80	>80
Borsele	5.1	5.4	5.8	5.6	5.6	22.2	27.9	16.9	5.4
Goes	4.4	4.7	5.2	5.3	5.3	22.6	27.9	17.9	6.6
Hulst	3.7	4.5	4.5	4.8	3.9	21.0	30.6	19.9	7.0
Kapelle	4.9	5.5	6.5	6.3	5.0	21.8	27.4	16.8	5.8
Middelburg	4.8	5.1	5.6	6.0	6.4	23.2	26.0	17.0	6.1
Noord-Beveland	3.3	3.8	4.2	4.3	4.3	19.1	30.8	22.9	7.4
Reimerswaal	6.2	6.8	6.7	6.6	6.3	25.0	24.4	13.4	4.5
Schouwen-Duiveland	4.5	4.7	4.8	4.8	4.6	19.8	28.3	21.0	7.6
Sluis	3.9	4.1	4.3	4.5	4.2	20.5	28.7	21.9	7.9
Terneuzen	4.2	4.6	4.9	4.9	4.9	22.5	28.1	19.0	6.9
Tholen	5.9	5.9	6.1	6.0	5.7	23.8	26.4	15.1	5.0
Veere	4.7	5.3	5.3	4.9	5.0	18.8	27.3	21.6	7.3
Vlissingen	4.1	4.5	5	5.4	5.6	23.2	27.0	18.9	6.3
Zeeland	4.6	5.0	5.3	5.3	5.3	22.1	27.5	18.4	6.5
Netherlands	4.9	5.1	5.4	5.8	6.4	25.0	27.3	15.2	4.8

Table 8: Age ratio in Zeeland, per municipality (based on CBS (2024c))

5.2.3 Education Level

Inhabitants of Zeeland tend to be lower-educated than the average inhabitant of the Netherlands. This might have an effect on the use of DRT, as Chapter 2.3.3 states that those with a lower education might opt more for DRT. As also explained in the aforementioned chapter, low education could be connected to another personal characteristic, namely income.

Region / education level (%)	Primary education	Secondary education	Bachelor's degree	Master's degree/PHD
Borsele	6.0	69.4	18.3	6.3
Goes	7.5	55.2	19.5	7.8

Hulst	5.6	71.4	16.0	7.0
Kapelle	4.8	69.0	19.6	6.7
Middelburg	7.4	63.4	20.5	8.8
Noord-Beveland	6.4	67.6	19	7.1
Reimerswaal	9.2	75.2	13.0	2.6
Schouwen-Duiveland	6.9	68.0	18.6	6.5
Sluis	11.0	65.6	15.8	7.6
Terneuzen	12.3	66.9	15	5.8
Tholen	8.7	73.8	13.8	3.6
Veere	4.4	64.1	24.3	7.3
Vlissingen	8.1	69.6	17.5	4.8
Zeeland (%)	8.1	68	17.5	6.4
Netherlands (%)	8.6	59.3	20.1	11.9

Table 9: Education level in Zeeland, per municipality (based on CBS (2024d))

5.2.4 Income

As illustrated in Table 10, the mean standardised income and personal income are slightly lower in Zeeland than in the rest of the Netherlands. This could potentially have a positive influence on the adoption of DRT in Zeeland, as those with a lower income tend to opt for DRT. As previously mentioned, this might be due to the relation between income and car ownership (see Chapter 2.3.4). Car ownership in Zeeland is discussed in Chapter 2.3.6.

Region / income	Mean standardised income	Mean personal income
Borsele	38,200	35,800
Goes	36,900	35,700
Hulst	36,800	36,600
Kapelle	38,100	36,300
Middelburg	35,900	35,300
Noord-Beveland	38,000	35,500
Reimerswaal	36,300	34,100

Schouwen-Duiveland	38,900	36,300
Sluis	36,200	34,400
Terneuzen	35,500	35,600
Tholen	36,300	34,500
Veere	39,800	36,100
Vlissingen	33,200	33,000
Zeeland	36,500	35,200
Netherlands	37,900	37,400

Table 10: Mean income in Zeeland, per municipality (based on CBS (2024e)).

5.2.5 Household

Table 11 illustrates that there are more multi-person households – albeit without children – and fewer single-person households in Zeeland compared to the rest of the Netherlands As established in Chapter 2.3.5, single households are more likely to opt for DRT compared to households with more members, especially when these households also have children. Therefore, areas such as Tholen or Reimerswaal that house significantly more households with children are perhaps less likely to opt for DRT. The same goes for Veere and Hulst, as they have a higher share in multi-person households without children. Regions that seem to be more prone to DRT (based on this variable alone) are Vlissingen and Middelburg, coincidentally the urban areas.

Region / household (%)	One-person household	Multi-person household without children	Multi-person household with children
Borsele	30.5	34.9	34.6
Goes	39.8	30.6	29.6
Hulst	34.8	36.3	28.9
Kapelle	28.9	34.5	36.6
Middelburg	43.0	28.2	28.8
Noord-Beveland	37.0	38.1	24.9
Reimerswaal	32.5	29.6	37.9
Schouwen-Duiveland	35.1	36.0	28.9
Sluis	38.8	35.2	26.0

Terneuzen	38.0	33.2	28.8
Tholen	30.6	32.8	36.6
Veere	32.3	37.0	30.7
Vlissingen	45.8	27.9	26.3
Zeeland (%)	37.7	32.4	29.9
Netherlands (%)	39.9	28.5	31.6

Table 11: Average household size in Zeeland, per municipality (based on CBS (2024f))

5.2.6 Car Ownership

Car ownership in Zeeland is higher than the national average, as illustrated in Table 12. This could have negative implications for the use of DRT in Zeeland, as car ownership has a negative effect on the adoption of DRT (see Chapter 2.3.6).

High car ownership does not correlate with the previously mentioned low education and income that characterises Zeeland, as this would explain *low* car ownership. One reason that could potentially explain the higher levels of car ownership is the necessity of the car in Zeeland due to the low density mentioned in Chapter 2.2.1.

Region / car ownership (n per 1000 inhabitants)	**Private car**
Borsele	589
Goes	562
Hulst	602
Kapelle	555
Middelburg	471
Noord-Beveland	622
Reimerswaal	519
Schouwen-Duiveland	573
Sluis	590
Terneuzen	569
Tholen	559
Veere	558

Vlissingen	485
Zeeland	546
Netherlands	505

Table 12: Car ownership in Zeeland, per municipality (based on CBS (2024g))

5.2.7 Use of Public Transport

There is no data on the use of public transport in Zeeland, which is why this personal factor cannot be discussed in as much detail as the other sections. However, Chapter 5.1.3 mentions that public transport use is minimal in Zeeland. This could influence the use of DRT in Zeeland, as a poor public transport service can result in higher levels of satisfaction with DRT (see Chapter 2.2.2).

5.3 Conclusion

Zeeland is, for the majority, a rural region and therefore has the expected rural spatial characteristics (see Chapter 3.1). This is amplified by its unique geography, as multiple peninsulas and islands make up the province.

However, this spatial rural context arguably influences the mobility of its inhabitants. The large distances between areas could inhibit particularly the elderly, youth, and those with mobility issues in their day-to-day life, as the insufficient PT system does not provide these demographics with enough mobility. Therefore, the introduction of DRT could be the solution to the problem, although it has been met with criticism from several parties. Furthermore, the lack of PT in the area could be beneficial to the adoption of PT, as those who experience little to no PT are often more content with new modes of transport. Lastly, the negative response towards the introduction of DRT as a new mode of transport in the province is in line with other research and could potentially be minimised by marketing and gaining an understanding about the system.

When it comes to personal characteristics, the previous sections have shown somewhat contradicting results regarding the adoption of DRT in Zeeland, but are seemingly in favour. Age, income, education, and the use/quality of PT all point towards a higher chance of DRT being used in Zeeland. However, the make-up of households and

higher levels of car ownership might inhibit inhabitants from using DRT, with an emphasis on the latter: why use any form of transport when the car is right outside your house? And which aspects could push or pull someone to use that form of transport? The following section explores answers to these questions and others by discussing the answers to the interviews with experts and (potential) users of DRT.

6 Findings

This chapter presents the findings of the interviews conducted with potential users, experts, and users of Flex. This chapter consists of two sections. The majority of this chapter discusses to what extent each indicator is important and why. When possible, findings are substantiated with the literature discussed in Chapter 2. The last section serves as a summary of this chapter by providing an overview of the importance of the dimensions and indicators, and their interrelations.

6.1 Initial Trust

6.1.1 Familiarity

Being familiar with a mode of transport is relatively important to the respondents. Those who rated this indicator low were naturally more willing to try DRT. This is illustrated by Potential User #9: *"If there's something new, no hard feelings." – rated 1/5 and ranked 9/15.*

Familiarity seems to be interrelated with the indicator *knowledge available*. Those who found *familiarity* important brought up the importance of knowledge being available to become familiar. Potential User #5 stated that they would not use a new mode of transport if there was not enough knowledge available: *"Because I want to know how to get from A to B, when I am unsure of how to get there or if I will make my connection. That I at least know, otherwise I prefer to go by car." – rated 4/5 and ranked 13/15*. This is in line with the general aversion to new modes of transport and the positive influence that knowledge could have on the acceptance of DRT as stated in Chapter 2.

6.1.2 Physical Safety

Physical safety is unimportant to the vast majority of the respondents[21]. Generally, the potential users did not include *physical safety* in their decision-making at all. Possible explanations could be a general disregard for this indicator or a lack of negative experiences. Potential User #1 stated the following: *"[Physical safety] does not play a role. I*

[21] Interestingly, it is one of the lowest rated indicator, but not the lowest ranked indicator. One reason might be that respondents misunderstood the question, thinking physical safety is important as a whole but unimportant in their own decision-making.

never really think about it. Maybe [...] when I am 90. Then I'll start thinking about it, but not right now." – rated 1/5 and ranked 4/15[22].

However, Potential User #7 did find physical safety relatively important in their decision-making, stating the following: *"You want to be relaxed, at least I do. If someone is driving strangely, you are not relaxed." – rated 3.5/5 and ranked 3/15.* From this quote, it could also be concluded that *physical safety* and *comfort* are related, as people who feel unsafe would also feel uncomfortable.

The potential users named several factors that could influence *physical safety*, such as the behaviour of the driver – e.g. reckless driving or not waiting until the passenger is sitting – and a working vehicle with seatbelts.

6.1.3 Social Safety

Similar to physical safety, social safety does not play an important role when choosing a mode of transport for the majority of the respondents. There seem to be three main reasons why social safety is not important to the respondents. Firstly, respondents do not have any negative experiences with bad social safety. This is illustrated by this statement from Respondent #1: "*No, no. Not even in the train. When I do go by train, I never had problems with [social safety]."- rated 1/5 and ranked 3/15*. Respondent #5 also did not rate social safety high, but acknowledged that social safety is an important indicator overall and that their lack of negative experiences might be the reason why it is an unimportant indicator to them. The correlation between previous experiences and the importance of social safety is further demonstrated by one of the users, as they found social safety important due to a negative experience. The user found Flex to be the ideal form of transport when travelling at night, as it was a better alternative to cycling alone in the dark. It should be noted that this negative experience took place in an urban area outside of Zeeland. This experience, along with the unimportance of this indicator among the Potential Users, I speculate on the importance of safety specifically within the rural spatial context.

[22] The difference in rating and ranking is an example of a possible misunderstanding as described above.

Secondly, and tied to the previous point, the perceived higher levels of social safety in Zeeland compared to other regions in the Netherlands could cause an increased feeling of social safety. Some respondents stated that the subject of social safety is not as prevalent in Zeeland compared to e.g. the Randstad. Respondent #6 states the following regarding this matter: *"Social safety, if you go to the Randstad, if you go by public transport, it is a lot less safe [compared to Zeeland]. […]. [Social safety] does not really play a role for me, because it is well-organized here in Zeeland" – rated 2/5 and ranked 9/15.*

Lastly, social safety might not be important due to being familiar with the region and its inhabitants. This is illustrated by the following quote from Respondent #10's colleagues: "*When you are at the edge of a village [in Schouwen-Duiveland], you know everyone. You might be standing there alone, but you know the people who drive by.*" Respondent #10 noted that the region where one is from could be important, as they found there are significant regional differences within Zeeland, as illustrated in the following quote: "*I don't think it's that bad on [Schouwen-Duiveland], that someone would feel unsafe at a hub at night. You are in a very different area compared to Zeeuws-Vlaanderen of course. […]. It is very different there. It is a bit more spread out, because IJzendijke, Schoondijke, that is quite a long drive*" *– rated 5/5 and ranked 6/15*. This might also be related to the rural spatial context due to its small-scale.

Another topic mentioned by a respondent is the location of (bus) stops. Respondent #4 perceived some of the bus stops in their area as being unsafe due to being on the outskirts of towns: *"…and the bus stop is in the middle of nowhere at the edge [of town], because the bus doesn't go through the village anymore. They want to do that with those hubs. I was waiting for the bus with my husband around 9 p.m. […]. A few cars drove by and we were standing together, so I didn't find it scary, but it is not fun when you are there alone." – n.a.*

I visited some of these bus stops with Respondent #4. Generally, these bus stops were located along a road, not in the vicinity of any buildings, and lacked lighting. Methods to increase social safety that were mentioned by respondents were good lighting or an emergency phone number.

6.1.4 Conclusion

Initial trust is relatively unimportant to the respondents. *Familiarity* seems to be relatively more important than both *physical* and *social safety*, albeit not as important as other indicators mentioned later in this chapter. Several conclusions on these indicators and connections with other indicators (see Figure 9) can be made based on this section[23].

Familiarity is relatively important to the respondents, meaning they are generally less likely to opt for a new mode of transport. A method to overcome this is by providing knowledge, as respondents would be more likely to use a new mode of transport if they are able to inform themselves about it. Therefore, there should be enough information on DRT easily available in order to stimulate more people to use a novel service.

Potential users deemed *physical safety* relatively unimportant. This could partly be explained by a general disregard and/or a lack of negative experiences. However, some potential users did find this indicator important, as they imagined feeling uncomfortable when feeling unsafe, e.g. if the driver drives recklessly. Therefore, *physical safety* can be increased by employing trained drivers and having seatbelts in the vehicle.

Potential users deemed *social safety* relatively unimportant. This could partly be explained by a general disregard and/or a lack of negative experiences in Zeeland, as respondents perceived the province to be relatively safe. This correlates with one DRT user who found safety important due to a negative experience they had whilst travelling at night in an urban area outside of Zeeland. They stated that using DRT in the evening is a good alternative to cycling alone in the dark. This correlates with statements from potential users on improving social safety by adding lighting to stops. Therefore, DRT could be made more socially safe by implementing enough lighting. The lack of importance of residents of Zeeland could potentially be attributed to the spatial familiarity, which in turn could be influenced by the rural spatial context. This would correlate with the negative experience of a user outside of Zeeland.

[23] There are three types of boxes used in this figure. Firstly, the bolded boxes contain already established indicators. Secondly, the regular black boxes contain new indicators. Thirdly, the grey boxes are speculations. This applies for the remainder of the figures in this chapter.

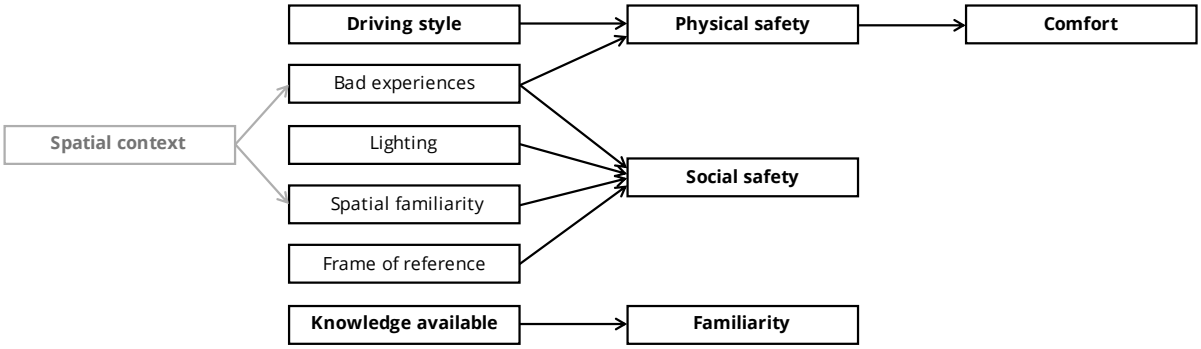


Figure 9: Relations between initial trust and other indicators

6.2 Performance Expectancy

6.2.1 Speed

Speed is relatively important to the respondents. Naturally, this indicator is important to most respondents because they want to directly go to their destination. Those who found *speed* unimportant generally had more time on their hands due to being retired, having no job, or having a flexible job.

Most respondents were willing to spend more time in a DRT vehicle compared to the bus or the car. Some were vague in their answers, such as "*if it takes too long, then it becomes an unattractive alternative*" *(R9 – rated 4/5 and ranked 2/15)*. Others were more specific in their answers, stating they are willing to travel 15 minutes or 20% longer than their original trip.

Respondents named mainly two indicators that could influence them to travel longer. Firstly, some mentioned they would accept travelling longer if the costs of DRT are lower than other modes of transport. Potential User #6 stated the following: *"It depends on the price. If something is free, for example free public transport, then I would be willing to take twice as long [as opposed to the car], but if it is as expensive or more expensive, then I will travel by car. So that connection between costs and speed is one I would make" – rated 4/5 and ranked 3/*15. Furthermore, Potential User #8 recognises that they might be faster by car, but will have to pay for parking costs: *"When we travel from Goes to Rotterdam by car, we might be*

faster, […], but you also have to park, which also costs a lot of money" – rated 3/5 and ranked 6/15.

Secondly, the effort during the trip seems to correlate with the duration of the trip, as some potential users stated they take the waiting time into consideration. This is illustrated by Potential User #5: "*If [the waiting time] takes longer than 20 minutes, I think I would rather do something else with my time" – rated 5/5 and ranked 5/15*. This correlates with Kjærup et al. (2020), who state that users of Plustur would not use the service if they had to wait too long. This further advocates for the integration of DRT in TPT, which is where the aforementioned hub system comes into play. Furthermore, Potential User #9 stated they are willing to spend more time in a vehicle if it meant they would not have to do anything whilst travelling: *"If you are able to do your job, so to say. So when you have your hands free" – rated 4/5 and ranked 2/15*. Moreover, some respondents stated that they prefer a certain mode of transport – usually the train – when the trip is longer because the train is perceived as less laborious. This is illustrated by the following statement from Potential User #8: *"I think as the distance [of the trip] grows, I would be more willing to spend more time in a bus or a taxi" – rated 3/5 and ranked 6/15*.

6.2.2 Reliability

According to the respondents, the reliability of transport is the most important indicator when choosing a mode of transport. Respondents find it important to be able to trust a system and to know they will be on time. Naturally, negative experiences with buses being late or not showing up impact the reliability. Potential User #6 stated they had several negative experiences with delayed public transport, which led them to only use the car within Zeeland: *"I think if public transport is this unreliable, I am never travelling with it again. I also noticed this once. There was an accident in Middelburg, which led to the trains not being able to drive. I had to wait there for two hours. After a while I had enough and I called someone to pick me up from Goes to Middelburg. The weeks after, I thought: 'I am not travelling by train anymore. I am going by car.' That lasted two months and it happened in November and we are now in January" – rated 5/5 and ranked 2/15*.

Potential users and experts (#4, #7 & #8) discussed mainly two ways to improve reliability: updates on the ride (via app, SMS, or a digital sign at the stop[24]) and sharing the location of the vehicle. This is illustrated by Potential User #3: *"I think it is mostly being informed, because you have no control over those buses, because you are dependent on traffic and how many people are entering the bus at every stop. So I think being informed is the most important [in improving reliability]. Also to gain more understanding [from travellers]" – rated 3/5 and ranked 6/15.* These findings correlate with statements from users, especially those who previously made use of the *Haltetaxi*, Flex's predecessor. This system did not have these features, which meant users whose vehicle was late were often left wondering when or if it was coming. User #13 recalled a moment where they stood in the rain for an hour as they waited for the *Haltetaxi* and called Flex "a relief"[25]. These findings also correlate with Kjærup et al. (2020), who state that users of the DRT system Plustur found updates extremely important, especially when it comes to transfers.

A third way to increase the reliability is to decrease the margin between booked time and actual pick-up time. Some respondents said that the margin wherein Flex could arrive should be as small as possible, preferably 5 minutes[26]. Potential User #10 said the following regarding this matter: "*It does not have to be there exactly on time, but it has to be there within 5 minutes when I order a Flex, that I can trust that it will arrive within that time*" – *rated 5/5 and ranked 1/15*. This correlates with Expert #7, who discussed that the margin between the booked time and the actual pick-up should be as small as possible to ensure users are not waiting too long. Avermann & Schlüter (2019) found that the waiting time is a strong variable determining satisfaction, which could arguably influence the use of a system.

These findings also correlate with Jevinger & Svensson (2024), who found that more than 90% of respondents found a 5-minute delay acceptable. This percentage drops to c. 80% when there is a 10-minute delay and c. 30% when it is 20 minutes. Interestingly, this aspect

[24] The latter two should be considered for the older generation who might not feel comfortable using an app.
[25] In my own experience, showing the location of the vehicle is important to ensure reliability. My vehicle was late, even though it said it was there. If I did not have the visual confirmation that my vehicle was coming and late, I would have been more stressed.
[26] At the time, this margin for Flex is 15 minutes.

could be connected to sending updates, as Jevinger & Svensson (2024) found that sending updates on a delay could increase the acceptance rate by 5-10%.

6.2.3 Conclusion

Performance expectancy is relatively important to respondents. Reliability is the most important indicator of this dimension – it is also the most important indicator overall. Several conclusions on these indicators and connections with other indicators (see Figure 10) can be made based on this section.

Speed is relatively important to the respondents. People who have more time on their hands naturally do not mind this indicator as much. The directness of the trip is the most important aspect of this indicator. Respondents stated they are more likely to spend more time in a vehicle if it is cheaper, the waiting time is minimal, or they are able to do something during the trip – which is a given when travelling by PT. Therefore, DRT could stimulate potential users by being as direct as possible, potentially lowering the costs of a ride[27], and reducing the waiting time.

Reliability is the most important indicator overall. Respondents find it important to know they will be on time and can trust the system. Bad experiences with reliability could push users to utilise another mode of transport. This correlates with findings from experts, who stated that increasing the reliability of DRT can increase its use. Methods to increase the reliability are (1) sharing the location of the vehicle and updates on its arrival time, and (2) guaranteeing that the user will make their transfer, e.g. by having a small arrival margin of 5 minutes. Therefore, DRT systems can improve reliability by sharing the location of the vehicles and providing updates on the arrival time, as well as guaranteeing the user will be on time by implementing a margin of delay of c. 5 minutes.

[27] Chapter 6.6 further explains that the costs of DRT are influenced by various factors.

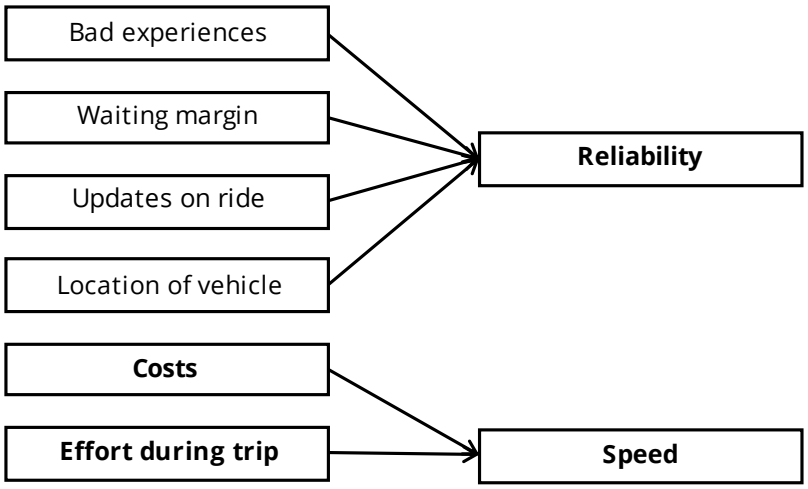


Figure 10: Relations between performance expectancy and other indicators

6.3 Effort Expectancy

6.3.1 Effort Before Trip

The effort before the trip is relatively important. Respondents found this indicator unimportant if they had enough time on their hands to figure out how to use a system. However, those who did find this indicator important stated that they would not use a mode of transport if it is too complicated to use.

When it comes to DRT, a share of the potential users stated they see DRT as restraining and unspontaneous. This is especially relevant when booking a ride back. Potential User #6 states the following: "*… [I do mind] booking on the way back. You don't know what time you're done with an activity.*" – *rated 4/5 and ranked 11/15*. This correlates with the following statement from Potential User #3, who also discusses the complexity of DRT: *"I wouldn't travel with Flex that quickly, purely because of all those steps. It makes it really complicated and annoying. A lot more steps where things can go wrong. You are dependent on it."* – *rated 5/5 and ranked 4/15*. Therefore, it could be concluded that potential users possibly see DRT as labourious.

Interestingly, this does *not* correlate with the findings from the users. Overall, users did not find Flex difficult to use and did not think it would repel them from using the service again. Some did say it can take time and effort to book a trip. However, most

acknowledged this might be due to the novelty of the system, as most of the effort was due to faults in the system or the call centre[28].

However, one user did run into a problem during booking, namely their transfer from DRT to PT. User #14 recalled an instance where they had to rebook a ride four times, because the app would not show the time frame in which Flex would arrive before the booking was completed. Therefore, the user was unable to estimate if they would arrive in time for their connecting bus. The user stated they would not continue to use the system if this is a recurring theme. This finding correlates with Chapter 2.4.4 and answers from Expert #7 and #8 on how to decrease the effort of using DRT, namely to ensure a seamless transfer between DRT and PT.

When it comes to the waiting time between booking and the planned arrival time, most potential users stated that they would want to be picked up between 10 to 20 minutes, whereas four potential users found it acceptable to wait an hour or longer because they understood the vehicle must come from somewhere. In relation to the personal characteristics, it could be speculated that the former group consists mostly of children and adults: Jevinger & Svensson (2024) found that 34.8% of children and adults preferred to book 30 minutes in advance, whereas the elderly preferred to book at least a day in advance (25.5%), with 30 minutes in advance coming in second (22.4%). This would more or less correlate with estimations of the respondents' ages. Therefore, age also might have an influence on the effort before the trip when it comes to the waiting time.

However, three out of four respondents who found it acceptable to wait an hour stated they would not use DRT for spontaneous trips. Potential User #5 said that they would rather take the car and Potential User #9 would similarly opt for another mode of transport as well: "*I suppose that if I want to go somewhere spontaneously, Flex is not the solution for that. Then I would make use of something else, like car sharing.*" *– rated 1/15 and ranked 2/15*. These findings correlate with statements from several experts (#4, #7 & #8), who agreed that successful DRT systems often do not deploy a minimal waiting time as it

[28] Think of the call centre booking the wrong timeslot or the app not processing a ride, but still charging the user.

already takes the vehicle c. 20 minutes to reach a user. Furthermore, eliminating the waiting time would open up the possibility of spontaneous trips.

However, Potential User #2 stated they were content with waiting an hour, partly because they have to wait 2 hours when travelling with the *Haltetaxi*. This means that Flex is a quicker mode of transport from their frame of reference. Expert #7 mentions this phenomenon in their interview, stating that some groups – such as users of the *Haltetaxi* – might be more inclined to use DRT due to the effort they already have to put in. Paradoxically, a car user might experience Flex as a slower and more laborious form of transport. This would correlate with results regarding car ownership and the use of PT discussed in Chapter 2.3. Again, being able to book a ride as soon as possible could mitigate this factor across all groups (Expert #7).

Most respondents preferred booking via an app. Potential User #3 stated they do not want to call to book a ride and would prefer an app for its swiftness. Only two out of eleven respondents preferred calling. However, Expert #4 argues that users should always be able to call to book a ride, as DRT could already be difficult to use due to the additional (online) steps one has to undertake. This is particularly relevant for the older generation who might have difficulty with technology. This correlates with findings from Jevinger & Svensson (2024), who found that 62% of elderly users preferred booking via a human operator, whereas this number was 21% and 25% for children and adults, respectively. This would also correlate with estimations of the respondents' ages. Therefore, calling to book a ride should still be an option, even though most respondents did not mention this in their answers. Therefore, age also might have an influence on the effort before the trip when it comes to the waiting time.

6.3.2 Effort During Trip

In line with the previous indicator, the effort during trip is relatively important. One of the main aspects of this indicator is switching modes of transport. Although some respondents stated they did not mind transferring, most do.

This indicator seems to be connected to *comfort*, as several respondents stated that they experience transfers as uncomfortable. This is partly due to the complexity of

the trip, as more transfers could lead to more things going wrong during the trip. For some respondents, this could lead to opting for the car, as it is perceived as easier and more reliable. This is illustrated by Potential User #10: "*If I go by train to Amsterdam right now and I see that I have to transfer in Roosendaal…. It is so busy nowadays and all those platforms…. Then you would have to start running and all the stress. Then I'll say 'never mind', and I'll take the car*" – *rated 4/5 and ranked 11/15*. This correlates with the following statement from Potential User #8: *"I wouldn't even want to do that. I would not want to transfer, to be honest. Only if you're going to a train station, then I would understand that you have to transfer to another vehicle. But within Zeeland, if I were to use Flex, then I would rather just call a taxi who brings me from A to B instead of having to use another vehicle" – rated 5/5 and ranked 9/15*.

6.3.3 Conclusion

Effort expectancy is relatively important. Although *effort during trip* is rated slightly higher, it is ranked lower than *effort before trip*. Several conclusions on these indicators and connections with other indicators (see Figure 11) can be made based on this section.

Effort before trip is relatively important. Although most potential users preferred booking via app, some did still want to be able to call. This is in correlation with statements from experts. Furthermore, the complexity of a system is important for its usage: if there are too many steps for users to perform, they are more likely to refrain from using the system and opt for easier and more reliable modes of transport, such as the car. In addition, the perceived lack of spontaneity for booking a ride back is seen as a hindrance. Experts stated several ways to improve the effort before the trip, including no minimal waiting time between booking and pick-up and several methods of booking. This would stimulate the use of DRT for spontaneous trips and takes the preferences of various demographics into consideration. Therefore, DRT should be able to be booked via app and phone and have no minimum waiting time in order to stimulate the use of the system.

Similarly, *effort during trip* is also relatively important. A share of the potential users stated they would find it annoying if they had to transfer often and would rather opt for the car in such situations. Furthermore, the ability to do something during a ride – which is a given when travelling with PT – could also stimulate the use of a system. Experts stated

integrating DRT with TPT could enhance the use of DRT. Therefore, DRT should have as few transfers as possible and be integrated into TPT in order to minimize the effort during the trip.

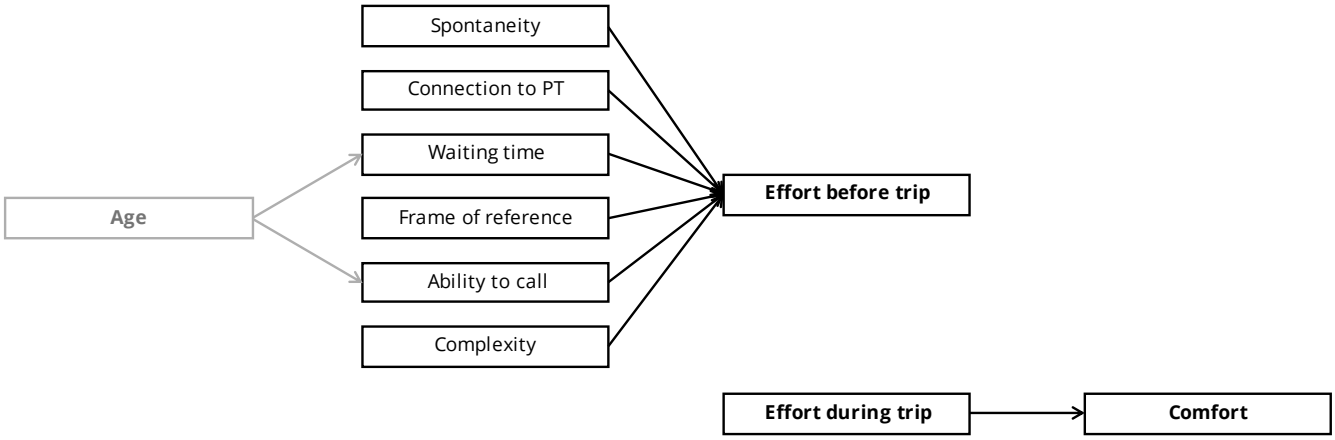


Figure 11: Relations between effort expectancy and other indicators

6.4 Social Influence

6.4.1 Use of Friends and Family

The use of certain modes of transport by friends and family is generally regarded as unimportant. Respondents who found it unimportant often said they make their own decisions, aside from what others do. An example of this is the following statement said by Potential User #6: *"…because I make my own decisions. If my parents travel by car and I by train, I am okay with that. I am an independent person who can make their own decisions" – rated 1/5 and ranked 15/15*.

However, those who found this indicator important stated they were more prone to use other modes of transport if people in their surroundings used it. This correlates with some users of Flex, as they started using the service because friends or family recommended it. This is in line with Daniels & Murray (2012), who found that word-of-mouth marketing is one of the more effective ways of advertising.

6.4.2 Good Reputation

Similarly to the use of family and friends, a good reputation is relatively unimportant. Although the majority of respondents found it unimportant in their decision-making, some respondents stated it would influence their mode of transport. Respondent #5

stated the following: "*Yes, if they have a good experience, then [it would be important]. Then I would give it a four [out of five]. If they recommend it, for example if they say that it was simple and easy, I would try it sometime*" – *rated 4/5 and ranked 14/15*. Furthermore, other respondents noted that having a bad reputation could influence the decision-making process – perhaps more than a good reputation[29].

6.4.3 Conclusion

Social influence is relatively unimportant to respondents. *Good reputation* is generally rated and ranked higher than *use of friends and family*. Several conclusions on these indicators can be made based on this section.

Use of family and friends is relatively unimportant. Some users of Flex utilised the system due to recommendations from family and friends, meaning that this indicator does matter to some extent. However, most potential users stated they would not use a service because their surroundings do so. This would indicate that word-of-mouth advertisement could be effective, but that a system should not rely on it.

Similarly, *good reputation* is relatively unimportant to the majority of the respondents for the same reasons as described above. The same advice from the previously mentioned indicator applies here: DRT should not rely on word-of-mouth advertisement.

6.5 Facilitating Conditions

6.5.1 Knowledge Available

The majority of respondents found *knowledge available* important. As established before, knowledge available is tied to the *familiarity* with a mode of transport: potential users are more inclined to use modes of transport when there is knowledge on how to use it. This correlates with statements from experts. Expert #7 discussed that a novel system could be overwhelming to potential users, which might deter them from using it. Furthermore, there are certain preconceptions that arise when introduced to DRT, such as the thought that it is similar to a taxi and should consequently be exactly on time (Expert #7), whilst

[29] This is further discussed in Chapter 9.

DRT systems often have a margin. Insecurity about the system and its use could be a barrier to potential users.

Therefore, experts (#4 & #7) advise implementing marketing strategies to inform potential users. This is preferably done in the same style as existing public transport – meaning the same logos and names – as TPT is already familiar to the general public (Expert #8). There are several ways in which DRT can be marketed. For instance, advertisements in local newspapers can inform the local population of a new system, whereas integration in existing public transport apps – such as 9292 or the NS app – could inform visitors of the area. Furthermore, it is essential to guide potential users as much as possible (Expert #7). For Arriva Vlinder, information evenings were held to explain the concept and answer questions from visitors. This was especially helpful for informing local potential users (Expert #4).

Furthermore, eye-catching objects in public spaces could potentially increase the use of a system. From my own experiences, I saw that the green poles that indicate a Flex stop generated a lot of attention – albeit sometimes bad as some inhabitants thought they were ugly. The green poles are marked with "hub" and often include a sign with information about how to book a ride.

Furthermore, the effort before a trip could arguably be tied to this indicator, as knowledge is crucial when preparing a trip. Potential User #1 illustrates this with the following statement: *"That is really important, because it is important during the preparation. I have to know who to call and I also think they should know that they can call me when something happens." – rated 5/5 and ranked 6/15*

Respondents found several aspects of this indicator important. Some respondents talked about how receiving updates is important. This is illustrated by the following statement from Potential User #3: *"…but [it is necessary to see] which stops you're passing. Then I can clearly see [that I have to exit in three stops]. I find that to be important. And also checking if you're able to catch a transfer or live-updates so you know how tight the transfer is. I find that to be quite important…" - rated 5/5 and ranked 8/15*.

Furthermore, information about the accessibility of a vehicle could also be important to those who have mobility issues, which Potential User #2 exemplifies: *"Those are vans and I have to see if I can access them properly. I would have to try that sometime. I can see that I will do it, but can I enter properly? Where is it stopping, where are the stops? That does count. Where do I have to be?" – rated 3/5 and ranked 12/15*. This topic is further discussed in the following section.

6.5.2 Accessibility

Accessibility is one of the more important indicators. For most respondents, the most important aspect of accessibility is the proximity of the mode of transport. Potential User #7 stated they would take the bus more often if the nearest stop was closer to their house. When it comes to the distance between stops, Potential User #5 and #11 stated they do not mind walking 10 minutes to the nearest bus station, which would be about 500 to 1000 metres.

These findings correlate with statements from users, specifically those residing in villages due to a general lack of public transport in their surroundings. These users were positive about the fact they could be picked up from their doorstep. Two users stated Flex is a way for them to still leave their village and do something during the day, as they did not have access to a car during this time. Therefore, User #13 called Flex "a relief".

However, most (if not all) respondents recognised that accessibility is more important for other groups of people, such as the elderly or people with a disability. Potential User #1 stated that 500 metres might be too far for some people, such as an elderly lady in his town: *"We have a community centre where we drink coffee with a few people. There is an elderly woman who lives about 500 metres from the community centre, but she cannot walk that distance with her walking aid. I pick her up by car. 500 meters is too far for her." – rated 5/5 and ranked 7/15*.

Potential User #2 is in a similar situation due to her disability, stating that walking 100 to 200 metres is too far. Therefore, being able to be picked up from anywhere is necessary for this group of people, especially since they cannot travel by car and are subsequently dependent on public transport or local initiatives. This is illustrated by the following

statement from Potential User #2: *"The only thing that keeps me [from using Flex] is the accessibility. Having to walk stairs. I used to do it, but I can't anymore. If I fall in the bus, my shoulder hurts." – rated 5/5 and ranked 2/15*. Furthermore, Potential User #2 stated accessing the bus or being granted the time to sit down is also part of this indicator. From their answer, it could be concluded that travelling with public transport is almost impossible for those with mobility issues when it involves an inaccessible vehicle. This correlates with Avermann & Schlüter (2019), who found that the ease of entry is a strong variable determining satisfaction. The importance of providing an accessible vehicle is further substantiated by Knierim & Schlüter (2021), who concluded that those who have physical impairments favor the intended use of the EcoBus, which means a significantly high social benefit is expected. They state that easier access and door-to-door pickup should thus not be neglected.

6.5.3 Ease of Paying

The ease of paying is one of the most important indicators according to the respondents. Clarity is the most important aspect of this indicator, which could arguably be connected to *effort before trip*: the more difficult it is to pay, the more effort one has to put in. Potential User #7 stated the following regarding this matter: *"Really important, because you don't want to get into an argument with the driver over if you've paid or not." – rated 4/5 and ranked 8/15*.

There is not one method of payment that all respondents preferred. However, the use of cash was not mentioned at all. All respondents preferred digital methods, such as debit card, the OV-card, or in the app. Potential User #1 preferred to only have one method of payment, namely the OV-card. This is where the importance of clarity returns. Potential User #1 said the following regarding this topic: *"I prefer to pay everything, also Flex, with the OV-card. I would like that the most, one card. No hassle with many cards. No, just one card." – rated 5/5 and ranked 5/15*. However, some experts (#4 & #8) argued that providing multiple payment options such as paying in an app or by debit card could make paying easier. Furthermore, Expert #4 argued that paying in the vehicle itself should also be an option, as merely paying beforehand was not effective in the context of Vlinder.

The importance of being able to pay by card is exemplified by Potential User #10. They stated the OV-card is complicated, possibly because they do not travel with PT often. They stated the introduction of paying by debit card in the bus is an improvement: "*I remember when you had to pay with one of those [OV-]cards, too much hassle. Then it got changed and you could also check in with your debit card. That was such an improvement*" – *rated 5/5 and ranked 8/15*. The lack of PT in rural areas could exacerbate this effect[30]. These quotes illustrate the importance of integrating multiple methods of payment to stimulate the use of multiple demographics, especially when introducing PT to a non-PT user.

6.5.4 Conclusion

Facilitating conditions are relatively important to the respondents. *Ease of paying* is the highest rated indicator, but interestingly the lowest ranked. Paradoxically, *accessibility* is the lowest rated but highest ranked indicator. Figure 12 visualises the relations between these and other indicators.

Knowledge available is an important indicator. Potential users stated that they want to check information about a system to prepare for their trip, to become acquainted with a new form of transport, or to check the accessibility of the vehicle. Experts stated that there are several ways (potential) users could be informed: (1) information in local papers for local users, (2) information in apps for tourists and spontaneous travellers, and (3) information evenings for local users. Particularly the latter could be important, as experts stated that guiding people closely – especially with a novel mode of transport such as DRT – could increase the acceptance and subsequently the use of DRT. Furthermore, placing eye-catching objects in public spaces could generate more attention to DRT and potentially increase the use of the system. Thus, DRT should be marketed both locally and online by spreading information in papers, apps, and through information evenings, and potentially by placing eye-catching objects in public spaces including information on how to use DRT.

Accessibility is a relatively important factor. (Potential) users would often not opt for TPT due to the distance from the nearest stop. The ideal distance to a stop is seemingly 500-

[30] This is further discussed in Chapter 6.10.

1000 metres. However, this might be too far for those with mobility issues. For this group, being picked up from their doorstep is essential. Therefore, DRT should have stops every 500-1000 meters, including the ability to also pick up those with mobility issues from anywhere.

Ease of paying is another important factor. Most (potential) users preferred paying digitally or by debit card. This correlates with some experts, who stated that paying via apps or debit card is necessary. Potential users did not mention paying with cash. Furthermore, experts stated that there should always be an option to pay in the vehicle, as not everyone prefers to pay online. In relation to this, the option to pay by debit card should always be an option, as non-PT users might not have an OV-card and would find it too much hassle to obtain one. Therefore, users should be able to pay online or in the vehicle and have the option to pay with a debit or OV-card and possibly by cash to increase the ease of payment.

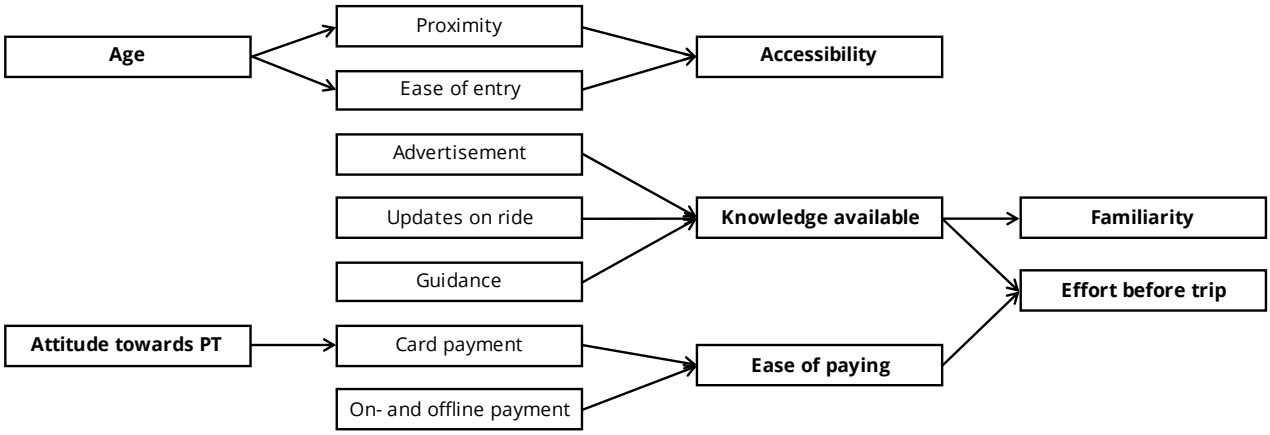


Figure 12: Relations between facilitating conditions and other indicators

6.6 Costs

Costs are relatively important. For some respondents, the perceived higher costs of public transportation would stimulate respondents to opt for the car. This is illustrated by Potential User #6: *"Yes, [the costs are] important. If public transport were less expensive or free, I would consider my mode of transport more often. But I think the car is cheaper." – rated 5/5 and ranked 1/*15. However, Potential User #8 stated that parking costs are the reason

why they would opt for the train: *"That is the reason why we sometimes go by train to Rotterdam, because of the parking costs" – rated 4/5 and ranked 13/15*.

Furthermore, some potential users related *costs* to *effort expectancy*. As previously established, potential users perceived DRT as being more laborious than other forms of transport. This is why this group thought that DRT should be at least on par with the costs of public transport and the car, if not less due to the perceived difficulty of using the services.

However, Potential User #10 stated that they find DRT offers better quality than TPT, meaning it could be more expensive: "*I think [Flex] can be more expensive than [PT]. […]. But it should be direct, there are more factors that play a role [in the costs]. The behavior of the driver and going from A to B. You can divert a bit of course, but yeah*" *– rated 2/5 and ranked 14/15*. Therefore, the quality of the mode of transport could also influence this indicator. This correlates with a statement from a user who found DRT to be relatively cheap. User #7 compared the price and quality of a regular taxi to DRT and stated Flex was almost "too good to be true": both forms of transport are similar in quality, but differ significantly in price.

6.6.1 Conclusion

Figure 13 visualises the relations between *costs* and other indicators. The costs of travelling are relatively important to respondents. It is tied to *effort expectancy*, as some potential users mentioned how DRT should not cost more than PT due to its perceived complexity. Moreover, the quality of the transport also matters when talking about the costs. Some respondents stated they would pay more for DRT than PT, because they perceived it as being of higher quality. This corresponds with a statement from a user, who found DRT relatively cheap compared to the quality and price of a taxi. Therefore, DRT should at least be on par with the costs of PT, especially if it is perceived as being laborious and worse in quality compared to other forms of transport.

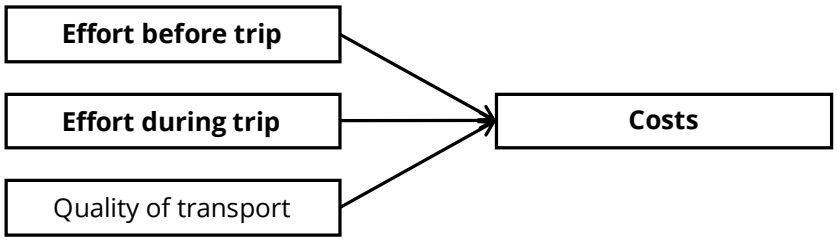


Figure 13: Relations between costs and other indicators

6.7 Comfort

Generally, comfort is relatively important. All aspects that make up comfort were ranked from 1 to 7. The following sections discuss which factors are most important, from most to least important.

6.6.1 Chance of Seating

The chance that the respondent is able to sit is the most important aspect of comfort. For most respondents, being able to sit was purely for comfort. However, Potential User #2 stated sitting is a part of accessibility due to their disability. Those who find this aspect important dislike standing in public transport, as illustrated by Potential User #3:*"I really do not want to stand, I really do not like that. Especially in the bus, that is so annoying."* – *ranked 1/7*. Furthermore, this aspect is naturally related to the discomfort of being in a full bus, as seating would then not be available. Potential User #5 stated they dislike the feeling of someone standing close to them in PT. Those who found this aspect to be unimportant stated they were fine with standing, as can be read in the following statement by Respondent #7: *"Seating, well, I am able to stand, if I go to Goes by bus and there is no seating, I am okay with standing for a little while."* – *ranked 2/7*.

6.6.2 Driving Style

The driving style is the second most important. There are several reasons why the driving style was important to the respondents. As previously mentioned, driving style is related to the perceived physical safety for some respondents. Another respondent who found driving style important stated that they become carsick quickly. However, a respondent

who found this indicator less important stated that they do not care to intervene, only if it is dangerous.

6.6.3 Behaviour of Travellers

The behaviour of other travellers comes in third. Those who found this aspect important stated it bothers them when other people are annoying. This ranges from other travellers calling and talking loudly to exhibiting strange and unpredictable behaviour. Interestingly, respondents who found this indicator important did not necessarily rank the indicator *social safety* higher. It could be speculated that *behaviour of travellers* could be seen as merely an annoyance rather than a threat to their safety, which is possibly related to the lack of negative experiences of social safety in Zeeland.

One respondent mentioned how negative behaviour can be annoying because you cannot do anything against it. Those who found this indicator to be unimportant stated that they might mind negative behaviour, but that it is not important for their eventual decision-making, as illustrated by Potential User #3: *"I do not mind it when there are other people. I like to sit quietly in a corner somewhere, but that is not that important." – ranked 3/7*.

6.6.4 Temperature in Vehicle

The temperature in the vehicle came in fourth. Respondents who found this indicator important stated they did not like being in a vehicle that is too cold or hot, as that could also make them feel sick. This is illustrated by Potential User #6: *"…if it is too hot or too cold, you're not going to feel well. You are going to feel sick and that is not nice." – ranked 4/7*. However, those who found this indicator unimportant stated that they were okay with regulating the temperature themselves: *"Temperature in the vehicle, you can dress for it. I am assuming if it's winter, you are wearing a coat." – ranked 7/7*.

6.6.5 Smell in Vehicle

The smell in the vehicle is tied with the previous indicator. Those who found this indicator relatively important found a strong smell to negatively impact their ride, especially because it is constant and travellers cannot do much against it. This is illustrated by Respondent #9: *"…if I enter somewhere and it smells terrible, you cannot do much against it. So that can be really annoying, because it is there constantly." – ranked 3/7*. Those who found

this indicator less important stated they either get used to the smell or do not mind it at all, such as Respondent #6*: "The smell in the vehicle, I usually get used to it." – ranked 7/7*.

6.6.6 Presence of Travellers

The presence of travellers came in sixth. Most respondents did not mind it when others sat in the same vehicle as them; they only minded possible negative behaviour. This is illustrated by Potential User #8: *"The chance that there are other travellers is not a problem to me, but possible negative behaviour is." – ranked 4/7*.

Only Potential User #5 ranked this indicator first, as they do not like it when other people are in the same vehicle: *"…I don't like it if there are a lot of people present. So that is important for me. Like I said, I don't like it when people you don't know breathe down your neck. Like in those buses, especially in the winter. Then all the windows fog up." – ranked 1/7*.

6.6.7 Sound in Vehicle

The sound in the vehicle came in last. Most people found this indicator unimportant, partly because sound is to be expected in a public setting. However, perhaps the most important reason why this indicator is not as important as the others is because the respondents could block unwanted sound by wearing headphones. As previously mentioned, some of the other indicators, such as smell or the behaviour of others, are out of the traveller's reach, which seemingly raises the importance of those indicators. Potential User #3 illustrates this: *"…I have noise-cancelling earbuds, so it does not bother me that much if there is a lot of sound." – ranked 7/7*.

6.6.8 Conclusion

Comfort is relatively important to the respondents. Some of the indicators are more important than the others, which is described below. However, it seems that indicators that can be influenced are less important, whereas constant and unchangeable indicators are more important. Figure 14 visualises the relations between comfort and other indicators.

Seating is the most important indicator of comfort, which works in the favour of DRT as users will always be able to sit. The driving style is relatively important too, as respondents would feel unsafe and sick if the driver is recklessly driving. Furthermore, potential users generally found the temperature, smell, or behaviour of other travellers more important, perhaps because they are constant and unalterable. Sound is the least important indicator, as respondents felt they could change it, namely by wearing headphones. Therefore, the comfort of DRT can be improved by employing trained drivers to ensure users do not feel sick or unsafe and monitoring the temperature and smell in the vehicle.

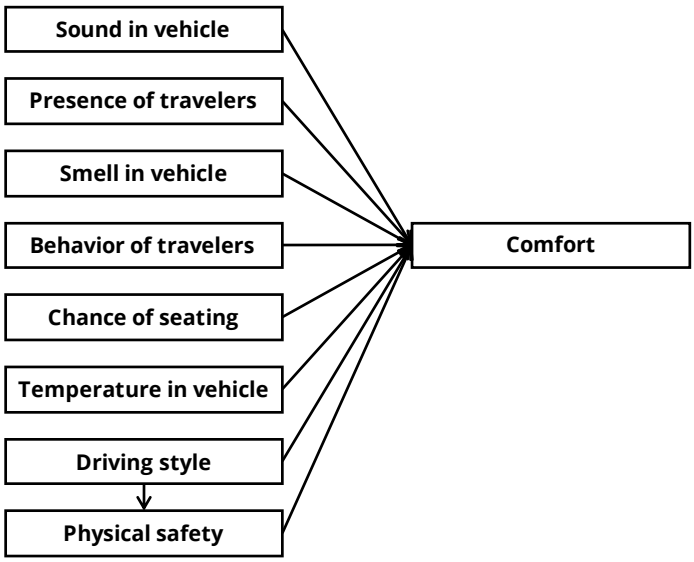


Figure 14: Relations between comfort and other indicators

6.8 Experience

6.8.1 Other Demographics in Vehicle

Most did not mind other demographics in the vehicle, stating that anyone should be able to use the bus. Some respondents connect this to *behaviour of travellers*: it does not matter who is in the bus, as long as they are not an annoyance. This is illustrated by Potential User #5: *"Other age groups do not matter if they do not bother anyone. Everyone has to be transported probably. I also had to be in a vehicle with someone who was mentally disabled."* – *ranked 2/2*. This annoyance is mostly targeted towards schoolkids, who are sometimes seen as irritating due to their loud behaviour.

Furthermore, Potential User #3 mentioned how they would find it annoying if they *constantly* had to pick up people who take longer to enter the vehicle, e.g. people in a wheelchair*: "I think I would be annoyed if they constantly had to help people get in the vehicle, and if that takes really long. It is important that they also have to travel, but…" – ranked 1/2.* It should be noted that they do not mind sitting in the same vehicle as older people and mentioned how people in a wheelchair should also receive good transportation. Moreover, Potential User #4 mentioned how they do not mind being in the same vehicle with mentally disabled people, but know some people who struggle with this.

6.8.2 Feeling Burdened

Similarly, feeling burdened was not important to most respondents. The main reason is that respondents found that other travellers should be aware of the system and how it operates, as illustrated by Potential User #11: *"You yourself choose for Flex, so you know what you are getting into." – n.a.* Other respondents could imagine feeling burdened, one of them being Potential User #2, who has a disability and might take longer to enter the bus.

6.8.3 Conclusion

Generally, *experience* is relatively unimportant. Respondents did not mind other demographics in the vehicle nor felt burdened in any way, as described below. Several conclusions on these indicators can be made based on this section (see Figure 15).

Overall, respondents did not mind sitting in the same vehicle with other demographics. However, one respondent stated they would find it annoying if it consistently takes a lot longer to travel if someone with a disability takes long to enter the vehicle. Another respondent stated that they do not mind sitting in the same vehicle as someone with a mental disability, but that they do know people who do. Therefore, merging DRT with transport for people with disabilities should perhaps be taken into consideration, although most respondents do not seem to mind this.

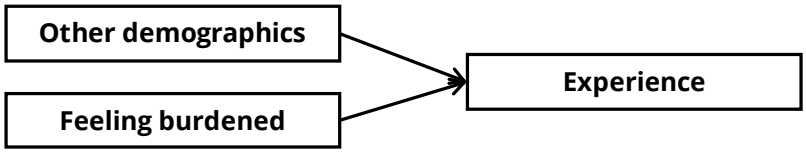


Figure 15: Relations between experience and other indicators

6.9 Attitude Towards Car

6.9.1 Positive Aspects of Car

Potential users named several positive aspects of the car. The most prevalent aspect for car use is the flexibility, as the car allows spontaneous trips. Therefore, this indicator could be tied to *effort before trip* or *speed*, since little preparation is needed before using the car (whereas one has to look up bus times or book a ride with DRT). As previously stated in Chapter 6.3, potential users who have access to the car think they would prefer it for such trips rather than DRT. This is illustrated by Potential User #7: *"That you can go whenever you want to, you don't have to check when to go, so you're not really bound to any time restrictions, and you're flexible. If someone calls right now, I can get in the car and drive away. I like that. It also doesn't take a lot of time. Travelling by public transport or bike takes longer*." Some respondents stated that the way to a destination was not always the problem with DRT, but more often the way back that would preferably be done spontaneously rather than planned.

Other aspects include a complex system (*effort before trip*), a bus stop that is too far away (*accessibility*), or transfers with public transport (*effort during trip*). Furthermore, potential users perceive the car to be more direct and therefore faster than public transport, tying this indicator to the indicator *speed* as well.

Moreover, the spatial context is tied to this dimension. Some respondents and experts (#1 & #3) stated that the car is needed in the rural areas, as they have limited access to the bus and no train transportation. Therefore, the inhabitants of these regions seem to be more reliant on the car. Furthermore, Expert #3 mentions that car use might have become a habit at this point, which is difficult to break (see Chapter 3.1).

6.9.2 Negative Aspects of Car

Respondents did not discuss many barriers to car use. One of the main barriers is the parking problem. Potential User #8 stated they opted for the train if the connection was direct and the parking costs high. Furthermore, some respondents stated environmental

concerns were the reason why they (sometimes) did not opt for the car. Potential User #3 said that environmental concerns are part of the reason why they do not take the car as often. Lastly, some respondents prefer to work whilst travelling, which is not possible when driving. Public transport is seen as a space to relax and work, whereas the car takes up all of the driver's attention.

Interestingly, these three barriers are not necessarily stimulants to opt for other modes of transport. If there is a car available, respondents do tend to opt for the car.

6.9.3 Conclusion

There are several reasons why the attitude towards the car mattered in relation to the use of DRT (see Figure 16). Potential users generally prefer the car for its flexibility, ease of use, and accessibility. Moreover, experts stated that a poor PT network could partly explain why people opt for the car and habitually drive the car, which is the case in Zeeland. This correlates with findings from Chapter 2.2. This is in line with answers from respondents.

However, high parking costs, environmental concerns, and the effort during the trip could potentially deter respondents from using the car. However, it seems the positive aspects overrule the negative.

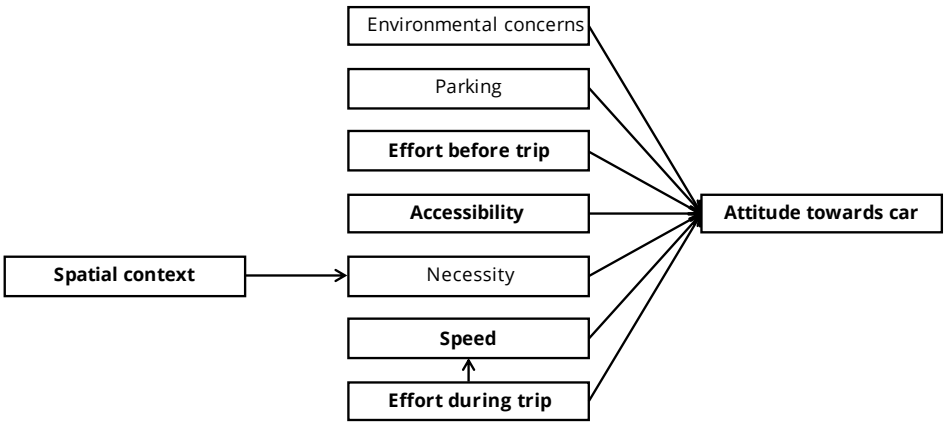


Figure 16: Relations between attitude towards car and other indicators

6.10 Attitude Towards PT

6.10.1 Positive Aspects of PT

There is mainly one positive aspect of PT, namely the ability to work and relax during public transport. Furthermore, it seems that the longer the journey is, the more prone respondents are to opt for the train. This could be related to the former aspect, as a longer journey by car would be more tiring than a journey by train. This is illustrated by Potential User #1: *"You don't have to focus. I notice that when I drive somewhere, that I come home really tired. […]. You don't have that with public transport, because you sit down and someone else drives for you. You're sitting comfortably then. That is a positive aspect of the train. Less tiring and more comfortable."*

6.10.2 Negative Aspects of PT

The main reason why some respondents do not opt for PT is because it is too far away. One respondent stated they would travel by bus more often if the stop was closer to their home. Potential User #2 stated the following: *"If it is not accessible, I don't use it. And here, the main reason is because [I] live in a village in Zeeuws-Vlaanderen. The train is far away. So you've already completed a whole journey before you arrive [at the train station]."* Therefore, the attitude towards PT could also be tied to the rural spatial context, as residents perceive it as lacking.

6.10.3 Conclusion

According to the respondents, the main positive aspect of PT is the ability to do something else whilst travelling. This is illustrated by some respondents' preference to travel by train for longer journeys (see Figure 17). However, respondents often do not opt for PT due to stops being too far away. Therefore, and related to *accessibility*, DRT should be close to all inhabitants of the region it operates in to stimulate potential users to utilise the system.

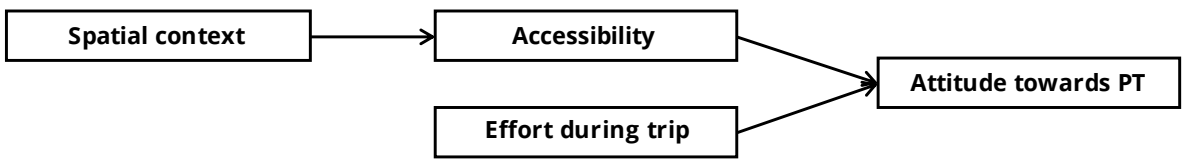


Figure 17: Relations between attitude towards train and other indicators

6.11 Intention to use DRT

Generally, potential users were not inclined to use DRT. Almost half of the potential users stated they would not opt for Flex because it is not as flexible and easy to use as the car or PT. Some were willing to try it sometime, but did not see themselves using it right now.

However, there are two reasons why respondents would use DRT. Firstly, the absence of the car seems to be the main reason: one potential user stated that they saw themselves having to use DRT in the future out of necessity, as they would get older and not be fit to drive. Furthermore, some users in the countryside did not have access to public transport and were therefore reliant on other modes of transport. Secondly, respondents would opt for DRT for recreational purposes, such as going for walks or going to a restaurant/bar.

6.11.1 Conclusion

Most respondents do not seem to want to travel by Flex, mainly due to its perceived inflexibility or complexity. The most common trip purposes among potential users are recreational or commutes. When asked if they would travel by DRT for spontaneous trips, most potential users said no; only those who have no access to other vehicles would.

6.12 Overview of Dimensions & Indicators

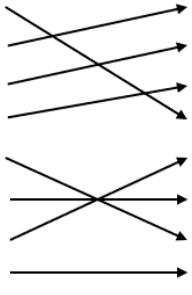
The following section provides an overview of the dimensions and indicators. The first section discusses their importance by providing the potential users' ratings and rankings. The second section visualises the interrelations that have been mentioned in this chapter.

6.12.1 Importance of Dimensions & Indicators

Figure 18 illustrates the ratings and ranking of the dimensions and the differences between them. The four most important dimensions are *facilitating conditions*, *performance expectancy*, *comfort*, and *effort expectancy*. Facilitating conditions *is* ranked significantly lower than it is rated, which is explained by the individual rankings of the indicators discussed later in this section. The less important dimensions are *experience*, *costs*, *initial trust*, and *social influence*. Although *experience* and *costs* seem to be rated relatively high, they are ranked lower than other dimensions. However, that is not to say

that they are completely irrelevant to the use of DRT, as some of these dimensions have higher and lower ranking indicators.

#	Dimension	Rating
1	Facilitating conditions	4.2
2	Performance expectancy	3.9
3	Comfort	3.8
4	Effort expectancy	3.6
5	Experience	3.5
6	Costs	3.4
7	Initial trust	2.6
8	Social influence	2.4



#	Dimension	Ranking
1	Performance expectancy	4.6
2	Comfort	5.9
3	Effort expectancy	7.2
	Facilitating conditions	7.2
5	Initial trust	7.7
	Costs	7.7
7	Experience	11.8
8	Social influence	12.1

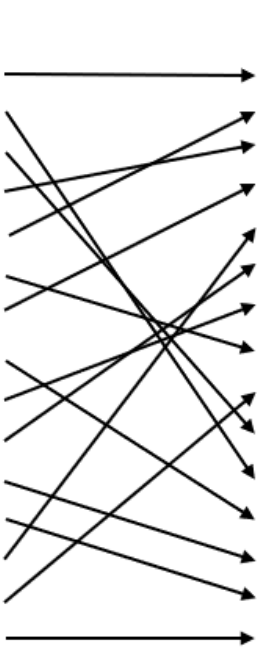
Figure 18: Importance of dimensions

Figure 19 illustrates the ratings and ranking of the indicators and the differences between them. The (un)importance of *reliability* and *use of friends and family* do not change: both were respectively rated and ranked first and last.

Indicators that were ranked significantly lower than they were rated were ease of paying (-9) and knowledge available (-7), which supports the lower ranking of *facilitating conditions*. The relative unimportance of these two indicators could be explained by the small research population, as a few outliers could significantly alter the results. Furthermore, the scores of these two indicators, along with *costs*, *effort during trip*, *social safety*, and *familiarity* are relatively close together. Again, one outlier could easily bump up e.g. *ease of paying* to #7. However, it could also be that *knowledge available* and *ease of paying* are overall important, but less important when compared to the other indicators.

Interestingly, both *physical* and *social safety* are ranked a lot higher than they were rated, respectively +8 and +5. This could be due to a general consensus that safety is important to respondents when choosing their mode of transport, but that it is not relevant in Zeeland due to the perceived safe environment. Furthermore, respondents might have realized that safety is indeed important after comparing these indicators to the others that mostly came after, as *initial trust* was often discussed first.

#	Indicator	Rating
1	Reliability	4.7
2	Ease of paying	4.6
3	Knowledge available	4.2
4	Comfort	3.8
	Accessibility	3.8
6	Effort during trip	3.7
7	Effort before trip	3.5
	Familiarity	3.5
9	Costs	3.4
10	Speed	3.0
11	Good reputation	2.6
12	Experience	2.4
13	Physical safety	2.2
	Social safety	2.2
15	Use of friends and family	2.1



#	Indicator	Ranking
1	Reliability	2.0
2	Accessibility	4.9
3	Comfort	5.9
4	Effort before trip	6.6
5	Physical safety	6.7
6	Speed	7.1
7	Costs	7.7
8	Effort during trip	7.8
9	Social safety	7.9
10	Knowledge available	8.3
11	Ease of paying	8.4
12	Familiarity	8.5
13	Good reputation	11.5
14	Experience	11.8
15	Use of friends and family	12.8

Figure 19: Importance of indicators

6.12.2 Relations Between Indicators

The relations between indicators are discussed several times throughout this chapter. Figure 20 provides an overview of the aforementioned relations and visualises how these indicators and dimensions should not be treated as separate entities, but influence and are influenced by multiple factors.

A conclusion that can be drawn from this figure is that indicators that are viewed as unimportant could still be relevant by influencing important indicators. For instance, most respondents stated they did not take *physical safety* into consideration. However, *physical safety* is linked to *comfort*, which is important to most respondents. Therefore, poor *physical safety* might not have a significant influence overall, but could impact the comfort of a ride.

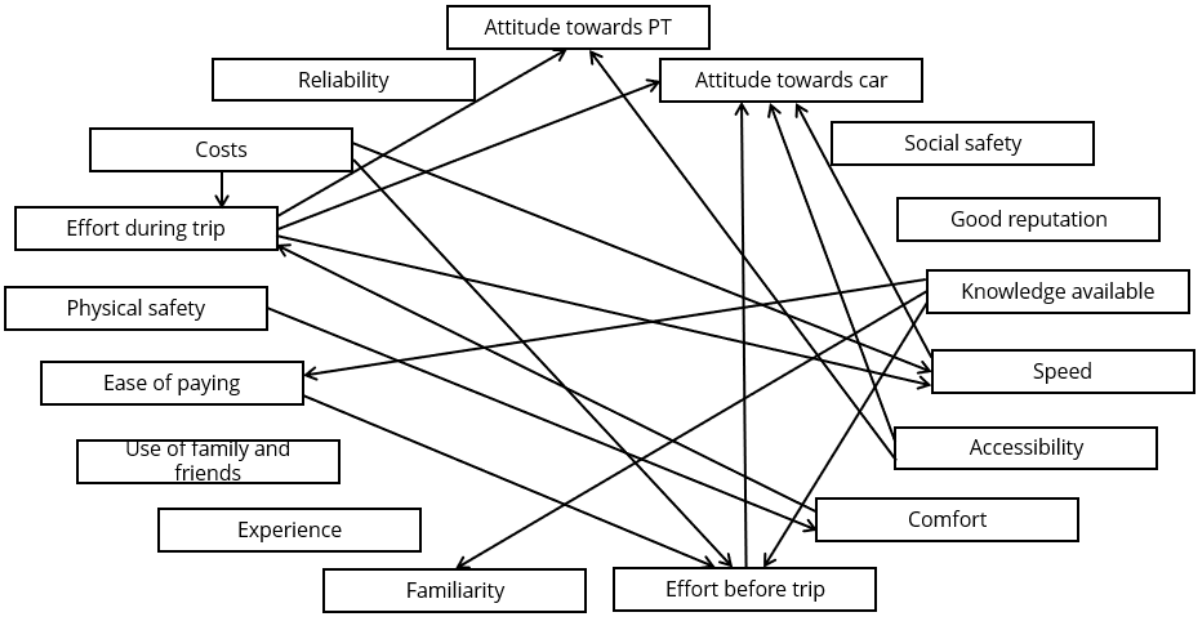


Figure 20: Relations between indicators

7 Conclusion

The results discussed in the previous chapters have culminated in this chapter, wherein these results are further discussed and summarised, ultimately leading to the answers to the research questions and the main question: **What stimulates the intention to use DRT in the province of Zeeland?**

7.1 Discussion

7.1.1 Research Question 1

The following section provides the answer to the question: **"To what extent do certain aspects of transport influence the intention to use DRT?"**

The most important indicator to (potential) rural DRT users is *reliability*. This indicates that potential users have to be able to trust a system, otherwise they might revert back to the car. *Comfort* and *accessibility* are also important indicators. Some respondents stated they would go by car if transport is not comfortable or if the stop is not close to their house. *Effort before trip* and *effort during trip* are both similarly important. A system that is easy to use is more inviting than one that takes up a lot of time. Transferring during a trip is also often seen as laborious and should be facilitated as much as possible.

Indicators that are relatively important are *ease of paying*, *knowledge available*, and *familiarity*. Respondents generally agreed that there should be multiple forms of payment both in-vehicle and online. Specifically debit card payment should be available, as a lack thereof could hinder the adoption of DRT by non-PT users. Furthermore, there should be enough knowledge available on how to use a system. This could positively influence the familiarity with a system, which in turn increases the adoption of DRT as respondents generally were hesitant about using a new system such as Flex.

In a similar manner, *costs* and *speed* are relatively important. Respondents generally agreed that these two indicators are connected, as a slower mode of transport should

cost less. However, these two indicators are not as important as the ones mentioned prior.

Indicators that seem unimportant based on the interviews, but proved to be important in the ranking are *physical* and *social safety*. Both were ranked low, but especially *physical safety* was ranked surprisingly high. The rating seems to be more consistent than the ranking, as the potential users acknowledged that safety is not often something they think about. This could be due to the perceived high levels of safety in Zeeland. Therefore, safety might be important to the respondents, but is not included in the decision-making process due to the spatial context.

The least important indicators are *good reputation*, *use of friends and family*, and *experience*. The former two illustrate how people generally do not seem to base their decisions off people's opinions but rather base them on their own experience. Furthermore, the presence of other demographics in a vehicle or possibly feeling burdened does not seem to play a role.

Outliers to this list are attitude towards car and attitude towards PT, as these two indicators are difficult to rate and rank compared to other indicators. However, some conclusions can be made. Those who use the car do seem to stick to that mode of transport due to its flexibility, ease of use, and proximity. Therefore, I would say that attitude towards car inhibits the use of DRT. The only instances where DRT is desirable to car users are when car use is (legally) not possible, such as the use of alcohol when going to a restaurant or café.

When it comes to attitude towards PT, most respondents stated they would use PT more often if it were closer. An aspect they enjoyed is the ability to relax or work whilst travelling. Users of PT did not necessarily show more inclination towards DRT use than car users, as some also had the same expectations of the ease of use. However, I could not certainly say that this indicator does not have any influence on the use of DRT.

From these results, conclusions regarding the hypotheses can be made. The hypotheses partly match the results, as shown here:

1. **H1 is correct**, as i*nitial trust* does seem to be relatively important, but is certainly not one of the most important dimensions in the list.
2. **H2 is correct**. *Performance expectancy* is one of the most important dimensions and could potentially be the strongest predictor among all.
3. **H3 is incorrect**. Previous studies found that *effort expectancy* has an insignificant effect on the intention to use DRT, whilst this research suggests the effort before and during the trip matters.
4. **H4 is correct**, as *social influence* seems to be insignificant to most.
5. **H5 is correct**. *Facilitating conditions* do seem to matter to most respondents.
6. **H6 is correct**. *Costs* do seem to matter, but minimally, as it was not rated and ranked relatively high.
7. **H7 is incorrect**, as *comfort* was hypothesised to be relatively insignificant. This research has shown that comfort is one of the most important predictors.
8. **H8 is correct**, as *experience* is relatively unimportant to most respondents.
9. **H9 is correct,** as *attitude towards car* is important to users and could have a negative effect on the use of DRT.
10. **H10 is (in)correct**, as this research does not show any conclusive results. Although there are more signs that *attitude towards PT* does not influence the use of DRT, more research is necessary in order to conclude this.

7.1.2 Research Question 2

The following section provides the answer to the question: **"How do personal characteristics influence the intention to use DRT?"**

Research generally agrees that women seem to utilise the service more than men. This could be influenced by the fact that women generally own cars less than men. Zeeland has slightly more women than men, which is similar to the national average. However, the difference does not seem to be significant. Therefore, gender possibly does not significantly influence the use of DRT in Zeeland.

Age seems to have an effect on the use of DRT, as research has shown that elderly people tend to use DRT more often than younger people. Some research differs from this conclusion, but this could be due to the differences between DRT services and their

targeted demographic. Zeeland has a higher count of elderly people compared to the rest of the Netherlands with about a quarter of its population being 65+. Therefore, DRT could have a higher chance of succeeding in Zeeland due to this variable.

People with a lower education seem to be more inclined to opt for DRT compared to those who have a higher education. This could be connected to income, as a lower education generally results in lower pay. Zeeland is generally lower educated than the rest of the Netherlands. Therefore, DRT could have a higher chance of succeeding in Zeeland due to this variable.

Lower-income households are generally more likely to opt for DRT. This could be connected to car ownership, as lower-income households might have less opportunity to buy a car. Zeeland generally has more lower-income households compared to the national average. Therefore, DRT could have a higher chance of succeeding in Zeeland due to this variable.

Single households are more inclined to opt for DRT compared to households with more members. Households with children also have a lower probability of using DRT. Zeeland generally has more multi-person households. Therefore, DRT could have a lower chance of succeeding in Zeeland due to this variable.

Car ownership negatively influences the intention to use DRT. Car ownership is generally higher in Zeeland, albeit due to necessity. Therefore, DRT could have a lower chance of succeeding in Zeeland due to this variable.

A poor PT network might positively influence the use of DRT. Although there is no concrete data on PT usage in Zeeland, people do tend to opt for the car more often than not. Answers from interviews point towards the poor PT network being the possible culprit, which would be in line with results on the rural spatial context. Therefore, DRT could have a higher chance of succeeding in Zeeland due to this variable.

7.1.3 Research Question 3

The following section provides the answer to the question: **"How does the rural spatial context influence the use of DRT?"**

Several characteristics of rural areas were explored throughout this thesis to uncover what implications they have on the overall mobility of inhabitants and subsequently the use of DRT. Firstly, results vary whether the density has influence on the use of DRT. Some studies found that a higher density is a more important predictor for DRT use, as more inhabitants would mean more potential users. This is in line with other sources that state that dispersed land-use patterns are not suited for DRT, potentially due to the higher levels of car ownership in these areas – which in turn negatively impacts the use of DRT. However, other studies have shown that inhabitants of low-density areas are more likely to opt for DRT, perhaps partly due to the next aspect.

Secondly, the existing transport infrastructure in rural areas is often lacking when it comes to PT. However, introducing DRT in such areas could have a positive effect on its adoption, as those living in areas with a poor PT network tend to appreciate DRT more. Introducing a DRT system of good quality could enhance people's perspective of PT, which could in turn increase their use.

Thirdly, and tied to the indicator *knowledge available*, inhabitants of rural areas might be less interested in new forms of mobility. This seems to correlate with the findings from the potential users, as most of them were not positive towards DRT, but also were not very familiar with the concept itself[31]. Therefore, it is important to inform the public as much as possible and design a system from the perspective of a car user. Moreover, increasing DRT's visibility is important, be it online or in real life through signage. The former correlates with findings from experts, the latter with my own observations with the green poles in Zeeland.

7.2 Recommendations for Praxis

Chapter 1 illustrated the search for answers on how to increase the use of DRT. Based on this research and literature on DRT, I formulated the following policy recommendations

[31] However, this is merely based on 11 respondents and is not generalisable for the entire region.

for increasing the use of DRT systems. Chapter 7.2.8 provides an overview of the following sections.

7.2.1 Increase Reliability

Updates

Receiving updates on a booked ride increases the reliability and could increase the acceptance rate of a delay by 5-10%. This can be done by sending notifications to users on the estimated arrival time and the location of the vehicle. This could be done via an app. However, SMS or a digital sign at a stop should be considered, as the older demographic might feel comfortable using an app.

Margin of Delay

The margin of delay between the planned and actual arrival time of a vehicle should be minimised to 5-10 minutes, as the acceptance rate of this margin lies between 70 and 90%. This rate drops to c. 30% when there is a margin of 20 minutes.

7.2.2 Minimise Effort

Methods of Booking

Users should be able to book rides via an app and by calling. The elderly tend to prefer the latter, whereas the former is preferred by adults and children. Therefore, omitting one of these methods could have consequences for the use of certain demographics.

Methods of Payment

Users should be able to pay with several methods, including debit card, OV-card, and online payment. Although PT users often have an OV-card, non-PT users generally do not. The inability to pay by debit card could hinder the use of DRT for the latter. This effect could be exacerbated in rural areas, where PT is less prevalent. Furthermore, users should be able to pay online and in-vehicle, as merely the former could hinder DRT adoption.

Accessibility

DRT stops should generally be every 500 to 1000 metres. However, this distance is too great for individuals with disabilities. Therefore, door-to-door services should be available to this group, especially since there is a high social benefit due to their limited access to the car.

Waiting Time

There should be no minimal waiting time between the moment of booking and the planned arrival time of the vehicle. This increases the spontaneity of DRT and minimises the barrier for booking a ride on the way back.

Limit Amount of Transfers

Limit transfers as much as possible. This is generally experienced as uncomfortable and could potentially deter potential users.

Integration with Public Transport

DRT should be properly integrated with DRT. Poor integration could lead to long waiting times between modes of transport, which could hinder the use of DRT. By properly integrating DRT in TPT apps (and vice versa), users are able to see their transfer time, which increases the ease of using the service.

7.2.3 Increase Familiarity

Advertisement

Generally, individuals in rural areas do not favour new modes of transport. Therefore, DRT should be properly marketed. Although the effect of word-of-mouth advertisement contributes to a share of DRT use, it should not be relied upon as individuals tend to choose their modes of transport based on their own experiences.

Marketing could be done via local newspapers, integration in TPT apps, or during information evenings where residents could pose questions on the system. Marketing altogether should be done in the same style as TPT, as this increases the familiarity of DRT.

Knowledge on DRT

There should be enough knowledge available on how to use DRT in order to become familiar with the system. Knowledge on how to use DRT could be provided on websites, apps, or signs at stops to increase the familiarity with the service.

7.2.4 Increase Safety

There are two ways to increase safety. Firstly, physical safety is influenced by the driving style of the driver (e.g. reckless driving) and seatbelts. Therefore, vehicles should be driven

by trained drivers and have working seatbelts. Secondly, social safety could be increased by properly lit stops and an emergency contact number.

7.2.5 Preferred Costs for DRT

DRT should cost the same as the bus. Due to the perceived difficulty of use, potential DRT users generally preferred DRT to cost similar to the bus.

7.2.6 Integration with Services for Disabled People

The integration of DRT with services for disabled people should be considered. Although most potential users do not seem to mind being in the same vehicle as someone with a physical or mental disability, some would either feel awkward or worry about being on time if it takes too long for them to enter the vehicle.

7.2.7 The Aim of DRT

Each system should consider what its aim is. Generally, DRT could provide the highest benefit to those who cannot or do not want to drive. Unsurprisingly, it seems that DRT should not be viewed as a replacement for the car, since the latter is generally perceived as faster and more reliable. However, DRT could still serve car users on trips where the use of the car is not preferred, such as when going to a restaurant or café.

7.2.8 Overview of Policy Recommendations

Table 13 visualises the aforementioned policy recommendations.

Aim	Policy
Increase reliability	Users receive updates on possible delays
	The location of the vehicle is shared with users
	The margin of delay between the planned arrival time and the actual arrival time of the vehicle is minimised to 10 minutes
	Users are able to see the transfer time between DRT and TPT

Minimise effort	No minimal waiting time between the moment of booking and the planned arrival time of the vehicle
	The amount of transfers is limited
	Users are able to book by calling and via an app
	DRT stops are between 500 to 1000 metres
	Door-to-door services are available to those with disabilities
	Users are able to pay by card
	Users are able to pay online and in-vehicle
Increase familiarity	Websites, apps, or signs on how to use DRT
	Articles on DRT in local newspapers
	Integration in TPT apps
	Information evenings in towns where residents could ask for information on the system
	Provide all knowledge in the same style as TPT
Increase safety	Properly lit stops
Preferred costs	DRT costs the same as the bus
Integration with Special Transport Services	Integration of DRT and Special Transport Services should be considered based on possible delays
Use of DRT	DRT is not a replacement of the car in daily life, but rather a service for those who cannot/do not want to drive and for trips where the use of the car is unwanted

Table 13: Overview of policies

7.3 Limitations

There are several limitations to this thesis that future research could address. Firstly, this research is not generalisable due to the small sample. Although the choice to opt for interviews does correspond with the aim of this thesis, namely to explore which aspects are important, surveys would have been able to generalise these results by researching a wider audience. Furthermore, this thesis is unable to conclude concretely what the relations between the spatial context, personal characteristics, and aspects of transport are. Although I speculate within Chapter 6 on certain relations, a survey could conclude on whether these speculations are true.

Secondly, my lack of lived experiences in the province might have inhibited this research. It is arguably impossible to understand what the lived experience of inhabitants of Zeeland is in the time span of this research. Being from the province could have helped with broadening the context of this research, asking more targeted questions in relation to the spatial context, and establishing a network of respondents.

Thirdly, the scope of this research is limited because I had to conduct it myself. There are several aspects that could have further explained the use of DRT, such as environmental concerns and the influence of a bad reputation. Some respondents brought up the fact that these two aspects were missing from the research. Furthermore, one respondent stated the effect of a bad reputation could possibly weigh more than a good reputation in their decision-making. Although it does not necessarily affect the outcome of this research, the scope and subsequently the ability to explain the use of DRT could have been increased if there were more resources.

7.4 Contribution to Future Research

This research contributes to the current body of knowledge on DRT in several ways. Firstly, this thesis underlines the importance of marketing and spreading knowledge on DRT. The results point towards a difference in expectations from users and potential users of Flex, namely when it comes to the amount of effort one has to put in to use DRT. Users of Flex generally view DRT as an easy-to-use and reliable system, whereas potential users view it

as laborious and unreliable. An explanation for this could be the frame of reference: car users tend to view DRT as more laborious – because it is. However, this research underlines the importance of knowledge of the system, as several respondents have mentioned how they would not use Flex if there is no information on how to use it. Unfortunately, methods to share information were not specified in this thesis due to the limited scope. Future research could further develop theory on this subject.

Secondly, this research has illustrated that comfort could be more important in the adoption of DRT than PT. Van Hagen & Govers, 2019 argue comfort is relatively high on the pyramid of needs. However, this thesis argues comfort should be lower on this pyramid due to its high rating and ranking among respondents. There is little research which could substantiate this claim. Therefore, I urge future research to include comfort in their models.

Thirdly, this research provides future research with a more holistic framework to research DRT use with. Future research could potentially use this framework for surveys in order to generalise the results in this research, which is as of now not possible due to the small sample.

Lastly, this research underlines the importance of integrating DRT into the TPT system. Several respondents mentioned how transferring is uncomfortable. Some respondents even stated that they would cease to use DRT if it meant their transfer would take a lot of effort. Implementing a hub system could prove to be successful, based on papers by Martí et al. (2023b) and Rongen et al. (2022). However, there is little to no research on the relation between DRT use and hubs. Future research could provide concrete answers.

7.5 Final Thoughts

From this thesis, it has become clear that, while there are naturally aspects that are significantly more important than others, the decision-making process is not a straightforward and rational process. Rather, there are multiple facets one has to take into consideration, both internal and external.

Reliability, accessibility, and *comfort* are generally the most important indicators for the intention to use DRT, as the respondents naturally found it important they were on time and comfortable. They are closely followed by *effort before trip* and *effort during trip*, and the indicators that make up *facilitating conditions*. *Social influence* and *experience* were generally not as important as the other indicators.

However, while some aspects may seem unimportant, they could merely be seen as taken for granted, e.g. social/physical safety. Although these indicators were generally rated and ranked low, respondents did acknowledge that they are important. Due to the perceived high levels of safety, it does not come up in their decision-making process. In a similar vein, indicators that were deemed unimportant might have influenced other, more important indicators. Although physical safety was not important to most, comfort was, and respondents acknowledged that the former could influence the latter.

Moreover, this thesis found that personal characteristics could indeed influence the intention to use DRT. Generally, women, older people, and individuals with a lower income, education, and no car seem to opt for DRT more than men, younger people, and individuals with a higher income, education, and a car. It is unsure if the attitude towards public transport contributes to the use of DRT. Furthermore, personal characteristics could have an effect on the perception of indicators.

On a larger scale, the adoption of DRT is also influenced by the rural spatial context. A low-density area could either be a positive or negative influence, whereas the existing transport infrastructure seemingly increases DRT use. However, it is important to market DRT systems, as rural areas might be less accepting of new systems. Furthermore, the rural spatial context could have an effect on the perception of indicators.

All in all, this thesis discusses the various factors that could explain DRT use in rural areas and provides guidelines to increase these chances. Although Flex was initially met with negative response, the positive feedback from DRT users in Zeeland showcases a positive future for Flex and hopefully for many other DRT projects to come.

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Appendix A: Observation Diary

Date: 18-2-2025

- Boeken was een rit is makkelijk. Soms bleef de app eindeloos laden wanneer ik die optie koos die zo snel mogelijk was. Dan moest je de app opnieuw opstarten.
- Ik vond het aangeven van reisproduct nogal vaag, aangezien dit in die 'u heeft uw account succesvol aangemaakt'-mail zit. Dit zou misschien in de app worden verwerkt.
- Het is niet duidelijk dat je in de Flexbus niet met de ov-chipkaart betalen.
- Je kan met een busje of een normale auto opgehaald worden. In het busje kunnen ongeveer 8 mensen en de auto 3. Het busje is rolstoeltoegankelijk.
- De eerste rit ging goed. De app liet goed zien waar de bus was en hoe laat hij er zou zijn. Uiteindelijk was hij tien minuten later dan de geplande tijd, maar dus wel binnen de marge.
- De tweede rit was minder. Ik had een rit gereserveerd die om 10.50 zou komen (dit was ook de verwachte tijd) in Brouwershaven. Alleen kon ik in de app zien dat het busje om 10.50 nog in Zierikzee was. De verwachte tijd werd hier niet op aangepast. Hierdoor zijn we uiteindelijk 11.01 vertrokken. Dat ik in de app wel kon zien waar het busje was, was fijn. Daarom maakte het voor mij niet heel veel uit. Alleen kan ik me voorstellen dat mensen die de app niet gebruiken, dan een SMS krijgen met "uw bus is er om 10.50" en verder geen updates ontvangen hier op kunnen afhaken.
- Het combineren van ritten gaat nog niet helemaal goed, aangezien ik had kunnen meereizen met een andere klant die om 10.59 van Brouwershaven naar Zierikzee zou gaan, wat ook mijn reis was (wel met andere haltes).
- Mensen die Flex gebruiken zijn positief.
- Ritten zijn directer dan de bus en dat vinden mensen fijn.
- Ik hoor van verschillende partijen dat buschauffeurs niet blij zijn met Flex, omdat ze bang zijn dat Flex klachten van hen wegneemt. Er zijn lokaal dus wel spanningen rondom Flex.
- Zeeland is erg uitgestrekt. Sommige dorpen hebben wel een busstation, maar vaak komt de bus dan maar 1 keer per uur langs van 8 uur tot een uur of 6. De bereikbaarheid met alleen ov in Zeeland is dus niet zo goed.
- Met Flex kunnen mensen in het buitengebied opgehaald worden. Binnen de bebouwde kom is er om de 500 meter een halte.

Date: 04-03-2025

- Ik vind met Flex reizen best leuk, vooral omdat het leuk is om te gebruiken. Dit kan ook zijn omdat het nieuw is.

- Ik heb een aantal keer gekeken op de app vanaf verschillende punten om te kijken of ik overal binnen een uur een Flexbusje kan bestellen. Meestal kan dit wel, maar ik heb een paar keer gehad dat ik langer dan een uur moest wachten. Stel ik heb Flex snel op te heenweg kunnen pakken, maar op de terugweg opeens zien dat het langer dan een uur duurt, zou ik wel een tweede keer nadenken over hoe ik Flex gebruik en of ik dat nog voor spontane ritjes doe.
- Het is nogal moeilijk om soms in een Flexbusje te stappen, zelfs voor iemand die goed te been is. Het trapje is best stijl en vooral als je naar beneden gaat kan dat nog wel eens eng zijn. Ik zou kunnen snappen als mensen die een beperking hebben hier bang voor zijn.
- Verder is de ruimte in de Flex wel prima. Vergeleken met het andere DRT-project in Zeeland wat ik heb gezien, waar mensen nauwelijks bij de chauffeur konden staan, is dit veel beter.
- Er rijden best wel wat mensen met Flex. Ook ’s avonds gaan er nog wel 2 of 3 mensen mee, wat gewoonlijk is volgens de chauffeur.

Date: 05-03-2025

- Ik merk dat het gedrag van de chauffeur overslaat op de stemming in de bus. Als de chauffeur iets niet snapt aan Flex, worden de reizigers ook een beetje gespannen. Gedrag van de chauffeur lijkt dus best belangrijk.
- Er wordt veel gepraat in de bus. Flex lijkt veel persoonlijker dan een gewone bus. Ook hierbij is het gedrag van de buschauffeur dus best belangrijk.

Appendix B: Potential User Interview Protocol

Introducerende vragen				
Met welk vervoermiddel reist u normaal?				
Met welke voertuigen heeft u het meeste en het minste ervaring?				
Waarom reist u?				
Dimensies	**Hoofdvragen**		**Doorvragen**	
Attitude towards car			Wat is uw mening over het gebruik van de auto als vervoermiddel? Welke aspecten vindt u aantrekkelijk in vergelijking met andere vervoersmiddelen? Welke aspecten vindt u juist minder prettig in vergelijking met andere vervoersmiddelen?	
Attitude towards PT			Wat is uw mening over het gebruik van openbaar vervoer als vervoermiddel? Welke aspecten vindt u aantrekkelijk in vergelijking met andere vervoersmiddelen? Welke aspecten vindt u juist minder prettig in vergelijking met andere vervoersmiddelen?	
Initial trust	Hoe belangrijk is het dat u **ervaring** heeft met het vervoersmiddel dat u kiest? • *Stel, u reist vaak met de auto en heeft eigenlijk geen ervaring met de trein. Weerhoud dit u ervan om met de trein te reizen?*	Likert	Waarom is dit zo belangrijk voor u?	Open
	Hoe belangrijk is **fysieke veiligheid** voor u wanneer u uw vervoersmiddel kiest?		Waarom is dit zo belangrijk voor u?	

	• *Denk hierbij aan ongelukken.*		i. Wat zijn aspecten die ervoor zorgen dat u zich (on)veilig voelt? i. Wanneer zou u zich veiliger voelen tijdens het reizen met flexvervoer?	
	Hoe belangrijk is **sociale veiligheid** voor u wanneer u uw vervoermiddel kiest? • *Denk hierbij aan uw gevoel van veiligheid, zoals wanneer u rare figuren ziet of in het donker moet wachten.*		Waarom is dit zo belangrijk voor u? ii. Wat zijn aspecten die ervoor zorgen dat u zich (on)veilig voelt? iii. Wanneer zou u zich veiliger voelen tijdens het reizen met flexvervoer?	
Performance expectancy	Hoe belangrijk is het voor u dat uw vervoersmiddel u **snel** naar uw bestemming brengt? • *Hiermee wordt de gehele reis mee bedoeld: dus vanaf het moment dat u wilt reizen tot het moment dat u op de bestemming bent.*		Waarom is dit zo belangrijk voor u? i. Stel, u gaat met flexvervoer i.p.v. de auto: hoeveel langer zou het dan met flexvervoer mogen duren? ii. Wanneer zou u bereid zijn om langer te reizen (e.g. kosten lager, duurzamer)?	
	Hoe belangrijk is het voor u dat uw vervoersmiddel **betrouwbaar** is? • *Denk hierbij aan uitval, vertraging/file, kapot voertuig.*		Waarom is dit zo belangrijk voor u? i. Waar denkt u aan als u denkt aan betrouwbaar vervoer? ii. Hoe kan de betrouwbaarheid verhoogd worden voor flexvervoer?	

Effort expectancy	Hoe belangrijk is het dat u **weinig hoeft te doen voordat de reis begint?** • *Denk hierbij aan een rit reserveren, zorgen dat de auto getankt is of fietsen naar een bus- of treinstation.*		Waarom is dit zo belangrijk voor u? i. Hoe lang zou u maximaal tussen rit reserveren en opgehaald worden willen wachten? ii. Welke manier van boeken spreekt u het meest aan (e.g. app of bellen) en waarom?	
	Hoe belangrijk is het dat u **weinig hoeft te doen tijdens de reis?** • *Denk hierbij aan werk wat u in de trein kan doen of de tijd dat u auto rijdt.*		Waarom is dit zo belangrijk voor u? i. Is het maken van een overstap hinderlijk, en waarom?	
Social influence	Bent u eerder geneigd om het vervoer te kiezen als uw **vrienden en familie** het ook gebruiken?		Waarom is dit zo belangrijk voor u?	
	Bent u eerder geneigd om vervoer te kiezen waar u **goede dingen over hoort**?		Waarom is dit zo belangrijk voor u?	
Facilitating conditions	Hoe belangrijk is het er veel **kennis** beschikbaar is, zodat u genoeg weet over het vervoersmiddel? • *Denk hierbij aan hoe u informatie kan opzoeken over uw vervoermiddel.*		Waarom is dit zo belangrijk voor u? i. Hoe zou u het liefst informatie willen lezen/ontvangen? ii. Zou u het fijn vinden om met een medewerker te bellen, en waarom?	
	Hoe belangrijk is het dat het vervoer **toegankelijk** is? • *Denk hierbij aan hoe u instapt of bij uw voertuig komt.*		Waarom is dit zo belangrijk voor u? i. Welke aspecten van toegankelijkheid zijn dan het	

			belangrijkst voor u?	
	Hoe belangrijk is het dat het **gemakkelijk** is om te **betalen**? • *Denk hierbij aan betalen in de bus of online, pin of contant.*		Waarom is dit zo belangrijk voor u? ii. Stel, u wilt een rit reserveren voor flexvervoer: hoe betaalt u dan het liefst?	
Costs	Hoe belangrijk zijn **kosten** van het vervoer voor u? • *Denk hierbij aan het complete plaatje: de kosten van de rit zelf, benzine, onderhoud, etc.*		Waarom is dit zo belangrijk voor u? i. Hoeveel bent u bereid te betalen voor flexvervoer in vergelijking met de auto en openbaar vervoer?	
Comfort	a. Hoe belangrijk vindt u de volgende aspecten: I. Rijstijl bestuurder II. Aanwezigheid medereizigers III. Gedrag medereizigers IV. Kans op zitplaats V. Temperatuur in het voertuig VI. Geur in het voertuig VII. Geluid in het voertuig b. Hoe belangrijk vindt u comfort?		Waarom is dit zo belangrijk voor u? Welke aspecten zijn dan het belangrijkst voor u, en waarom? Zijn er nog andere dingen die u belangrijk vindt als u denkt aan “comfort”?	
Experience	a. Hoe belangrijk vindt u de volgende aspecten bij het kiezen van uw vervoer: I. Andere leeftijdsgroepen in een voertuig hebben II. Bezwaard voelen b. Hoe belangrijk vindt u de algehele beleving?		Waarom is dit aspect zo belangrijk voor u? Welke aspecten zijn dan het belangrijkst voor u, en waarom? Zijn er nog andere dingen die u belangrijk vindt als u denkt aan “beleving”?	
Intention to use DRT	Denkt u dat u gebruik gaat maken van flexvervoer?		Waarom zou u wel/niet gebruik maken van flexvervoer?	

			Wanneer zou u wel gebruik maken van flexvervoer? Wat weerhoudt u ervan om gebruik te maken van flexvervoer?	
Concluderende vragen				
Op welke volgorde zou u de genoemde aspecten zetten, van belangrijk naar onbelangrijk?				
Zijn er nog dingen die niet genoemd zijn tijdens dit interview maar u wel kwijt wilt?				

Appendix C: Expert Interview Protocol

Expert #1 & #2			
Dimensie	**Hoofdvraag**	**Deelvraag**	
Personal characteristics	Welke doelgroep reist het meest met dit systeem?		Open
Intention to use DRT	Wat vinden gebruikers fijn aan dit systeem?		
	Welke klachten hoort u over dit systeem?		
	Welk doel hebben de tripjes?		
	Ziet u dat het ergens goed/mis gaat?		
	Welke veranderingen zouden er gemaakt kunnen worden met oog op Flex?		
Praktische vragen			
Mening over conceptueel model?			Open
Mening over vragen voor respondenten?			

Expert #3			
Dimensie	**Hoofdvraag**	**Deelvraag**	
Spatial Context	Welke regionale problemen op gebied van mobiliteit zijn er in Zeeland?		Open
	In welke delen van de provincie zal de bus verdwijnen of is de bus verdwenen?	Wat voor effect heeft het verdwijnen gehad op de inwoners van Zeeland?	
	Wat zijn de belangrijkste vorm van mobiliteit in Zeeland?		
	In hoeverre wordt WMO/leerlingenvervoer gebruikt?		
	Hoe bekend is Flex in Zeeland?		
	Voor wie denkt u dat Flex bedoeld is?		
Praktische vragen			
Mening over conceptueel model?			Open
Mening over vragen voor respondenten?			

Expert #4			
Dimensie	**Hoofdvraag**	**Deelvraag**	
Spatial Context	Welke problemen op gebied van mobiliteit waren er in de gebieden waar Vlinder nu opereert?	Wat voor impact had dit op de bevolking	Open

	Hoe is Vlinder tot stand gekomen?		
	Welke projecten hebben invloed gehad op het ontwerp van Vlinder?		
	Hoe heeft Vlinder een impact gehad op mobiliteit?		
Intention to use DRT	Hoe merkt u het succes van Vlinder?		
	Welke obstakels waren er tijdens de implementatie?		
	Wat zijn de belangrijkste voorwaarden voor een succesvol systeem met oog op de gebruiker?		
Praktische vragen			
Mening over conceptueel model?			Open
Mening over vragen voor respondenten?			

Expert #5			
Dimensie	**Hoofdvraag**	**Deelvraag**	
Spatial Context	Welke regionale problemen op gebied van mobiliteit zijn er in Zeeland?	Hoe heeft dit beleid beïnvloedt?	Open
	In welke delen van de provincie zal de bus verdwijnen of is de bus verdwenen?	Wat voor effect heeft het verdwijnen gehad op de inwoners van Zeeland?	
	Wat is de huidige status van Flex?		
	Wat heeft invloed gehad op de implementatie van Flex?		
	Welke andere DRT-projecten zijn er op dit moment in Zeeland?	In hoeverre hebben deze projecten geholpen bij de vormgeving van Flex? Hoe zal Flex integreren met bestaand flexvervoer	
	Zal Flex deur-tot-deur of halte-tot-halte zijn?		
Praktische vragen			
Mening over conceptueel model?			Open
Mening over vragen voor respondenten?			

Expert #6	
Praktische vragen	

Mening over conceptueel model?	Open
Mening over vragen voor respondenten?	
Zijn er bepaalde aspecten die ik mis?	
Kan de vraagstelling verbeterd worden?	
Hoe kan ik in contact komen met niet-gebruikers?	

Expert #7			
Dimensie	**Hoofdvraag**	**Deelvraag**	
Personal characteristics	Wie maakt gebruik van het OV?	…en waarom?	Open
Intention to use DRT	Hoe zorg je ervoor dat men DRT gaat gebruiken?		
	Wat zijn de voorwaarden van een succesvol DRT systeem?		
	Wat zijn de drempels van DRT?		
	Wanneer blijft men DRT gebruiken?		
Personal characteristics	Wie maken gebruik van DRT?		
Attitude towards PT	Wat zijn de belangrijkste zaken die ervoor zorgen dat mensen het OV gebruiken?	Hoe beïnvloedt dit het gebruik van DRT?	
Attitude towards car	Hoe kunnen autogebruikers beïnvloedt worden om DRT te gebruiken?		
Praktische vragen			
Mening over conceptueel model?			Open
Mening over vragen voor respondenten?			

Expert #8			
Dimensie	**Hoofdvraag**	**Deelvraag**	
Intention to use DRT	Hoe zorg je ervoor dat men DRT gaat gebruiken?		Open
	Wat zijn de voorwaarden van een succesvol DRT systeem?		
	Wat zijn de drempels van DRT?		
Personal characteristics	Wie maakt gebruik van het OV?	…en waarom?	
Attitude towards PT	Wat zijn de belangrijkste zaken die ervoor zorgen dat mensen het OV gebruiken?		

	Hoe beïnvloedt OV-gebruik het gebruik van DRT?		
Attitude towards car	Hoe kunnen autogebruikers beïnvloedt worden om DRT te gebruiken?		
Praktische vragen			
Mening over conceptueel model?			Open
Mening over vragen voor respondenten?			

Appendix D: User Interview Protocol

Dimensies	**Hoofdvragen**
Intention to use DRT	Waarvoor gebruikt u Flex?
	Wat voor positieve ervaringen heeft u met Flex?
	Wat voor negatieve ervaringen heeft u met Flex?
	Wat mag voor u hetzelfde blijven?
	Wat zou voor u mogen veranderen?
Reliability	Hoe ervaart u de betrouwbaarheid van het systeem?
Effort before use	Hoe ervaart u het boeken van een rit?

Appendix E: Code Book

Each code has a certain structure. The first letter(s) is the type of interview, with E standing for Expert, PU for Potential User, and U for User. The following section indicates the code group the code is part of. The last section is the code generated in the open coding phase.

The table below visualises the codes used to analyse the interviews and notes, consisting of four columns. The first column indicates the code, the second column explains said code, and the third column indicates which dimension(s) it is part of.

Code	Description	Dimension
E barrières DRT	**Experts mentioning what could inhibit (potential) users to use DRT**	**x**
frequentie rit	Mentions how the frequency of DRT could influence the use of DRT	- Ease of use
frequentie boeken	Mentions how the amount of times users can book a ride at the same time could influence the use of DRT	- Ease of use
ov-gebruik lastig	Mentions PT being seen as difficult to use by (potential) users	- Attitude towards PT
DRT niet flexibel	Mentions DRT being seen as inflexible to (potential) users	- Ease of use
reserveren	Mentions booking being a hinderance to (potential) users	- Ease of use
referentiekader	Mentions how potential users could not use DRT based on their existing frame of reference	- Attitude towards PT - Attitude towards car
E betrouwbaarheid	**Experts mentioning what could influence reliability**	**x**
busje volgen in app	Mentions how users being able to follow a vehicle with an app could influence the use of DRT	- Reliability - Knowledge available
updates reis	Mentions how users receiving updates could influence use of DRT	- Reliability - Knowledge available
E communicatie	**Experts mentioning how communication with (potential) users could influence the use of DRT**	**x**

mensen begeleiden	Mentions how guiding potential users could influence the use of DRT	- Ease of use
bellen	Mentions how being able to call could influence the use of DRT	- Ease of use
E demografie flex	**Experts mentioning what the demography of DRT users looks like**	**x**
wisselend	Mentions how demographics does not seem to have an influence on the use of DRT	- Personal characteristics
leeftijd	Mentions the influence of age on the use of DRT	- Personal characteristics
E ervaring	**Experts mentioning how the familiarity with DRT could influence the use of DRT**	**x**
eerste indruk	Mentions how first impressions could influence the use of DRT	- Familiarity
onzekerheid over nieuw vervoer	Mentions how the insecurity potential users feel when (thinking of) trying a new mode of transport could influence the use of DRT	- Familiarity
misconcepties DRT	Mentions how there are misconceptions regarding DRT	- Familiarity - Knowledge available
E gebruik DRT	**Experts mentioning what other aspects could influence the use of DRT**	**x**
referentiekader	Mentions how potential users could use DRT based on their existing frame of reference	- Attitude towards PT - Attitude towards car - Intention to use DRT
captive users	Mentions how some users use DRT because they have no alternatives	- Intention to use DRT
goede ervaringen	Mentions how users continue using DRT due to good experiences	- Intention to use DRT
aansluiting ov	Mentions how connecting DRT to existing PT influences the use of DRT	- Intention to use DRT

flexibel	Mentions how the flexibility of DRT could influence the use of DRT	- Ease of use
E betalen	**Experts mentioning how costs/ease of payment could influence the use of DRT**	**x**
ov-tarief	Mentions how the use of PT costs in DRT could influence the use of DRT	- Costs
in vervoer betalen	Mentions how (not) being able to pay in the vehicle could influence the use of DRT	- Facilitating conditions
contant	Mentions how the use of cash can influence the use of DRT	- Facilitating conditions
E marketing	**Experts mentioning how the use of marketing could influence the use of DRT**	**x**
app	Mentions how the visibility of DRT in apps could influence the use of DRT	- Facilitating conditions
lokale krant	Mentions how the visibility of DRT in local papers could influence the use of DRT	- Facilitating conditions
E situatie in zeeland	**Experts mentioning the spatial context of Zeeland**	**x**
auto nodig	Mentions the necessity to own a car in Zeeland due to its insufficient PT network	- Spatial context
autorijden gewoonte	Mentions habitual driving in Zeeland	- Spatial context
demografische druk	Mentions the significant portion of elderly in Zeeland	- Spatial context
ongelukken	Mentions the amount of accidents in Zeeland	- Spatial context
PU barriers auto	**Potential users mentioning aspects that could inhibit them from using the car**	**x**
benzinekosten	Mentions the gas prices and how it might influence the use of the car	- Attitude towards car - Intention to use DRT
aandacht erbij houden	Mentions the focus one must have whilst driving	- Attitude towards car - Intention to use DRT

geen social contact	Mentions the lack of contact with others whilst in the car	- Attitude towards car - Intention to use DRT
klimaatbewustzijn	Mentions the role of the environment and its effect on car use	- Attitude towards car - Intention to use DRT
niet nodig	Mentions the car is not needed in their routine	- Attitude towards car - Intention to use DRT
parkeren	Mentions the role of parking on the use of DRT	- Attitude towards car - Intention to use DRT
PU Barriers DRT	**Potential users mentioning aspects that could inhibit them from using DRT**	**x**
angst voor duur rit	Mentions fear of DRT taking too long	- Intention to use DRT
angst voor misgaan rit	Mentions fear of something going wrong during ride	- Intention to use DRT
het hebben van een auto	Mentions the availability of the car as a reason to not use DRT	- Attitude towards car - Intention to use DRT
niet direct	Mentions DRT not being direct	- Intention to use DRT - Effort expectancy
niet spontaan	Mentions DRT not being spontaneous	- Intention to use DRT - Effort expectancy
te veel moeite	Mentions DRT being too much work	- Intention to use DRT - Effort expectancy
terugreis reserveren ingewikkeld	Mentions booking for a ride back is too much work	- Intention to use DRT - Effort expectancy
tussenstappen ingewikkeld	Mentions booking a ride is too much work	- Intention to use DRT

		- Effort expectancy
PU barrières OV	**Potential users mentioning aspects that could inhibit them from using PT**	**x**
beperkt	Mentions the limited availability of PT in the area	- Attitude towards PT - Facilitating conditions
hond verboden in bus	Mentions dogs not being allowed in bus	- Attitude towards PT
niet betrouwbaar	Mentions PT not being reliable	- Attitude towards PT - Performance expectancy
niet direct	Mentions PT not being direct	- Attitude towards PT - Effort expectancy
niet snel	Mentions PT not being fast	- Attitude towards PT - Performance expectancy
te duur	Mentions PT being too expensive	- Attitude towards PT - Costs
PU gebruik auto	**Potential users mentioning reasons why they use the car**	**x**
flexibel	Mentions the car as being flexible	- Attitude towards car - Effort expectancy
snelheid	Mentions the car being fast	- Attitude towards car - Performance expectancy
betrouwbaar	Mentions the reliability of the car	- Attitude towards car - Performance expectancy
gemak	Mentions the ease of use of the car	- Attitude towards car - Effort expectancy
bekendheid passagiers	Mentions the familiarity with passengers in the car	- Attitude towards car

nodig	Mentions the need for a car (in Zeeland)	- Attitude towards car - Spatial context
direct	Mentions the car transports the user directly to the destination	- Attitude towards car - Effort expectancy
autonomie	Mentions the autonomy a car provides	- Attitude towards car - Effort expectancy
relatief goedkoper	Mentions the car as being relatively cheaper	- Attitude towards car - Costs
lange afstanden	Mentions the use of the car when traveling longer distances	- Attitude towards car - Effort expectancy
comfort	Mentions the car being comfortable	- Attitude towards car - Comfort
PU gebruik flexvervoer	**Potential users mentioning reasons why they use DRT**	**x**
ov-tarief	Mentions that costs of DRT should be the same as PT	- Intention to use DRT - Costs
wanneer auto wegvalt	Mentions the car not being an option for mode of transport (anymore)	- Intention to use DRT - Attitude towards car
belang informatie	Mentions the need for information	- Intention to use DRT - Knowledge available
gereden worden	Mentions being driven instead of driving yourself	- Intention to use DRT - Effort expectancy
direct	Mentions DRT being direct	- Intention to use DRT - Effort expectancy
minder dan ov-tarief	Mentions that costs of DRT should be lower than PT	- Intention to use DRT - Costs

flexibiliteit	Mentions DRT being flexible	- Intention to use DRT - Effort expectancy
PU gebruik ov	**Potential users mentioning reasons why they use PT**	**x**
weinig doen tijdens reis	Mentions doing little during a trip	- Attitude towards PT - Effort expectancy
langere afstanden	Mentions longer distances	- Attitude towards PT - Effort expectancy
wanneer auto wegvalt	Mentions no access to car	- Attitude towards PT - Attitude towards car
goedkoper	Mentions PT being relatively cheaper	- Attitude towards PT - Costs
nabijheid	Mentions the distance between PU and closest bus station	- Attitude towards PT - Facilitating conditions
directe verbinding	Mentions no transfers to destination	- Attitude towards PT - Effort expectancy
duurzaamheidsaspect	Mentions environmental concerns	- Attitude towards PT
PU belang beleving	**Potential users mentioning (un)importance of *experience***	**x**
andere doelgroepen	Mentions other demographics in vehicle	- Experience - Personal characteristics
andere doelgroepen gerelateerd aan gedrag medereizigers	Mentions the relation between other demographics in vehicle with *behavior of other travelers*	- Experience - Comfort
bezwaard voelen	Mentions *feeling burdened*	- Experience
gedrag chauffeur	Mentions *behavior of the driver*	- Experience
sociale gelegenheid	Mentions PT being a social place	- Experience
belangrijk	Mentions the importance of *experience*	- Experience
onbelangrijk	Mentions the unimportance of *experience*	- Experience

PU belang betrouwbaarheid	**Potential users mentioning (un)importance of *reliability***	**x**
belang telefoon	Mentions the importance of having a phone	- Performance expectancy
erop kunnen rekenen	Mentions being able to rely on a vehicle	- Performance expectancy
niet lang hoeven wachten	Mentions not having to wait long	- Performance expectancy
belangrijk	Mentions the importance of *reliability*	- Performance expectancy
neutraal	Mentions feeling neutral about *reliability*	- Performance expectancy
PU betrouwbaarheid verhogen	**Potential users mentioning ways to increase reliability**	**x**
aansluiting halen	Mentions being on time for a transfer	- Performance expectancy
alternatief bij uitval	Mentions alternative options when a ride is cancelled	- Performance expectancy
altijd dezelfde ervaring	Mentions always having the same experience	- Performance expectancy
communicatie	Mentions communication between traveler and transport company	- Performance expectancy - Facilitating conditions
correcte informatie over rit	Mentions having correct information on ride, e.g. departures and arrivals	- Performance expectancy - Facilitating conditions
digitale borden	Mentions digital signs that update information regarding ride	- Performance expectancy - Facilitating conditions
locatie vervoer	Mentions being able to see the location of the ride	- Performance expectancy - Facilitating conditions
marges kleiner	Mentions having a small margin between waiting and pick-up	- Performance expectancy - Effort expectancy
niet zonder mensen wegrijden	Mentions ride not leaving without travelers	- Performance expectancy
op tijd rijden	Mentions being on time	- Performance expectancy
personeel	Mentions having reliable and knowledgeable staff	- Performance expectancy

		- Facilitating conditions
respectvol behandeld worden	Mentions being treated respectfully	- Performance expectancy - Facilitating conditions
(tijdige) informatievoorziening	Mentions being updated on possible delays in a timely manner	- Performance expectancy - Facilitating conditions
vervoerscentrale bellen	Mentions being able to call the transport company	- Performance expectancy - Facilitating conditions
PU belang fysieke veiligheid	**Potential users mentioning (un)importance of *physical safety***	**x**
gedrag chauffeur	Mentions the behaviour of the driver	- Initial trust
geen negatieve ervaring	Mentions the lack of negative experiences	- Initial trust
niet bang aangelegd	Mentions not generally not being afraid	- Initial trust
verkeer bij fietsen	Mentions traffic whilst cycling	- Initial trust
werkend voertuig	Mentions being in a functioning vehicle	- Initial trust
belangrijk	Mentions the importance of *physical safety*	- Initial trust
neutraal	Mentions feeling neutral about *physical safety*	- Initial trust
onbelangrijk	Mentions the unimportance of *physical safety*	- Initial trust
PU belang gebruik vrienden en familie	**Potential users mentioning (un)importance of *use of friends and family***	**x**
gerelateerd aan goede dingen horen	Mentions *use of friends and family* being related to *good reputation*	- Social influence
een keer proberen	Mentions wanting to try a new mode of transport	- Social influence - Initial trust
eigen keuzes maken	Mentions making their own choices	- Social influence
opgegroeid met ov	Mentions growing up using a mode of transport	- Social influence
belangrijk	Mentions the importance of *use of friends and family*	- Social influence

neutraal	Mentions feeling neutral about *use of friends and family*	- Social influence
onbelangrijk	Mentions the unimportance of *use of friends and family*	- Social influence
PU belang gemakkelijk betalen	**Potential users mentioning (un)importance of *ease of paying***	**x**
duidelijkheid	Mentions clarity	- Facilitating conditions
één betaalwijze	Mentions wanting one way of payment	- Facilitating conditions
belangrijk	Mentions the importance of *ease of paying*	- Facilitating conditions
PU betaalwijze	**Potential users mentioning (un)importance of the way they are paying**	**x**
cash onnodig	Mentions finding cash unimportant	- Facilitating conditions
in app	Mentions of in-app payment	- Facilitating conditions
ov-kaart	Mentions of payment with ov-card	- Facilitating conditions
pin	Mentions of payment with debit-card	- Facilitating conditions
PU belang goede dingen horen	**Potential users mentioning (un)importance of *good reputation***	**x**
een keer proberen	Mentions wanting to try a mode of transport when hearing good things	- Social influence - Initial trust
slechte dingen horen	Mentions not wanting to try a mode of transport when hearing bad things	- Social influence
zelf ondervinden	Mentions not being swayed by hearing good things	- Social influence - Initial trust
belangrijk	Mentions the importance of *good reputation*	- Social influence
neutraal	Mentions feeling neutral about *good reputation*	- Social influence
onbelangrijk	Mentions the unimportance of *good reputation*	- Social influence
PU belang kennis beschikbaar	**Potential users mentioning (un)importance of *knowledge available***	**x**
duidelijkheid	Mentions clarity being important	- Facilitating conditions

gerelateerd aan betrouwbaarheid	Mentions *knowledge available* being related to *reliability*	- Facilitating conditions - Performance expectancy
gerelateerd aan moeite voor reis	Mentions *knowledge available* being related to *effort expectancy*	- Facilitating conditions - Effort expectancy
overzicht haltes van rit	Mentions an overview of the stops during the ride	- Facilitating conditions
updates over overstap	Mentions updates on transfer	- Facilitating conditions
belangrijk	Mentions the importance of *knowledge available*	- Facilitating conditions
neutraal	Mentions feeling neutral about *knowledge available*	- Facilitating conditions
onbelangrijk	Mentions the unimportance of *knowledge available*	- Facilitating conditions
PU informatievoorziening	**Potential users mentioning (un)importance of the provision of information**	**x**
app	Mentions the use of an app	- Facilitating conditions
bellen	Mentions the use of calling	- Facilitating conditions
bellen onnodig	Mentions finding calling unnecessary	- Facilitating conditions
mail	Mentions information via email	- Facilitating conditions
website	Mentions information on website	- Facilitating conditions
PU belang kosten	**Potential users mentioning (un)importance of *costs***	**x**
onbelangrijk door afhankelijkheid	Mentions *costs* being unimportant due to having to use a mode of transport	- Costs
gerelateerd aan moeite	Mentions *costs* being related to *effort expectancy*	- Costs - Effort expectancy
belangrijk	Mentions the importance of *costs*	- Costs
neutraal	Mentions feeling neutral about *costs*	- Costs
onbelangrijk	Mentions the unimportance of *costs*	- Costs

PU belang moeite tijdens reis	**Potential users mentioning (un)importance of *effort during trip***	**x**
gerelateerd aan betrouwbaarheid	Mentions *effort during trip* being related to *reliability*	- Effort expectancy - Performance expectancy
overstappen niet vervelend	Mentions transfers not being annoying	- Effort expectancy
overstappen vervelend	Mentions transfers being annoying	- Effort expectancy
wachten	Mentions waiting as part of effort	- Effort expectancy
weer	Mentions the weather influencing the effort put into traveling	- Effort expectancy
belangrijk	Mentions the importance of *effort during trip*	- Effort expectancy
neutraal	Mentions feeling neutral about *effort during trip*	- Effort expectancy
onbelangrijk	Mentions the unimportance of *effort during trip*	- Effort expectancy
PU belang moeite voor reis	**Potential users mentioning (un)importance of *effort before trip***	**x**
gerelateerd aan kennis beschikbaar	Mentions *effort before trip* being related to *knowledge available*	- Effort expectancy - Facilitating conditions
gerelateerd aan kosten	Mentions *effort before trip* being related to *costs*	- Effort expectancy - Costs
reserveren niet te ingewikkeld zijn	Mentions booking a trip should not be difficult	- Effort expectancy
reserveren niet vervelend	Mentions booking is not annoying	- Effort expectancy
reserveren vervelend	Mentions booking is annoying	- Effort expectancy
belangrijk	Mentions the importance of *effort before trip*	- Effort expectancy
neutraal	Mentions feeling neutral about *effort before trip*	- Effort expectancy
onbelangrijk	Mentions the unimportance of *effort before trip*	- Effort expectancy
PU methode reserveren	**Potential users mentioning ways to book a ride**	**x**

App	Mentions wanting to book via an app	- Facilitating conditions
Bellen	Mentions wanting to book on the phone	- Facilitating conditions
PU wachttijd	**Potential users mentioning the length of the waiting time between booking and pick-up**	**x**
1 uur	Mentions wanting a waiting time of an hour	- Effort expectancy
1.5 uur	Mentions wanting a waiting time of an hour and a half	- Effort expectancy
10 minuten	Mentions wanting a waiting time of 10 minutes	- Effort expectancy
20 minuten	Mentions wanting a waiting time of 20 minutes	- Effort expectancy
Zo min mogelijk	Mentions wanting to wait as little as possible	- Effort expectancy
PU belang snelheid	**Potential users mentioning (un)importance of *speed***	**x**
afhankelijk van doel reis	Mentions *speed* being dependent on the trip (e.g. work vs. leisure)	- Performance expectancy
de tijd hebben	Mentions having the time to travel	- Performance expectancy
direct willen reizen	Mentions wanting to travel directly	- Performance expectancy - Effort expectancy
draait niet alleen om respondent	Mentions transport is not about respondent	- Performance expectancy
gerelateerd aan kosten	Mentions *speed* is related to *costs*	- Performance expectancy - Costs
gerelateerd aan moeite tijdens reis	Mentions *speed* is related to *effort expectancy*	- Performance expectancy - Effort expectancy
ligt aan afstand	Mentions *speed* depends on the distance	- Performance expectancy - Effort expectancy
niet te lang duren	Mentions travel should not take too long	- Performance expectancy
op tijd komen	Mentions wanting to arrive on time	- Performance expectancy
belangrijk	Mentions the importance of *speed*	- Performance expectancy

neutraal	Mentions feeling neutral about *speed*	- Performance expectancy
onbelangrijk	Mentions the unimportance of *speed*	- Performance expectancy
PU belang sociale veiligheid	**Potential users mentioning (un)importance of *social safety***	**x**
Bekendheid	Mentions being acquainted influencing social safety	- Initial trust
Belangrijker in ov	Mentions *social safety* being more important in PT	- Initial trust
Gebruik koptelefoon/telefoon	Mentions the use of headphones/phone to increase *social safety*	- Initial trust
Gedrag chauffeur	Mentions the behavior of the driver	- Initial trust
Gedrag mensen	Mentions the behavior of other travelers	- Initial trust - Comfort
Geen negatieve ervaring	Mentions not having any bad experiences	- Initial trust
Goede verlichting	Mentions good lighting to increase *social safety*	- Initial trust
Laat reizen	Mentions traveling in the evening/at night	- Initial trust
Negatieve ervaring	Mentions having negative experiences	- Initial trust
Noodnummer	Mentions an emergency phone number to increase *social safety*	- Initial trust
Personeel	Mentions staff being able to increase *social safety*	- Initial trust
Personenauto	Mentions regular vehicles for PT influencing *social safety*	- Initial trust
Wordt niet over nagedacht	Mentions not thinking about *social safety*	- Initial trust
Zeeland relatief veilig	Mentions Zeeland being relatively safe	- Initial trust
Belangrijker met familie/kinderen	Mentions *social safety* being more important with family/children	- Initial trust
Belangrijk	Mentions the importance of *social safety*	- Initial trust
Neutral	Mentions feeling neutral about *social safety*	- Initial trust
onbelangrijk	Mentions the unimportance of *social safety*	- Initial trust

PU belang toegankelijkheid	**Potential users mentioning (un)importance of *accessibility***	**x**
Attentheid chauffeur	Mentions attentiveness of driver	- Facilitating conditions
Nabijheid	Mentions distance from PU to nearest station/stop	- Facilitating conditions
Opstaphoogte	Mentions the height of the vehicle	- Facilitating conditions
Belangrijk	Mentions the importance of *accessibility*	- Facilitating conditions
Belangrijk voor anderen	Mentions the importance of *accessibility* for others	- Facilitating conditions
Neutraal	Mentions feeling neutral about *accessibility*	- Facilitating conditions
onbelangrjik	Mentions the unimportance of *accessibility*	- Facilitating conditions
PU intentie gebruik DRT	**Potential users mentioning (un)importance of *intention to use DRT***	**x**
Incidentele reiziger	Mentions intending to use DRT irregularly	- Intention to use DRT
Misschien, als het goed werkt	Mentions intending to use DRT if it works well	- Intention to use DRT
Ja, noodzaak	Mentions intending to use DRT out of necessity	- Intention to use DRT
Ja, regelmatig	Mentions intending to use DRT regularly	- Intention to use DRT
Nee	Mentions not intending to use DRT	- Intention to use DRT
Niet voor spontane reizen	Mentions not intending to use DRT for spontaneous trips	- Intention to use DRT
Om te testen	Mentions intending to use DRT to try it out	- Intention to use DRT
PU context Zeeland	**Potential users mentioning the spatial context of Zeeland**	**x**
WMO-indicatie moeilijk	Mentions the difficulty of obtaining WMO	- Attitude towards PT - Spatial context
Meer mogelijkheden in Walcheren/Zuid-Beveland	Mentions more modes of transport in Walcheren/Zuid-Beveland	- Spatial context
Parkeerprobleem toeristen	Mentions the parking problem due to tourists	- Spatial context - Attitude towards car
Parkeren makkelijk in Zeeland	Mentions the ease of parking in Zeeland	- Spatial context

		- Attitude towards car
Westerschelde barrière	Mentions the Westerschelde as a barrier	- Spatial context
PU overig	**Potential users mentioning subjects unrelated to any dimension**	**x**
lokale oplossingen	Mentions local initiatives being a mode of transport	- Spatial context
ontwetendheid over bestaan Haltetaxi	Mentions the lack of awareness of the Haltetaxi	- Spatial context
weer	Mentions the weather	- Spatial context
U boeken	**Users mentioning booking a ride with Flex**	**x**
boeken niet moeilijk	Mentions that booking a ride is not difficult	- Intention to use DRT - Effort expectancy
negatieve ervaring met boeken	Mentions having negative experiences with booking a ride	- Intention to use DRT - Effort expectancy
U Flex t.o.v. andere voertuigen	**Users comparing Flex to other modes of transport**	**x**
bus niet direct	Mentions the bus not being direct	- Attitude towards PT - Performance expectancy
dichtstbijzijnde bus ver	Mentions the nearest bus stop being far away	- Attitude towards PT - Facilitating conditions
eerst haltetaxi gebruikt	Mentions previous use of the Haltetaxi	- Attitude towards PT
flex betrouwbaar t.o.v. haltetaxi	Mentions Flex as reliable in comparison to Haltetaxi	- Attitude towards PT - Performance expectancy - Intention to use DRT
flex flexibel t.o.v. haltetaxi	Mentions Flex as flexible compared to Haltetaxi	- Attitude towards PT - Performance expectancy - Intention to use DRT

geen vervanging van auto	Mentions Flex not being able to replace the car	- Intention to use DRT - Attitude towards car
U gebruik Flex	**Users mentioning several subjects regarding the use of Flex**	**x**
captive user	Mentions having to use Flex due to being a captive user	- Intention to use DRT
sociale veiligheid	Mentions using Flex due to social safety	- Intention to use DRT - Initial trust
gebruik door familie	Mentions using Flex due to family	- Intention to use DRT - Social influence
afwezigheid auto	Mentions using Flex due to absence of car	- Intention to use DRT - Attitude towards car
bekendheid DRT	Mentions using Flex due to previous experiences with DRT	- Intention to use DRT - Familiarity
alcohol	Mentions using Flex to drink alcohol	- Intention to use DRT - Attitude towards car
wandelingen	Mentions using Flex to go for a walk	- Intention to use DRT
U mening over Flex	**Users mentioning how they have experienced Flex**	**x**
ideaal concept	Mentions Flex as an ideal mode of transport	- Intention to use DRT
geen gebruik bij veel moeite	Mentions not using Flex if it is a lot of effort	- Intention to use DRT - Effort expectancy
goed tarief	Mentions being positive about the costs of Flex	- Intention to use DRT - Costs
ontwetendheid over duur wachttijd flex	Mentions U not knowing how long the waiting time is	- Intention to use DRT - Performance expectancy - Effort expectancy

ontwetendheid uiterlijk flex	Mentions U not knowing what Flex looks like	- Intention to use DRT