Getting There & Away

The role of travel information in recreational day trips, with a specific focus on the mode and the destination choice

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The role of travel information in recreational day trips, with a specific focus on the mode and the destination choice

Daarheen & Weer Terug

De rol van reisinformatie in recreatieve dagverplaatsingen, met specifieke nadruk op vervoerwijze en bestemmingskeuze

(met een samenvatting in het Nederlands)

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Preface

After graduating in 2001, I was offered a PhD position at the planning department of the faculty of Geosciences. After completing my master's degree, I felt the need to study something in depth, as my degree in Science & Policy covered a wide range of subjects without really getting to the core of these subjects. At the same time, I realised that working on only one project for four years would be a challenge for me. Therefore, the PhD position was combined with a job as junior researcher at TNO (then INRO, now mobility and logistics). For four years I combined the dual job of two days a week in Delft and three days a week in Utrecht.

I have learned a lot from managing these two part-time jobs at the same time; particularly two jobs at two completely different organisations. As these two jobs were my first 'real job', I had still to learn the basic skills that every employee should have. However, for me that meant that two different types of skills had to be developed: on the one hand it required working solo on a large project, making decisions on your own, 'managing' the supervisors when input was needed and writing scientific articles and, finally, a book. On the other hand, it required working within a group, having a junior role (i.e. carrying out set tasks) and writing text in a more commercial manner. At times this would be frustrating, but overall it offered a unique insight into two completely different work-attitudes.

What I had not expected was the time it takes to stay integrated in two groups of colleagues. However, due to these colleagues I have many fond memories of both jobs. At TNO the joint lunch and the 3 o'clock tea breaks made for a great working environment. For example, I've spent many hours talking to Isabel about trips we made or will make in front of her Russian map of the world. Although the work environment was very pleasurable, the work pressure was often high and I enjoyed working with Tanja, Pascal, Marten and Bart E. on projects of different types and content. I would like to thank Wim for his continuing interest in my PhD project and my development as a researcher during our coaching sessions.

Working on a PhD is a more solitary activity. Nonetheless, there are many colleagues and of course my supervisors that I would like to thank. Tejo, you offered me an open position at the planning department, letting me write my own proposal thus ensuring that I could pursue the topic of my choice. I would like to thank you for the freedom to make my own choices and consequently my own mistakes. Furthermore, I would like to thank you for the discussions we had on the policy 'part' of my thesis. Dick, you became my supervisor directly after you started working in Utrecht. I would like to thank you for your input on the theoretical framework and the analyses. Furthermore, I have appreciated your detail comments on the earlier versions of the chapters and articles.

To decrease the relative solitude of the PhD it is important to meet with other researchers working on similar topics. First I would like to thank Harry Timmermans and his colleagues for letting me join their PITA meetings and discussing my research. Second I want to thank the members of the transport meeting initiated by Martin Dijst. Our biweekly discussions on our PhD projects were not only scientifically valuable but also showed that as PhD's we all encountered the same (scientific and organisational) problems.

At the start of my PhD a lunch-walk group emerged. With Anet, Jasper, Taede, Sjef, and Sendy I spend many lunches, rain or shine, outside. Particularly the rooms of the breedtestrategie PhD's, such as Nikki, Ivo, Michel and Anet saw me frequently whenever I needed a break. I want to wish my roommate Sonja the best of luck in finishing her book. I am sure that it will become an excellent book. I enjoyed our discussions on the functioning of the university and discussing our research, mainly because our topics and methodology could not be further apart. In the last few months Sonja and I had to move to the third floor. The immediate welcome from these colleagues and in particular Marike and Cora was a welcome difference from the atmosphere on the fifth floor. Thank you!

I've always said that a PhD is just as any other job. I tried to leave it at work as much as possible. This was successful until the last few months when I went into overdrive to finish the book on time. Particularly during these months I want to thank het Harem (Anneloes, Ellen, Jolein, Karen, Nieke en Renske) for the skype, mail en live talks! It is customary to thank the family and I will not deviate from that custom. Mum and dad thank you for your encouragement and instilling me with the belief that I should follow my heart in whatever I undertake. Furthermore, I would like to thank mum, and also Andreas, for reading my chapters as laymen; they increased the readability of the chapters considerably. Natuurlijk wil ik mijn broer en zussen niet vergeten! Naomi, Aaron en Judith: jullie zijn allemaal een andere kant op gegaan in het leven en juist door die diversiteit zijn jullie een inspiratie voor mij!.

That leaves Andreas. The last few months have been extremely busy, but our trip along the Pan-American Highway is about to start. So will you join me in our (travel) adventure?

June 2006

Rebecca van der Horst

1 Introduction

1.1 The impact of recreational travel

With the introduction of the free Saturday in 1962, the two-day weekend in the Netherlands was a fact (Mommaas *et al.* 2000: 25). As only one of the indicators it shows that the amount of free time enjoyed by individuals had grown rapidly in the fifties and sixties. At the same time the car became a more common household attribute, being utilised by the family for recreational trips and for commuter trips (Van der Wal 2003). Along with the rapid economic growth, which led to more expenditure, and a rising population, a rapid mobility growth ensued in the Netherlands. The following numbers illustrate the enormous expansion of mobility. In the sixties there were roughly 600,000 cars compared with 6.5 million cars in 2002. During the same period the number of car kilometres travelled rose from 40 billion per year to 225 billion per year (Harms 2003: 3). This rapid mobility growth is not a specific Dutch problem. In the EU-15, the distance travelled has tripled in the last three decades and the private car ownership has more than doubled between 1975 and 2000 (DG TREN 2006).

Nowadays, mobility causes a mixture of positive and negative effects on society (DG TREN 2001: 11). To start with the positive effects: These include the increase of wealth and trade, the exchange of knowledge and experience and the personal freedom to travel (VROMraad 1999: 17). Martens (2000: 9) asserts that mobility of goods and individuals are indicators of economic growth. After all, the efficient organisation of the economy benefits from the options available to move goods and people through space. As long as accessibility is high, the economic benefits are also high. Another benefit caused by mobility is that it allows people to live independently from each other (Tacken 1997: 313). Furthermore, it allows people to participate in activities, and with faster transport modes (such as the car) more activities can be reached as time spent on travelling remains fairly constant (Schafer 1998). To summarise, the benefits for individuals are personal development, individualisation and personal autonomy (Martens 2000: 9).

Next to these positive effects, mobility also causes some negative effects. Decreasing accessibility, safety and increasing emissions are the most commonly mentioned adverse effects of mobility growth. The cause of decreasing accessibility is congestion (Mahmassani, 1997: 280). Congestion results from a higher demand than the available infrastructure can handle. It is thought that increased accessibility directly leads to larger markets and enables businesses and households to save time and costs (Rodrigue *et al.* 2006). The other way around: decreasing accessibility leads to fewer economic opportunities and decreases the competitiveness (e.g. higher costs on transport goods) (Kraan 1996: 1). The second negative impact of mobility growth is that it decreases the level of safety. Even though mobility has grown rapidly, the number of accidents per travelled kilometre has decreased enormously making the Netherlands one of the safest countries (only 881 fatal accidents in 2004). However, every accident results in economic and social losses and

is therefore still a major issue. Furthermore, the level of safety is lower in other EU countries, increasing the level of safety is one of the main aims within European transport policy (DG TREN 2001: 66). Finally, mobility growth results in rising emission levels that damage the (living) environment (Mahmassani 1997: 281; Schafer 1998: 455). Technological advances reduced emission levels of certain gases; however, CO_2 and NO_X emission have grown (VROMraad 1999: 9). Furthermore, a current issue is particle matter (PM_{10}) emissions, which cause (in)direct health problems (DETR 1997).

The main aim of transport policy is to modulate the impact of mobility growth to achieve socially desirable outcomes, which also include respecting the environment and improving safety (Metz 2005: 355). The trip motive is often the first step in determining which policy instruments are deployed. Commuter and business trips often receive specific attention because of their contribution to congestion and to economic growth. Other trip motives, such as recreational trips, have not received specific policy attention at the national or European level. However, recreational trips do account for 22% of all kilometres travelled. To compare, 23% of all kilometres travelled are commuter trips (Van Veggel & Peeters 2005: 625). Recreational trips are hard to clearly define; they are often treated as the 'other' category after commute and business trips. A clear definition is therefore required before data can be collected. Most broadly defined, leisure is all time not spend on obligatory activities (Boelhouwer 2002: 5). Statistics Netherlands[1] divides social-recreational trips into day trips and over-night trips. Their specific definition for recreational day trips is "*all outdoor activities for a recreational purpose lasting at least two hours without spending the night*" (CBS 2006). The Dutch National Bureau for Tourism (NBT) uses nearly the same definition, but set the time frame at four hours, thus excluding (regular) sport activities. Due to the regular nature of sports activities, we opt to use the NBT definition for recreational day activities. As Figure 1.1 shows, the average traveller makes 0.48 recreational trips per day, only surpassed by commuter (0.51) and shopping (0.66) trips.

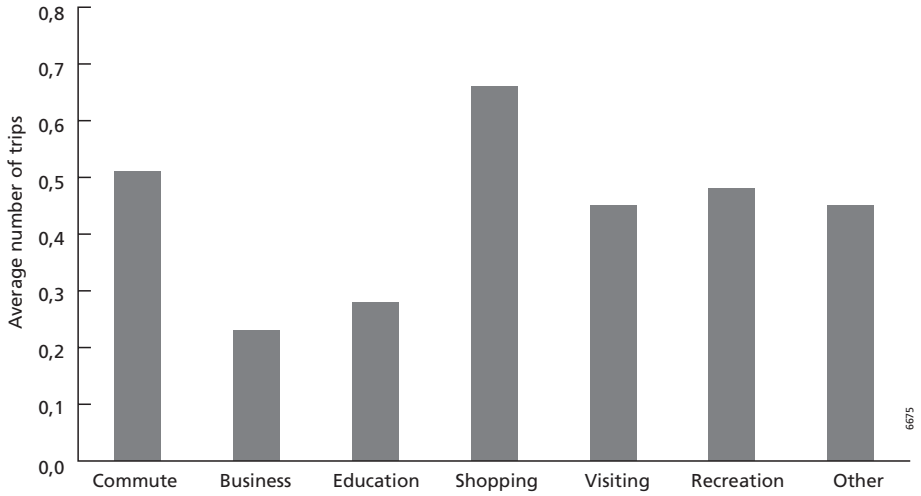

Figure 1.1 *Average number of trips per trip motive (MON 2004)*

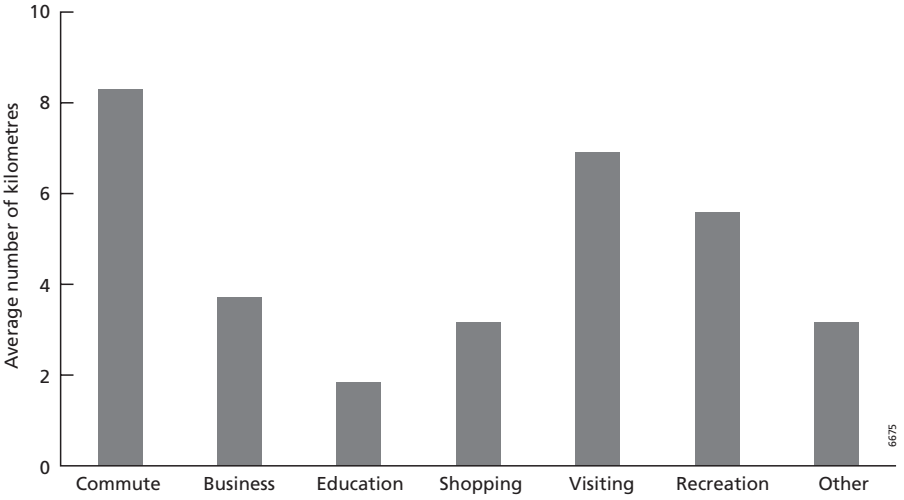

Figure 1.2 *Average number of kilometres travelled per trip motive (MON 2004)*

The trip lengths of recreational trips are another indication that recreational trips should receive specific transport policy attention. Again recreational trip lengths are, on average, the third longest (see Figure 1.2). Only commuter trips (8.3 km) and visiting trips (6.9 km) are longer. When the average number of trips is multiplied by the average trip lengths we see that recreational trips are the third largest motive contributing to overall mobility.

The contribution of the recreational trip motive to mobility means that this trip motive also contributes to the above-mentioned positive and negative impacts caused by mobility. Although recreational trips are not a major source of congestion on motorways (approximately 8% during evening rush hour), it is a major contributor to congestion on regional and local roads. This is particularly so when large visitor populations arrive and leave at the same time, as for example happens at theme parks or events (Van Veggel & Peeters 2005: 636). Not surprising, the first traffic jam that was recorded in the Netherlands was on a beautiful Pentecost day in 1959. A mitigating effect is that average car occupancy is 2.2 individuals for recreational trips compared with 1.1 for commuter trips. In addition, recreational trips contribute significantly to the emissions of CO_2, NO_x, PM_{10} and noise. Finally, recreational trips are mostly made on regional and local roads. As most accidents occur in these types of roads, recreational trips diminish overall road safety (SVOW 2006[2]).

Trips with a recreational motive also contribute to economic growth, although this is usually not acknowledged in transport policy (see also chapter 2). Annually, the Dutch population spends approximately 1.5 billion euros on visiting theme parks, events and special attractions (CBS 2004: 109). Furthermore, there are roughly 45,000 companies in the recreation and tourism sector, offering a total of 227,000 fulltime jobs (Mommaas *et al.* 2000: 15). In contrast, the insurance and banking sector offers fewer jobs in the Netherlands. Next to the economic impact of recreational trips, they also contribute significantly to the personal development of individuals. Recreational

trips stimulate the personal development by participating in new or stimulating activities. For the contribution of recreational trips to the overall mobility and the consequences on congestion, safety, environment, economic growth and the personal development, we argue that more attention should be given to recreational trips in transport policy. Therefore, this study specifically focuses on this trip motive.

1.2 Affecting travel behaviour

Due to the variety of effects that mobility causes, it has received abundant attention from both scientists and policy makers. As previously stated, most effort concentrates on maximising the benefits (i.e. economic growth and personal development) while minimising the negative effects (i.e. congestion, safety and emissions). Modulating these effects requires a thorough understanding of individual travel behaviour as aggregating this behaviour results in overall mobility. The idea is that travel enables people to participate in certain activities. Understanding the mechanisms for activity engagement, i.e. what activities to pursue, when, where, for how long, with whom and in what sequence, leads to a better understanding of the demand for travel and subsequently of travel behaviour (Krygsman 2004: 19). Travel behaviour is thus a result from many separate decisions that the traveller makes. Hence, changing travel behaviour implies that the outcome of some of these decisions needs to be changed. Most policy effort has concentrated on congestion caused by car travellers; getting travellers to travel less or with other transport modes were policy objectives (see chapter 2 for more detail). In addition, travellers who do use the car are stimulated to use different routes or to change departure times as to disperse the travellers over place and time.

1.2.1 Using travel information to affect travel behaviour

There are many ways to affect the different decisions within travel behaviour. Road pricing, changing spatial planning and media campaigns promoting other transport modes are but a few examples. Travel information intends to help individuals make more informed travel decisions, and thereby moderate the effects of congestion (Schofer *et al.* 1993: 107). Information about travel opportunities, services, network structure and performance plays an important role in influencing travel decisions. In theory, accurate, timely and understandable information can contribute to choices that are somehow better for the individual traveller, for society or both. Travel information can also help a traveller to decide between different alternatives. Someone who wants to visit a recreational activity may not know which transport mode to use. Information on the available options may help that traveller to decide which transport mode best meets his wishes. Another reason to use travel information is to better plan a trip or to be aware of unwanted delays (such as non-recurrent congestion). Thus, travel information affects the knowledge a traveller has, which may result in different travel behaviour.

Travel information has been cited as a valuable instrument since the eighties (Arnott *et al.* 1989) and as a policy instrument since 1990 (V&W 1990). Many initiatives to provide travellers travel information were started; however, many failed because the travellers' needs were not met. Furthermore, not until recently has it been possible to deploy travel information that is accurate and timely. The advancements of information and communication technology (ICT) have made

new detection methods possible, allowing us to collect sufficient transport data that is necessary for accurate, timely and understandable travel information. Furthermore, the development of ICT has provided new communication methods, as the internet, mobile phones and navigation systems have become widely available. Currently there are some successful travel information services. For example the '511-project' in the United states. This is a national programme that offers areas a framework which they can use to provide local travel information by phone (511) and the internet. Depending on the area, the service provides information on car travel, public transport travel, ridesharing and even bicycle travel[3]. In Great Britain, the website www.transportdirect.info offers door-to-door information for both car travellers and public transport users. In the Netherlands, most travel information services aim at one mode of transport. The first (pilot) service that combines public transport information with car information is currently being tested in the Haaglanden region (Vonk & Van der Horst 2005). The possibilities of travel information to affect travel behaviour and the current developments that facilitate the deployment of travel information have both led to a substantial body of scientific research (Schofer *et al.* 1993; Khattak *et al.* 1999; Polak & Jones 1993; Hato *et al.* 1999; Kenyon & Lyons 2003; Pierce & Lappin 2004; AVV 2004, 2005).

However, two observations need to be made. First, most of these studies did not use an elaborate conceptual framework to determine the specific role of travel information. Nonetheless, such frameworks are necessary to understand why consumers make certain decisions and which information is crucial in this decision (Engel *et al.* 1995; Bettman 1979). This understanding, of how people acquire and use information, is relevant for marketing management, designing effective communication campaigns and effective service delivery (Gursoy & McCleary 2004a: 353). Adding an elaborate conceptual model could therefore increase the impact travel information may have on travel behaviour. The second observation is that none of these studies specifically focus on the recreational trip motive, although travel information potentially has a larger impact on recreational trips than on other trip motives.

1.2.2 Using travel information to affect recreational trips

Most empirical studies on use and impact of travel information focus on commuter trips (Katteler *et al.*2002; Patten *et al.* 2003) or do not have a specific focus on a trip motive (Jou *et al.* 1997; Khattak *et al.* 1999). However, these studies showed that trip motive affects the information needs and the impact on travel behaviour. Hence, it is valuable to understand the role travel information has within recreational travel behaviour.

Another reason is that travel information has become more relevant for recreational trips. Not only has the number of recreational activities increased, but for many, the time pressure on these trips has also increased. Although the amounts of free time and the time spent on recreational activities have remained at the same level since the mid eighties (Harms 2003: 23), the travel time to activities or destinations has increased. Consequently, the actual time that can be spent at the destination has diminished. Consequently, the traveller is confronted with a paradox, with more recreational activities to pursue, but less time to spend at the chosen recreational destination. To deal with this paradox, the traveller tries, more than before, to optimise the choice of trip by selecting a trip that best fulfils the goal of the recreational activity. In other words, the traveller wants to make sure that the trip will yield a certain positive experience (Mommaas *et al.* 2000: 10).

Hence, these travellers are more prone to use travel information when deciding on a recreational trip. Finally, the nature of recreational trips makes the traveller more receptive to search for information and consequently change their travel behaviour. To explain the nature of recreational trips, the characteristics of this motive are compared with the commuter motive (Table 1.1).

As can be seen from the table below, the characteristics of commuter and recreational trips are different. The daily routine of the commuter means that he is familiar with route and the possible transport modes. Furthermore, his experience with the trip means that he can adjust departure time as to be on time. He does have more constraints, such as having to arrive on time. The daily routine often results in habitual travel behaviour. Consequently, travel information only has limited possibilities in changing travel behaviour or route. Only the decisions that are not yet habitual are likely to change, such as departure time. Because of the experience with the trip, the traveller knows exactly what information is required to make a travel decision. Based on these characteristics, we assume that commuters only conduct a short, but detailed, information search. This is confirmed by studies; most commuters listen to the radio and only when they hear of an unusual occurrence on their route will they search for specific information on the perceived alternatives (AVV 2004; Khattak *et al.* 1999). Thus, the commuter is mostly interested in en-route information to streamline the trip.

The constraints facing the traveller performing a recreational trip are considerably different. Recreational trips are often made to participate in different activities, which are located in a diffuse pattern. As these trips are usually made infrequently, the traveller is unfamiliar with the current trip and the previous experiences may not offer clues as to what to expect. Furthermore, recreational trips are often made with other people. Everyone in the travel party may have different goals that have to be met (see Mommaas 2000: 10) and agreeing on the activity and travel mode may require more deliberation. As the recreational traveller is unfamiliar with many aspects of the trip but wants a memorable trip, it is likely that an extensive information search is conducted to make an informed decision. Therefore, we expect that recreational travellers are

Table 1.1 *difference between commute and recreational travel*

Commuter trips	**Recreational trips**
Daily routine	Incidental
One destination; same route	Wide variety of different destinations
Concentration of locations	Diffuse pattern of locations
Individual	With travel party
Obligatory	Discretionary
(Scarce) time is important factor	(Arriving on) time is less important
Speed of travelling is important	Comfort and relaxation is important
Limited geographical scope	Wider geographical scope
Peak hours: workday rush hours	Some peaks in weekends/holidays
Clear expectations	Expectations are unclear
Little but detailed information search	Clear orientation, extensive information use

(Table adapted from Stemerding 1996: 29)

more interested in general information that helps them decide where to go, which route or mode to take. Hence, travel information is used to make the decisions that form travel behaviour.

1.2.3 Using travel information to affect mode and destination choice

Recreational travellers use travel information to be able to make a decision or to plan a trip. Therefore, pre-trip travel information that can be used for pre-trip decisions seems to be most relevant for these travellers. This raises the question as to what pre-trip decisions should be investigated in this study. Lappin & Bottom (2001: 16) argue that responses to travel information fall into two categories: context responses and trip-making responses. Responses to travel information involving the context include behaviour that affects the way that trips are scheduled or integrated into daily decisions; for example, adjustments of residential location or changes in habitual behaviour are trip-making context responses. Responses to the actual trip-making cover a wide range of trip-related decisions, such as destination choice, departure time, mode, route choice, driving behaviour and choice of parking location. Since recreational trips are infrequent, it is expected that travel information on recreational trips will not quickly impact the trip-making context. Consequently, the trip-making responses, such as mode, route, destination and departure time, are most relevant.

As not all these choices could be examined, the specific focus is on the mode and the destination choice of recreational trips. Affecting mode choice with travel information has received abundant attention for commuter trips (Adler & Blue 1998; Kenyon & Lyons 2003; Kingham *et al.* 2001). Although the changes in mode choice were less than expected, it was argued that this was caused by the insufficient technical advancements (Adler & Blue 1998) or by habitual mode behaviour (Kenyon & Lyons 2003). Based on the characteristics of recreational trips (see Table 1.1), we expect that habitual mode behaviour has less influence on recreational trips than on commuter trips. Therefore, it is interesting to investigate to what extent habitual mode behaviour extends to recreational mode choice. From a policy viewpoint, affecting mode choice may lead to less car travel and thus decreases the congestion. Most commuters have a fixed work destination, making the effect of travel information on destination choice less relevant. However, recreational travellers have many possible destinations that could be selected. Mommaas *et al.* (2000: 10) suggested that the number of recreational destinations has risen the last few years. It is therefore plausible that recreational travellers need travel information to decide on their destination, making this an relevant relationship to investigate.

1.3 Research aim and questions

Travel planning research and transport policy analysis are based on the ability to understand and thus predict how travellers respond to changes in their travel environment (Krygsman 2004: 23). The previous section discussed the role of travel information in affecting recreational travel behaviour. The potential for changing recreational travel behaviour is expected to be substantial, since travellers face uncertainty due to the lack of experience and unfamiliarity. In addition, recreational trips are a substantial part of mobility and changing some aspects of this travel behaviour could significantly contribute to decreasing the negative impacts of mobility. However,

few studies have specifically investigated the role of travel information within recreational trips. Therefore our research aim is:

To gain insight into the role of individual travel information in recreational trips, particularly related to mode and destination choice, and to investigate the implications for transport policy.

Four research questions are investigated in order to reach the aim of this study. In Figure 1.3 a schematic overview of the relation between the different research questions is presented. As this figure shows, there are four central concepts in this study: decision-making process, external factors, use and effect of travel information, and transport policy. The first three concepts are needed to understand displayed travel behaviour, while the latter is used to position the research findings within transport policy. The first research question deals specifically with decision-making processes:

1a. Which combination of current decision-making theories most adequately describes the decision-making process underlying recreational mode and destination choice?
1b. Which aspects can be identified that describe the role of travel information in this process?

Theoretically, travel information influences recreational travel behaviour by having an impact on the decision-making processes underlying the actual behaviour. Therefore, a model of the decision-making process that applies to both mode and destination choice has to be developed. A more detailed description of the role of travel information is needed in order to determine whether and how travel information affects travel behaviour. The role of travel information is defined broadly to encompass the search process, the use of the information and the possible effect on travel behaviour.

Decision-making processes are executed, and can therefore only be interpreted, in the light of the external factors operating on the decision maker. Therefore, the second research question is:

2. What are the key external factors that affect the decision-making process for mode and destination choice, and how do they affect the role of travel information?

Travel choices are made within a defined space in which only a few travel options are available (Hägerstrand 1970). Many constraints and opportunities from outside the actual decision-making process, for example previously made decisions or experience, influence the available options. Therefore, external factors potentially affect the execution of all stages in the decision-making process. Understanding the effect of external factors on the role of travel information is essential from a policy perspective. In addition, these factors can be used to segment travellers into specific groups that have similar information needs. This enables service providers offering travel information to tailor the information to the specific needs of the traveller.

The third central concept in this study concerns the actual use and effect of travel information in mode and destination choice. Therefore the third research question is:

3. What is the actual information search behaviour, which information is used in the mode and destination choice and what is the impact on travel behaviour?

The actual role of travel information determines which information the travellers find important before choosing a mode or recreational destination. Within a decision-making process travellers compare one or more alternatives by comparing key attributes of each alternative. In other words, choosing between two recreational destinations may result in comparing the attributes such as entrance fee and attractions in the park. Based on the relative values of these attributes, the traveller decides. Travel information may provide the values of these attributes when they are unknown to the traveller. Therefore, mapping the actual information use is a proxy for determining which attributes are relevant in mode and destination choice for recreational trips.

Together, these three research questions answer what the role of travel information is in mode and destination choice for recreational trips on an individual level. Travel information can also be actively deployed as an instrument to change travel behaviour. This raises the question as to what the implications are of using travel information in affecting recreational travel behaviour on an aggregated level. The fourth central concept of this study therefore concerns transport policy. This research question is different to the previous questions as it does not lead to an in-depth analysis but rather discusses the implications of the results found in the previous questions.

4. What are the implications of the role of travel information on the individual level for the actual deployment of travel information as a policy instrument?

Understanding the impact of travel information on changes in individual behaviour travel behaviour will allow for a better utilisation of policy instruments. Consequently, the policy instruments are more effective in tailoring supply to demand and avoiding negative impacts such as congestion and emissions. Interpreting the results found in this study in light of transport policy and investigating the implications of these results require a clear understanding of (Dutch) transport policy and its policy instruments, such as travel information.

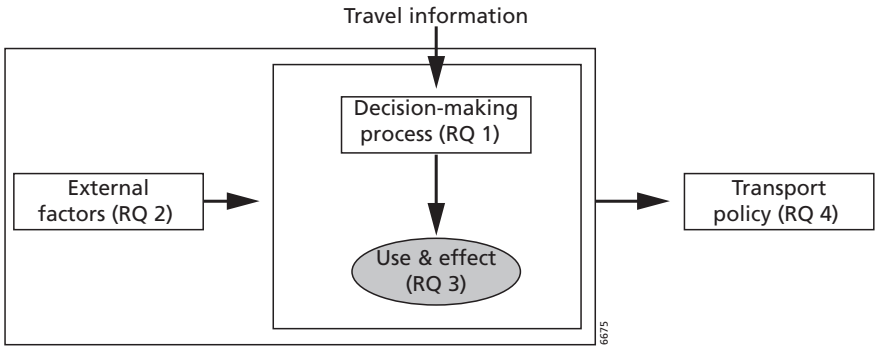

Figure 1.3 *Relation between research questions*

The relations between the research questions are depicted in the figure above. Next to these relations, it can also be used to discuss the nature of the research questions. The first research question has a theoretical nature; its answer supports the following research questions but it will not be answered empirically. As there is little known on the use and effect of travel information on recreational trips, research question three can only be answered empirically. However, to allow for implications for transport policy, it is necessary to answer research question 2 both theoretically and empirically. The last research question regards policy and will therefore be answered within the transport policy framework.

1.4 Outline of thesis

This study is divided into nine chapters (see Figure 1.3). Chapter 2 discusses (Dutch) transport policy and provides a framework in which the results of this study can be interpreted. Consequently, it provides the necessary basis for answering the fourth research question. In chapter 3, a theoretical model that describes the decision-making process for mode and destination choice is developed. Furthermore, this chapter discusses the aspects of the decision-making process that describe the role of travel information. Consequently, chapter 3 answers the first research question. Chapter 4 then discusses the external factors and their potential influence on the decision-making process. In doing so, it provides a theoretical answer to the second research question. Chapter 5 acts as a bridge between the theoretical and the empirical chapters. It discusses the methodological issues related to the data collection. Chapters 6 to 8 present the empirical results of this study. Chapter 6 examines the actual role of travel information in the decision-making process and thus answers the third research question empirically. In chapter 7, the relation between external factors and travel information is determined, whereby each external factor is discusses separately. As the external factors also affect each other, their combined impact on the decision-making process is also analysed. Chapter 8 contains logistical regressions that further explain the role of travel information within the process for mode and destination choice. In chapter 7 and 8, the empirical answer to research question 2 is provided and the empirical basis for answering research question 4 is laid. Chapter 3 to 8 thus provide a detailed discussion on the role of travel information on the individual level. Chapter 9 contains the conclusions and discussion points on each of the main concepts. Furthermore, this chapter answers the fourth research question by formulating implications for the use of travel information as a policy instrument for recreational trips.

Notes

1 In Dutch: CBS
2 Website (www.swov.nl) accessed on 20-03-2006
3 see www.511.org for information in the San Francisco Bay area.

2 Dutch transport policy and travel information

2.1 Introduction

The main objective of this study is to determine the role of travel information in recreational mode and destination choice. However, in order to translate the results into recommendations for using travel information as a policy instrument, a framework of Dutch transport policy is necessary. Not only does this framework facilitate the interpretation of results, it is also the starting point for recommending changes in current or future transport policy based on the presented results. Therefore this chapter provides the basis for answering the fourth research question: "*What are the implications of the role of travel information on the individual level for the actual deployment of travel information as a policy instrument?*". Although we specifically consider Dutch transport policy, the mobility growth raises similar issues in other western countries. Dealing with these issues, and thus the potential role of travel information can also be applied to these countries.

Individuals who want to participate in activities, such as work, shopping or using recreational facilities, generate mobility. Both negative impacts (such as congestion, emissions and safety) and positive impacts (such as economic growth and personal development) are associated with mobility. Because mobility generates both positive and negative effects, the goal of transport policy is to steer mobility in the right direction. That is to say, to minimise unwanted side effects and to maximise the perceived benefits. This immediately raises the question as to what the intended right direction might be. Insight into the necessity of transport policy and how mobility can be explained is therefore required. Furthermore, understanding of how the Dutch central government organises transport policy is needed. The policy objectives reveal the direction mobility is steered to and thus discloses the priorities given to the various aspects of the mobility issue. Transport policy is not static and consequently policy objectives have changed over time. Current objectives can only be understood in light of previous objectives. Therefore a brief history of Dutch transport policy explains which instruments are deployed to reach the changing policy objectives. It shows that the complexity of the issue increases with mobility growth and that transport policy reacts by increasing the complexity of policy instruments. Furthermore, the complexity will continue to increase in the future.

Travel information is one of the instruments mentioned as a possible and partial solution to tackle some of the mobility issues (V&W 1996). Furthermore, understanding the role of travel information further enhances the knowledge policymakers have on individual travel behaviour and the underlying choices. The role of travel information instrument has to be construed in light of Dutch transport policy, for the instrument's deployment is directly related to the policy objectives. However, a more detailed discussion on the instrument is required for interpreting the research results reported in chapter 6 and 7.

The structure of this chapter follows the aspects described above. Section 2.2 discusses the necessity of transport policy, the complexities of the mobility issue and the Dutch approach to transport policy. Section 2.3 then discusses the changes in policy objectives and related instruments of Dutch transport policy based on the abstract discussion presented in section 2.2. Finally, section 2.4 further explores the instrument *travel information* related to transport policy and, more specifically, to recreational travel. The chapter concludes with a short discussion on the interaction between individual use of travel information and the effect of travel information as a policy instrument (section 2.5).

2.2 Understanding Dutch transport policy

Mobility is defined by Statistics Netherlands[1] as the total of trips made per time unit multiplied by trip distance. This definition implies simplicity, but in reality understanding, and more importantly, affecting mobility is a complex and multifaceted issue. This section discusses various facets of the mobility issue: the impact of mobility, potential instruments that can be deployed in influencing mobility (growth) and the specific Dutch approach to national transport policy.

2.2.1 The necessity of transport policy

Most trips are made to participate in activities elsewhere and the introduction of the car has greatly increased the travel distance for these trip. Some numbers illustrate the enormous expansion of mobility. In the sixties roughly 600,000 households owned a car compared with 6.5 million cars in 2002. During the same period the kilometres travelled rose from 40 billion per year to 225 billion per year (Harms 2003: 2). Road infrastructure greatly expanded to accommodate this rapid mobility growth. Two laws from 1965 (*Rijkswegenfonds*) and 1966 (*Wet Uitkering Wegen*) allocated sufficient funds to realise the construction of the new motorways. As an example, in 1965 the Netherlands had slightly more than 500 km motorway compared to 2500 km in 2004 (CBS 2005).

This rapid growth was not without consequences, both positive and negative. Starting with the positive effects of mobility: more activities could be reached in the same amount of time. For Schafer (1998) found that overall travel time remains fairly constant, thus faster transport modes lead to greater distances. People started to explore more distant destinations. Furthermore, mobility is a main condition to live independently from other people (Tacken 1997: 313). As Martens (2000: 9) argues: the cultural value of mobility is personal development, individualisation and personal autonomy. Mobility growth is also anchored in the structure of economic growth (Hafkamp & Geerling 2002: 8). Martens (2000: 9) asserts that mobility of goods and individuals are indicators of economy growth. After all, an efficient organisation of the economy benefits from the options available to move through space. As long as accessibility is high the economic benefits are also high. Thus the positive effects of the mobility include the increase of wealth and trade, the exchange of knowledge and experience, and the personal freedom to travel (VROMraad 1999: 17).

Mobility growth is not without negative effects. Decreasing accessibility and safety and increasing emissions are the most commonly mentioned adverse effects of mobility growth.

The main cause of decreasing accessibility is congestion (Mahmassani, 1997: 280). Congestion results from a higher demand than the available infrastructure can handle. This is a major issue in the Netherlands since an average congestion of 200 km per workday occurs on the Dutch motorways (Tampère 4: 2). It is thought that increased accessibility directly leads to larger markets and enables businesses and households to save time and costs (Rodrigue *et al.* 2006). The other way around: decreasing accessibility leads to less economic opportunities and decreases the competitiveness (e.g. higher costs on transport goods) (Kraan, 1996: 1). The second negative impact of mobility growth is safety. Even though mobility has grown rapidly, the number of accidents per travelled kilometre has decreased enormously making the Netherlands one of the safest countries (only 881 fatal accidents in 2004). However, most traffic accidents happen on regional and local roads. Since many recreational trips go over regional and local roads this issue remains relevant, particularly since every accident results in economic and social losses. Finally, mobility growth results in rising emission levels that damage the (living) environment (Mahmassani 1997: 281; Schafer 1998: 455). Technological advances reduced emission levels of certain gasses; however, CO_2 and NO_X emissions have grown (VROMraad 1999: 9). A currently relevant issue is particle matter (PM_{10}) emissions, which causes (in)direct health problems (DETR 1997). In many areas the level of PM_{10} exceeds the legal limit set by a new EU directive, which has lead to cancellation of road and housing projects. Consequently further growth in mobility has to be accompanied with drastic measures to curb the PM_{10} emissions.

It is clear that policy is needed to deal with this multitude of consequences caused by mobility growth. In the traditional perspective transport policy tries to maximise the positive effects while minimising the negative effects. However, this traditional perspective often neglects the multifaceted nature of mobility. For example, both negative and positive effects can be fragmentised over time, space and population. For instance, high emission levels are more problematic in a city than in a village. A related issue it that the impact is often on different scales. For example, congestion is often a local issue while economic benefits are measured on a national level. Finally, addressing a single issue often adversely affects the other consequences. Spreading congestion over time, thus increasing accessibility, often leads to a more constant emission of noise, PM_{10} and gases. In short, drawing up transport policy that accounts for all facets related to mobility is complex. Consequently, transport policy needs clear policy objectives that take account of these facets. The next section further discusses the relevant facets to provide a framework for interpreting Dutch transport policy.

2.2.2 Mobility: a multifaceted issue

Dealing adequately with both negative and positive effects of mobility requires a clear understanding of all facets related to mobility. After prioritising policy objectives, the relevant questions are: how to accomplish the objectives (selecting instruments) and who is responsible for carrying out these instruments?

Prioritising policy objectives

The benefits and costs related to mobility cannot be treated similarly since they, as stated earlier, differ per time, space and population. Furthermore, a solution for one issue often results in relocation of the problem or causes additional negative impact elsewhere. Adding infrastructure often increases accessibility at that specific section of the road; however, congestion often relocates

up or downstream on the same road. In addition, the additional infrastructure may cause more noise. Moreover, stimulating the economy by allowing (unlimited) mobility growth will at some point affect accessibility, environment and safety. This means that the traditional perspective of minimising negative effects and maximising positive effects is not always possible. Consequently, a careful selection and prioritisation of transport policy objectives is required. Thus, prioritising objectives means that all those involved in making transport policy are conscious of the fact that not all negative impacts of mobility are addressed.

Accomplishing objectives: selecting policy instruments
Reaching policy objectives depends on the selection of appropriate instruments. Subject to how mobility is approached, the relevant instruments are selected. Most commonly, mobility is either approached from the supply (infrastructure) or the demand (individual's) side.

As Figure 2.1 shows, the main determinant of supply is the available road and rail infrastructure. Particularly relevant for public transport, the frequency of the services and the available transit points limit the supply. Rail tracks without train service are worthless to travellers, as road infrastructure is without a transport mode. Spatial planning, which determines the location of the supporting infrastructure, such as parking areas, exits, petrol stations and maintenance, is the last determinant of supply. The supply determinants are interdependent. To illustrate, doubling rail tracks is only useful when rail services are also increased. As a result, increasing supply often requires more than one measure. Changing supply is relatively simple (compared with changing demand) because infrastructure and services are tangible. Once it has been decided to increase supply, only the necessary funds need to be allocated.

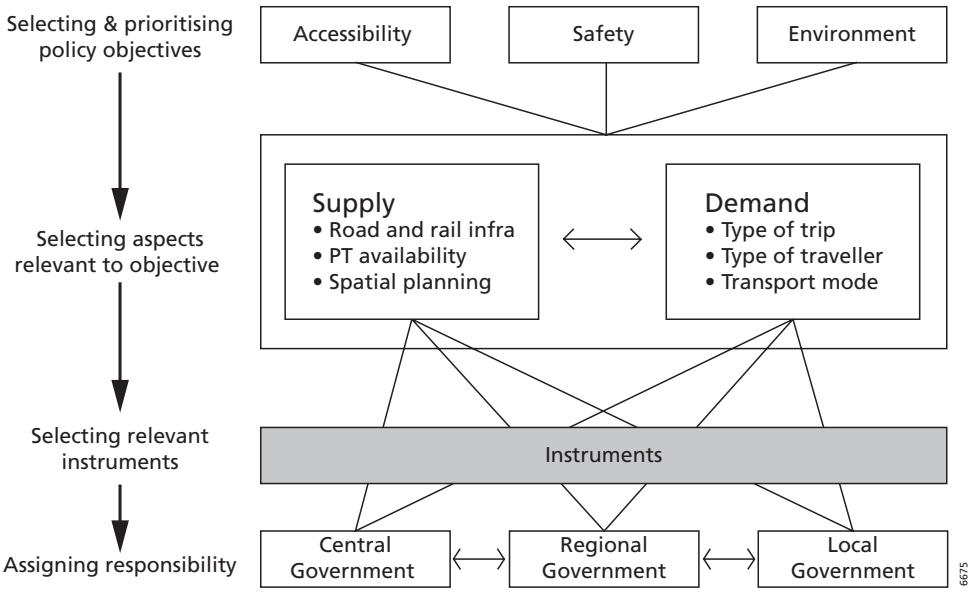

Figure 2.1 *The relations between mobility facets*

The main determinant of demand is the individual traveller. As defined before, total mobility demand is aggregating all trips made by all individuals. Mobility growth is mostly a result from changes in socio-demographics; the population has grown and car ownership has risen. Not all trips are the same; trip motive, transport mode or type of traveller may differ (Figure 2.1). Not all travellers are alike; some prefer to use public transport, while others prefers to travel by car but only outside peak hours. Therefore, some travellers are more likely to react to demand changing instruments than other travellers. Neither are all transport modes the same. Selecting a transport mode corresponds selecting a type of infrastructure. Congestion appears on road infrastructure, making it more logical to affect car choice than public transport choice. If car choice is selected the policy instruments should be specifically geared towards the car travellers. Finally, transport policy often distinguishes between commuting, business travel and recreational (or other) travel. Trip motive often implicitly results in several pre-defined selections. Thus it is essential to determine the trip motive because it reveals how easily travel behaviour can be adjusted. For instance, commuters have fixed work hours and work location, while business trips are often made under time constraints. This study specifically focuses on recreational trips because these trips often have the least amount of constraints, thus allowing for changes in travel behaviour. It is expected that travel information is therefore successful in affecting recreational travel behaviour. To sum up, changing demand requires a thorough understanding of who, how and why and tailoring the instrument to the specific groups concerned.

To change travel behaviour at least one of these factors should be changed. However, changing travel behaviour is complicated because it involves individuals and their choices. Deciding what travel behaviour should change and then allocating the necessary funds is not enough. It is therefore essential that appropriate instruments are selected to reach the set objective. De Wit & Van Gent (2001) provide a number of instruments that can be deployed to change behaviour. These include prohibitions and commands; rationing and licensing; information; levies and subsidies on private producers and consumers; and taxes. Instead of providing a number of instruments, Spit & Zoete have tried to distinguish between types of policy instruments. They classify three types of instruments (Spit & Zoete 2002: 21);

- Classical instruments; for example through laws, sanctions and regulations,
- Modern instruments; for example through financial incentives,
- Post-modern instruments; through immaterial incentives e.g. information provision or advertisements.

Based on this classification, one could conclude that the classical instruments force certain behaviour while the modern and post-modern instruments more try to persuade individuals to adopt certain behaviour. Which instrument is most appropriate is discussed in section 2.3.

Government responsibility

The last aspect is to determine on which level the policy instruments need to be deployed. The policy objectives already indicate which government is responsible. For instance, accessibility issues on Dutch motorways are, by definition, the responsibility of central government, while regional and local roads are the responsibility of regional or local government. However, this distinction of responsibility is not always that apparent. Particularly when negative spill over effects are anticipated. For example, increasing the accessibility on regional roads by promoting motorways may deteriorate motorway accessibility. Whenever the responsibility is not

straightforward, it needs to be determined and documented. Whenever the multiple objectives have been chosen that require a coordinated action, a plausible strategy is that central and regional (or local) government cooperate. This is in line with the Dutch administrative structure; each level can formulate and carry out its own regulations as long as it does not conflict with a higher level (Newman & Thornley 1996: 47).

Figure 2.1 shows the interactions between the different issues related to mobility. It shows the fragmentation of policymakers, policy objectives and actual mobility. This fragmentation shows complexity of the mobility issue. Although this chapter specifically focuses on Dutch transport research, this framework is also applicable to transport issues in other countries.

2.2.3 The Dutch approach

Mobility directly affects several other policy areas whereas the same areas also affect mobility. Commission De Wolff (1970) tried to clarify the relation between policy areas analytically by defining facets and sectors (Spit & Zoete 2002: 18). Sector plans encompass concrete programmes of a specific policy sector (such as mobility or environment) to ensure the efficient development of services (see Figure 2.2). Facet plans try to integrate all government activity from one viewpoint, such as spatial planning or economic policy. In practice the distinction between facet and sector is not rigid; sectors and facets interfere in each other's policy areas. As a consequence, the policy documents discussed in the following sections cannot be seen completely separately.

In discussing Dutch transport policy the influence of other policy fields is also considered. Spatial planning coordinates the location of infrastructure, housing, business and recreational destinations. Therefore it affects transport policy both directly and indirectly. In the Netherlands spatial planning objectives can be formulated at all levels of government, as long as they do not conflict with higher-level objectives (VROM 1996: 5). Nevertheless, in this study the role of central government is emphasised, and the policy documents discussed are all published on a central level[2]. Central spatial planning objectives are laid down in the spatial planning documents[3]

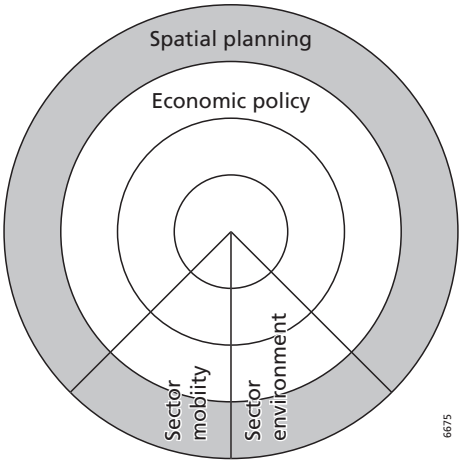

Figure 2.2 *How Dutch policy perspectives overlap*

(VROM 1996: 5). The ministry of housing, spatial planning and environment (VROM) is responsible for spatial planning. Ensuring liveability and accessibility to locations are two central objectives of VROM. Since mobility potentially affects these objectives, VROM pursues an active role in limiting mobility growth. Accordingly spatial planning documents include a section on mobility. In general, the main instrument that VROM could deploy to tackle mobility issues is location policy, thus regulating where houses, businesses, and infrastructure can be built.

Nevertheless, transport policy is mainly laid down in structure schemes[4]. These transport structure schemes, composed by the ministry of traffic and transport (V&W), are at best an odd policy document. The document hinges between facet and sector; it contains two separate sections; first the government's long-term policy objectives for transport (facet) and second concrete project descriptions (sector). The policy objectives are formulated in a very general manner making it difficult to determine which aspects should be addressed and the appropriate instruments (see Figure 2.1). The project descriptions provide an indication for actual implementation of certain measures. However, the descriptions only reflect the supply-side, i.e. specific infrastructure that needs to be built. In the last structure scheme (the Mobility Paper) an implementation agenda has been added that describes the demand-side measures (see section 2.3.4).

Although the concrete project list may imply that reaching, at least supply, objectives is straightforward, actual implementation can be problematic. For inclusion on the project list does not automatically mean that the project is executed. First, it needs to be registered in the Program Infrastructure and Transport[5] (MIT). The MIT structures the stakeholders' decision-making process to reach a solution of traffic or transport bottlenecks[6]. This process, which may take years, consists of several phases. Since a project does not automatically move from one phase to the other,[7] not all projects included in the transport schemes will actually be carried out. The projects that reach the final phase of the MIT may be incorporated in the transport budget, and only the projects that are mentioned in the transport budget are, eventually, carried out. Consequently, the loose connection from structure scheme to the annual revision of the MIT and the actual budget means that many projects are cancelled.

The ministry of transport tries to contain mobility with instruments that affect both supply and demand (Priemus & Maat 1998: 19). Yet, historically speaking the ministry of transport is supply-orientated. They were and are the road builders in the Netherlands. Nowadays they often use post-modern instruments (e.g. media campaigns) and are trying to introduce policy experiments such as road pricing.

In short, transport policy is laid down by the ministry of transport but is further affected by other ministries such as VROM and EZ. Agreeing on the same prioritisation of policy objectives is therefore a complicated matter. And even when ministries agree on (general) transport objectives the implementation of instruments may differ, possibly leading to conflict.

2.2.4 Summary

This section discussed the positive and negative effects of mobility growth and concluded that transport policy is needed to guide these effects. Furthermore, for guiding mobility growth it is crucial that policy objectives, related aspects and appropriate instruments are identified. Since

several ministries as well as different government levels have an interest in guiding mobility, prioritising policy objectives is not straightforward. As will become clear in the following section, transport policy is therefore not always as effective as it might be in reaching the set objectives.

2.3 National transport policy

How the central government has tried to affect mobility growth in order to minimise the negative impact while maximising the positive impact is the central issue in this section. Using the relations depicted in Figure 2.1, the changing approach of central government is discussed by sketching the complex relation between the mobility issue and transport policy. Starting from the late sixties the structure schemes on transport policy and the relevant spatial planning documents are reviewed.

2.3.1 Infrastructure policy (1968-1979)[8]

The sixties was a period of economic growth (Van der Wal 2003). Luxuries goods, such as cars, telephones, televisions, and refrigerators became common household attributes. Increasing car ownership and the availability of a car for recreational and work purposes was viewed as positively affecting economic growth. The logical objective of transport policy was therefore to stimulate mobility growth. A completed road infrastructure would support additional mobility growth. The necessary funds were allocated by passing two additional laws, the *Rijkswegenfonds* (1965) and the *Wet Uitkering Wegen* (1966). As a consequence the car became the most important transport mode. Unfortunately, this came at the expense of other transport modes. Particularly, the relevance of rail infrastructure for freight transport diminished and this led to the closure of many railway lines (Bruinsma *et al.* 2002: 2). During this period, the ministry of transport acted solely as an infrastructure builder. Since the only instrument deployed was a supply instrument, we cannot speak of transport policy as such. An infrastructure policy would be more appropriate. However, the emphasis on building new infrastructure would change as the awareness of environment grew and the (negative) impact on accessibility became apparent.

2.3.2 First signs of change (1979-1988)

The perception of environmental issues arose at the start of the seventies. The publication of *Limits to growth* by Meadows *et al.* (1972), better known as the Club of Rome, stressed that natural resources are limited and that resource allocation should be a careful deliberation. During the same time, the population grew by approximately 1.5 million and the first concerns for the maximum population growth started to emerge (VROM 2000). Besides these concerns, it also became apparent that infrastructure measures alone could accommodate the expected mobility growth. Thus, society had changed which affected the overall perception of mobility. These changes were reflected in the first structure scheme on traffic and transport (SVV)[9] when it appeared in 1979. The fact that mobility was discussed in a separate policy document indicated that it had become a major issue. Furthermore, the ministry of transport understood that transport policy entailed more than just building additional infrastructure. A quote from SVV (V&W 1979: 5) illustrates the latter change clearly: "*there needs to be a deliberation whether the growing demand for facilities serves the general well being of (Dutch) society before additional infrastructure is added*".

Besides building the missing links in the infrastructure, the SVV objectives were to limit the inconvenience caused by car use (V&W 1979: 5). Limiting car use in certain areas, decreasing trip length, and stimulating public transport and slow modes were thought to decrease this inconvenience. However, government also felt that individuals' freedom of choice should not be limited. Thus instead of selecting instruments that would affect individual travel behaviour the government decided to change the spatial layout (see Figure 2.1). That way, individuals could still perform the same activities but due to smaller travel distances the need to use the car would decrease. The ministry of VROM, responsible for spatial planning, had similar ideas to curb the negative effects of mobility growth. This is reflected in the third document on spatial planning (1977-1983). It stated: *"Compared to other metropolitan areas, the possibility to increase the interaction between living areas and working areas is still possible, as a result limiting the need for mobility and improving the travel system*" (VROM 2002: 28).

Both ministries had similar policy objectives related to mobility growth and had selected the same aspect (spatial planning) that they wanted to affect. This was particularly relevant for the ministry of transport because they cannot deploy spatial planning instruments. Therefore, selecting instruments had to be described in the spatial planning documents. Unfortunately, translating these policy objectives into concrete instruments only occurred on a limited scale (VROM 2002: 26). Consequently, the proposed instruments were largely ineffective in reaching set objectives as formulated in SVV and the documents on spatial planning. However, it was realised that government had to be more active and that only selecting policy objectives would not suffice.

2.3.3 Change to active mobility policy (1988-2000)

The international economic crisis did not miss the Netherlands. In the early eighties unemployment soared and the housing market collapsed (see Figure 2.3). At this time the mobility issue was less relevant on the policy agenda. The stringent budget reforms that followed slowly had an impact, and from the mid-eighties the economy started to recover. During this difficult economic period, mobility became a central policy issue; on the one hand it was seen as an engine behind economic growth, but on the other, decreasing accessibility arising from rising traffic density seriously hampered economic growth. For example, traffic intensity outside urban areas grew by a factor of 1.7 (Van Kampen 2003: 6). To further complicate the issue, the environment had also become a serious topic with mobility as a large contributor to emissions. Central government drew up new transport policy to deal with these conflicting interests.

The main objective of the second structure scheme (SVVII 1990) was to limit 'unnecessary' mobility. This meant that freight transport was stimulated (to fuel economic growth) while personal travel was discouraged. Limiting 'unnecessary' mobility would address the accessibility problem, with the additional advantage of increasing safety and decreasing emissions. Infrastructure planning was limited to the execution of already proposed projects and some new projects to solve bottlenecks. This shift was not unexpected; the road and rail infrastructure nearly covered all major connections in the Netherlands (Bruinsma *et al.* 2002: 2). Before discussing the specific use of instruments, we can conclude that SVVII placed more emphasis on demand-side measures. However, affecting travel behaviour from a supply-aspect (spatial planning) still remained an essential track. This was a minor shift in the deployment of policy instruments, yet significant in problem perception. In contrast to the previous period the objectives were more

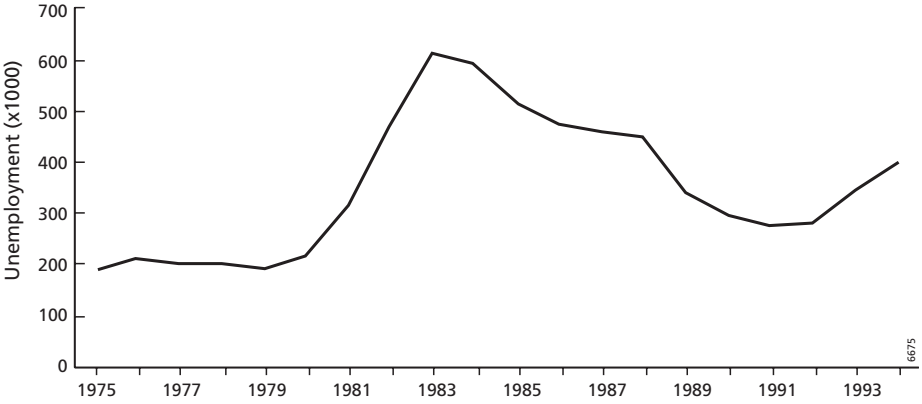

Figure 2.3 *Unemployment in the Netherlands (CBS 2006)*

successfully translated into policy instruments. Overall, central government saw itself as solely being responsible for reaching the policy objectives.

To discourage personal mobility three tracks were laid down: 1) spatial planning, 2) modal shift and 3) pricing schemes (VROMraad 1999: 33). The first track, *spatial planning*, had to lead to a lower need for (car) mobility. It was expected that by changing the spatial layout distances between frequently visited locations would be shorter (Bruinsma *et al.* 2002). This was a continuation of the strategy proposed in SVV and the third document on spatial planning. In contrast to the previous document, the fourth document on spatial planning did translate the objective into specific instruments. No additional translation is made within the SVVII since the ministry of transport does not possess these instruments. Consequently, relevant policy instruments are discussed on the fourth document on spatial planning. The main objective was to concentrate work locations, home and necessary facilities in such a way that trip lengths were minimised (Bruinsma *et al.* 2002). It was argued that this concentration would lead to shorter trip lengths and thus to more use of slow modes (Martens 2000: 3). The two major instruments were the choice of VINEX (residential areas) locations and ABC-location policy. The former regulated the construction of new residential areas next to existing cities. People living in these areas would make use of the work and other facilities of the nearby city, thus limiting the necessity to travel to other cities. The latter was geared toward matching the business location to the availability of parking places (see box below).

The second track to decrease unnecessary mobility focussed on *modal shift*. Since car travel resulted in congestion, commute and recreational travellers were persuaded to either use public transport or slow modes (such as bicycles and walking). Not all travellers were stimulated to use other transport modes: SVVII prioritised business travel. All other trip motives were labelled as avoidable. Commuter travel caused most congestion (e.g. peak hours) and was therefore addressed separately. Although not specifically mentioned, other trip motives, including recreational trips, were also deemed avoidable. Two instruments were deployed to achieve modal shift: improving public transport and increasing public awareness through media campaigns (Van

Roost & Verheul 2002: 36). The car and public transport were considered equal alternatives in mode choice. However, the road network was more developed and some destinations could not be reached by public transport. Consequently, travellers could not use public transport but had to use the car. Improving the public transport network would therefore automatically lead to less car use. Media campaigns had to increase public awareness that congestion would limit economic growth and that individuals could change this. An illustration of the media campaign is the slogan *"The car can survive without you for a day"* [10]. This campaign stimulated people not to use the car for a recreational trip but to use another transport mode.

Finally, the third track concerned *pricing schemes*. The assumption was that pricing would lead to an adequate internalisation of social costs, such as congestion, emissions and safety. Mostly this meant that car travellers would be confronted with a more realistic picture of their travel costs. Car travellers normally only consider petrol costs when deciding between transport modes, while public transport users are confronted with a more realistic price. As a result, public transport is usually seen as being a lot more expensive than the car. Pricing schemes would thus ensure a more realistic deliberation between travel modes.

Studies that evaluated the objectives of SVVII the fourth document on spatial planning concluded that the effectiveness of the instruments was far below expectations (VROMraad 1999). The main objective, limiting mobility growth, was not reached. VROMraad (1999: 26) argued that structural trends, in particular an increase in the number of households and an increase in a two car households, were mainly responsible for this growth. That raises the question as to whether the mobility growth would have been larger without the instruments implemented in SVVII. This is a question that can never be answered. But a more detailed analysis of the three tracks would reveal if the selected instruments were indeed appropriate.

Overall spatial planning instruments were not very effective because not all stakeholders agreed on the set policy objectives. Although each policy level, be it central regional or local, can formulate and carry out its own regulations, these regulations should not conflict with higher-level government (Newman & Thornley 1996: 47). This means that central government provides general plans while local government has the authority to establish binding rules for individuals and businesses (Dieperink & Driessen 1999: 463). However, objectives put forward in the fourth

Box 2.1 ABC-location policy (Bruinsma et al. 2002)

The ABC location policy dictated the relation between accessibility of businesses per public transport and the number of available parking spaces. At locations close to a train hub (so-called A-locations) only limited parking was allowed to stimulate the use of public transport. The underlying idea was that firms with many employees or visitors were located at these locations. Companies with few employees per square meter, for example production related or transport related, were to locate themselves at industrial estates close to the highway (so-called C-locations). Many parking spaces were allowed at these locations.

document on spatial planning were often not implemented when they conflicted with objectives set by local government. A good example can be found in the failure of the ABC-location policy, which could not prevent a strong growth of peripheral industrial estates, while the development of rail locations stalled (Bruinsma *et al.* 2002). Many companies pressured local government for a C-location even though an A or B location would have been appropriate. Threatening local government with an alternative location (thus creating less employment in the region) often led to the allocation of the desired location. Thus a clear vision on policy objectives is needed on all government levels. Within SVVII the objectives were established by central government. More communication between the government levels is therefore essential. This communication should also be extended to companies, as hardly any of the companies that relocated were aware of the ABC-policy (Spit 1996). Shortening distances between key locations did result in shorter travel distances and less car use, but only on a local level (VROMraad 1999: 35). If mobility were measured in number of trips instead of kilometres travelled this policy would have been successful. Approximately 75% of all trips are shorter than 10 kilometres; however, these trips only account for 20% of all kilometres travelled. Since home and work location were not affected by spatial planning, the longer trips were not influenced either. It can therefore be concluded that this instrument is effective on a local scale.

Limiting growth by changing the modal shift was found to be largely ineffective. The assumption that public transport and car are equal alternatives in the mode choice was proven invalid. This should not have been a surprise since Bovy *et al.* (1990: 124) already showed that cars and public transport are not communicating vessels. The pedantic attitude of central government that they knew what was best for travellers led to general political and social resistance (VROMraad 1999: 33). The media campaigns coercing travellers to switch modes were therefore not effective.

Road pricing was not introduced during this period and can therefore not be evaluated on effectiveness. Although taxes on gasoline and parking fees were raised increased, no noticeable difference was found in car travel behaviour (Hafkamp & Geerlings 2002: 9). The elasticity of petrol prices turned out to be limited. It can therefore be questioned whether road pricing would lead to less use of the car. Other countries, most notably the UK and Sweden, have introduced road pricing in their capitals. The results are very encouraging; for example, a 25% reduction of car travellers was achieved in Oslo (Sarkar 2006) and in London traffic delays were reduced by 30% after six month of operation (TfL 2003).

In short, the policy objectives set in SVVII were ambitious while the instruments deployed were not sufficiently effective to reach those goals. This caused major doubts about whether to continue this line of policymaking. The complexity caused by mobility was better understood and a better-suited approach (with smaller scale experiments) was thought to be more effective. As a consequence a new approach in dealing with mobility growth was needed.

2.3.4 Change to allowing mobility growth (2000-now)

The resulting transport policy as described in the Mobility Paper[11] has several remarkable differences compared with the SVVII. Many of these differences were also described in the NVVP[12], which appeared in 2001. The NVVP was rejected due to changes in the National Parliament. Since a new approach to transport policy was the starting point for both documents,

they share many similarities. A short discussion on the NVPP is therefore warranted. Van Roost & Verheul (2002: 36) argued that the NVPP contained a paradigm shift, since the primary assumption was that "mobility growth should be allowed". Policy instruments should be geared towards accommodating growth while, at the same time, minimising negative effects caused by mobility (Van Roost & Verheul 2002: 31). The central issue shifted from increasing accessibility to increasing travel time reliability. Compared with the central premise of SVVII, where certain mobility growth had to be limited, this is a radical change.

The second aspect that changed within the new approach was the role of central government. No longer convinced that central government could (or should) tackle the mobility issues themselves a more prominent role was given to regional and local government. For it is assumed that provinces and regions are in the best position, in consultation with the municipalities, to take account of the region as a whole. Furthermore, public-private partnerships should be stimulated. The current role of central government is thus as an organiser of the market and as a supplier of national infrastructure (RPB 2003). The central government's role had not only changed in transport policy, but is in line with dominant developments in public administration towards open market forces and deregulation (Van Roost & Verheul 2002: 31). These changes are also present in the Mobility Paper.

Conflicting objectives and policy instruments occurred regularly in previous policy documents. To prevent this, the Mobility Paper and the environmental plan are both a module within the fifth spatial document. Another procedural change is that an implementation agenda[13] has been added to the Mobility Paper. This agenda translates the policy objectives into concrete actions for central, regional or local government. One problem of SVVII was that a practical translation for lower government was not included. It was expected that the local government would carry out the policy objectives by selecting the appropriate instruments for that specific area. However, many local governments did not implement the policy objectives. It is now expected that the implementation agenda increases the likelihood that the policy objectives are reached. A risk is that the implementation agenda prevents local government from tailoring the instruments to their specific situation.

The main objectives of the Mobility Paper are also accessibility, emissions and safety. However accessibility, and more particularly travel time reliability, receives most attention while emission levels and safety are seen as legal requirements that should be reached despite mobility growth. Instruments for increasing travel time reliability are based on a four-pillar-approach (Blom 1998). These pillars are: better utilisation of existing infrastructure, pricing, specialised governing and building. A more efficient utilisation of road infrastructure is accomplished by dynamic transport management (DTM) and mobility management (see also section 2.4). These instruments should seduce, instead of coerce, travellers to change some aspect of their travel behaviour. Where the main emphasis used to be on mode choice, the current emphasis extends to departure time, destination, route and other travel behaviour choices. By charging the traveller for using the road it is expected that demand peaks (which cause congestion) are more evenly distributed over time and space. Although theoretically one expects that this will be the most effective instrument for accessibility, it may have adverse effects on the environment, as spreading mobility over time and location will mean that overall noise levels increase and emission of pollutants becomes more

constant. The third pillar is specialised governing, which relates to the previous point that regional government as well as public-private partnerships are made responsible for achieving the policy objectives. When these pillars do not sufficiently succeed in increasing accessibility and travel time reliability the fourth pillar, building, is executed. Either through increasing the capacity at bottlenecks or adding crucial missing links to the existing infrastructure.

The approach presented in the Mobility Paper offers a multitude of instruments concentrated within four pillars. Thus a tailor-made approach for each transport problem is available. However, many responsibilities have been shifted to regional and local government. This raises the question as to what extent these levels of government are equipped to dealing with the complex mobility issues.

The tendency in the Mobility Paper is to inform the travellers on various aspects of the trip, e.g. level of congestion or price, and then let the traveller decide if he wants to change any behaviour. Thus instead of forcing certain behaviour on the traveller (SVVII) he is seduced into changing his behaviour. For example, road charging makes the car traveller more aware of the trip cost and may consequently change route, departure time or even mode. Simulations with road pricing have shown that it can be successful in changing mode use; the results show a 5% increase in the public transport use. Our assumption is that informing travellers on the current travel situation may have similar effects. In the following section we discuss the role of travel information using policy documents related to travel information.

In short, central government has taken the lessons learned during the SVVII period and this is reflected in the starting points of the Mobility Paper. To what extent the more tailored instruments are capable of achieving the policy objectives remains to be seen.

2.3.5 Summary

Developing effective transport policy is complicated. Not only because the objectives and instruments should be selected carefully but also because structural trends, such as increasing car ownership, cause mobility growth. During the last decades central government has learned several valuable lessons, such as the need for clear policy objectives and a thorough translation of these into appropriate instruments. Particularly the selection of appropriate instruments is not straightforward. It seems that selecting instruments closest related to the aspect that should be affected could be a solution. Thus, if affecting mode choice is the issue then travel behaviour should be targeted and changing local spatial planning. Furthermore, these small-scale measures are least likely to create unwanted spill over effects. The responsibility has also changed, from no specific government responsibility (before SVV) to strong central government (SVVII) to a more decentralised approach. Whether this approach is successful remains to be seen. Advantages are that the local or regional government are familiar with local or regional issues and they are able to execute a complete plan in which mobility is a relevant part. The major disadvantages are the possibility that regions shift their issues onto other regions and that central government does not provide sufficient vision or direction.

2.4 Policy instrument: travel information

The previous section showed that central government slowly moved from large-scale measures that had to result in modal shift towards deploying small-scale instruments that would seduce the traveller to change travel behaviour. Travel information is such a small-scale instrument. The general assumption is that informed travellers are more likely to change departure time or choose a different transport mode, thus relieving the pressure on motorways. The first policy document that discussed the role of travel information in affecting some aspects of travel behaviour appeared in 1996 (V&W 1996). The future role of travel information was described and its possible impact on travel behaviour discussed. Furthermore, it introduced the information chain: acquiring transport data, adapting data to travel information, and disseminating travel information. This information chain is still being used in current discussions on travel information. The role of government was to provide current and reliable travel information in order that the traveller is able to adapt his travel choices related to mode, departure time and route before and during the trip (V&W 1996: 5). Thus the role of government corresponded with the strong government present in the SVVII. However, disseminating travel information was already seen as a task for private parties. As the document states: "where possible the government stimulates private parties to be creative and entrepreneurial" and "value added service providers can provide travel information as part of the (commercial) services" (V&W 1996: 13). The policy document travel information remains starting point for travel information policy on motorways (AVV 2004a: 7).

The Mobility Paper mentions travel information several times as one of the instruments that could achieve more efficient utilisation of infrastructure. In practice, central government stimulates the deployment of new travel information services by funding pilot studies. For example, the ICT and accessibility pilot study where a new multi-modal travel information service that provides travel delays is introduced (Vonk & Van der Horst 2005). Other projects that are facilitated by central government are the innovation programme Transumo and ITS Netherlands (V&W 2005: 21).

The policy objectives related to travel information is formulated differently for cars than for public transport. For car travel is it solely geared towards more efficient utilisation of infrastructure; while assisting current users, seducing potential users and ensuring that public transport travel information is on the same level as car-related information are the objectives for public transport (AVV 2003a: 22). Therefore, the instrument travel information is deployed in several "programmes" tackling accessibility. Within dynamic traffic management (DTM) traffic information is used to increase existing capacity and travel time reliability. By informing the traveller on current travel time and possible delays it is expected that perceived travel time reliability increases. Travel information related to DTM is usually en-route allowing the traveller to switch routes. Thus travel information within DTM is mostly geared towards car travel.

In contrast to utilising existing infrastructure, mobility management is not geared towards facilitating the current travel demand but to shift the demand to other travel goals, modes, departure time and routes (V&W 2002: 5). Travel information within mobility management is aimed at the public transport information objectives. Mobility management is defined as: a comprehensive package of (seducing) activities aimed at the choice process of travellers (V&W 2002: 5). Central choices are necessity to travel, travel mode and efficiency of trips (V&W

2002: 7). Mobility management thus aims at choices made before the actual trip. Therefore, travel information deployed within mobility management is often pre-trip. In practice, travel information is often deployed in combination with other instruments (AVV 2004a: 20). Consequently, a combination of DTM and mobility management may be deployed to tackle the accessibility issue.

Recreational trips are emphasised in mobility management because they cause large visitor populations and (severe) accessibility problems on regional and local roads. Consequently, the regional and local governments are responsible for executing the relevant mobility management measures. Although regional or local government are often more familiar with the situation it also assumes that they are equipped to deal with it. The most relevant aspect is determining who is ultimately responsible. Is a theme park owner responsible for attracting large visitor populations or is the regional government responsible for providing sufficient road capacity? This issue needs to be addressed for each situation. Consequently, it is difficult to extend best practices related to travel information; possibly leading to re-invention of the wheel.

A more acute problem for travel information lies at the first step of the information chain. Currently, only data on the motorways is collected; however, hardly any information is available on regional and local roads. In practice, regional and local government are responsible for collecting data on regional and local roads. Although floating car data (FCD) techniques are more widely available, collecting this data is still limited to pilot studies. Public transport information suffers from a similar problem. During the last decade, successful advances have been made to integrate train, bus and other public transportation information. Since many stakeholders provide a part of the data, they need to collaborate before the integrated information can be disseminated. Although static information (such as time tables) is now all integrated, providing up-to-date information is still a challenge. As the ultimate goal is to provide multi-modal information, not only the data acquisition has to improve but the differences between the different transport modes also have to be bridged.

In short, travel information is deployed as to make the traveller aware of different options. Spit & Zoete (2002: 21) define travel information as a post-modern instrument, which persuades travellers to act differently. It is expected that a growing awareness will in turn lead to different travel behaviour. The instrument is thought to be effective because it will cater to the needs of the traveller. This study investigates the effectiveness of the instrument by studying use and effect of travel information in recreational trips.

2.5 Conclusions

The main objective of this chapter was to provide the basis for the fourth research question: "*What are the implications of the role of travel information on the individual level for the actual deployment of travel information as a policy instrument?*". This basis consists of a framework in which transport policy can be interpreted and the application of this framework to Dutch transport policy, with a specific emphasis on travel information as a policy instrument.

It is expected that small-scale instruments, such as travel information, are better equipped at dealing with a specific issue. They directly target the aspect that has to change, in our case travel behaviour, and are least likely to create unwanted spill over effects. Since travel information makes travellers (more) aware of alternatives, it could affect some aspects of travel behaviour. Furthermore, we assume that recreational travellers are less familiar with the travel alternatives and are therefore more prone to use information as to guide their decisions. In chapter 3 this argument is addressed in more detail when we discuss the decision-making process of travellers. Displayed travel behaviour is the result of these processes.

For transport policy the relevant question is whether travel information indeed raises awareness of alternatives or is used to change some aspects of travel behaviour. And if this question is answered positively, what are the implications of using travel information as an instrument? Should travel information be promoted as a core instrument in changing travel behaviour? To what extent could these results for recreational trips be broadened to include other trip motives? Therefore, this study contributes to the further understanding of travel information, one of the experiments in transport policy.

Up to now transport policy has not specifically focussed on recreational trips, mostly because recreational trips contribute less to motorway congestion than commuter travel. However, a small change in travel behaviour often results in substantial decrease of congestion. Furthermore, recreational trips generally contribute to decreasing accessibility on regional and local roads. Based on the impact travel information has on recreational travel behaviour, would it not be necessary to further emphasise specific recreational policy?

The consequences of information use and travel behaviour changes are addressed in the empirical chapters (6 to 8). Based on these results a vision on the role of travel information within transport policy is provided in chapter 9.

Notes

1 In Dutch: CBS
2 Unless otherwise stated the term government reflects central government
3 In Dutch: Nota over de Ruimtelijke Ordening
4 In Dutch: Structuur schema (verkeer en vervoer)
5 In Dutch: Meerjarenprogramma Infrastructuur
6 See website http://www.minvenw.nl/dgp/mitprojectenboek/mit/Spelregels/index.aspx for more information.
7 It is mainly a political decision to move to next stage or remove a project from the MIT.
8 The years in brackets indicate the period of the described approach to transport policy.
9 In Dutch: Structuurschema Verkeer en Vervoer
10 In Dutch: "De auto kan best een dagje zonder u".
11 In Dutch: Nota Mobiliteit.
12 National traffic and transport plan, in Dutch: Nationaal verkeers en vervoersplan
13 In Dutch: Uitvoeringsagenda

3 Short-term decision making in travel behaviour

3.1 Introduction

To investigate the role of travel information in recreational mode and destination choice, it is necessary to understand how travellers make these decisions. Theoretically, a traveller uses the most appropriate decision-making process that enables him to reach a certain goal (Engel *et al.* 1995: 155). As recreational destination and transport mode are the goals that travellers want to reach, the aim of this chapter is to develop an appropriate model for these decision-making processes based on existing models and theories. Related to figure 1.3, this chapter provides the theoretical answer the first research question: *"Which combination of current decision-making theories most adequately describes the decision-making process underlying recreational mode and destination choice?" and " Which aspects can be identified that describe the role of travel information in this process?".*

Developing an appropriate model for these decisions is not trivial. Payne *et al.* (1992: 89) conclude that many models and approaches have been described and discussed; under the label of decision theory, these models and approaches are used to extend our knowledge of choice and decision behaviour (Jeng & Fesenmaier 2002: 15). As decision-making is a central concept in many fields, decision theory is an interdisciplinary field involving a group of disciplines such as economics, business studies, management studies, and psychology (Bernsen *et al.* 1989: 93). Before developing an appropriate decision-model for recreational mode and destination choice, it is necessary to understand the main approaches and their main differences. Therefore, section 3.2 broadly describes the principal approaches to decision-making theory: prescriptive and descriptive. Within the descriptive approach, the information processing perspective is often applied to decision-making processes in which understanding the role of information is essential. Consequently, it provides a good starting point in developing a new model. The first step of the decision-making process is determining the stages that the traveller goes through during the choice process (section 3.3). The second step is to add a generation of the choice set to the theoretical model (section 3.4). Travellers cannot make a decision without, either consciously or subconsciously, considering external factors. Therefore, the decision-making process cannot be seen separately from the external factors that may influence this process. Therefore, external factors are included to complete our model (section 3.5). In section 3.6 all the different aspects are integrated and the theoretical model used in this study is presented. The chapter concludes with a summary and the implications for the remaining research questions of this thesis.

3.2 The decision-making process: prescriptive or descriptive approach

Decision theory contains a body of knowledge that looks at how decision makers choose among a set of alternatives to reach a certain goal (Svenson 1998: 142). In decision theory the common distinction is between normative (or prescriptive) and descriptive decision theory (e.g. Bernsen *et al*. 1989; Jeng & Fesenmaier 2002; Svenson 1998; Russell *et al.* 1999). To determine whether normative or descriptive decision theory better fits our purpose to select a model for mode and destination decision-making processes, the differences between the approaches are discussed in this section. Broadly speaking, normative decision theory specifies the mechanisms of how decisions are made beforehand, while descriptive decision theory investigates the process of decision-making. The normative decision theory is based on economic notions and its purpose is to predict actual behaviour accurately (Jeng & Fesenmaier 2002: 16). The individual, usually, follows a utility maximising strategy, which is based on the micro economic theory of rational choices between bundles of goods or alternatives. For each alternative, the values of the relevant attributes, and thus the overall utility, are known. It is then assumed that individuals, given their preferences and budget, choose the alternative with the highest utility.

Since not all individuals attach the same importance to different alternatives, Edwards (1954) proposed subjective expected utility (SEU), in which subjective beliefs are combined with the utility of an alternative. More alterations were made to predict travel behaviour more adequately and to improve the theoretical foundation. For example, in random utility theory it is assumed that decision makers have incomplete information and, therefore, uncertainty must be taken into account. Manski (1977) identifies four different sources of uncertainty: unobserved alternative attributes, unobserved individual attributes (called "unobserved taste variations"), measurement errors and proxy variables.

Prospect theory (Kahneman & Tversky 1979) was developed as an evolution of SEU theory taking account of important behavioural deviations from this theory to explain 'irrational' choices. It became the most important and influential theory in contemporary behavioural decision research (Svenson 1998: 148). One of the key findings of Kahneman & Tversky was that losses are valued differently from gains. 'Irrational' behaviour had occurred when individuals were confronted with betting games in which the expected utility was the same, but the framing of the games (some in losses other in gains) was different. Based on these results, they concluded that some individuals value losses as more important than gains (loss avoiders) while other individuals find the gains more important (risk seekers). Furthermore, it was concluded that the framing (or presentation) of the problem affected the outcome (i.e. the choices one makes) of choice problems. Instead of simply comparing all alternatives, prospect theory distinguishes two stages: editing and evaluating. The editing phase consists of a preliminary analysis of the offered alternatives, which often yields a simpler representation of only a few alternatives (Kahneman & Tversky 1979: 274). The evaluation phase then compares the alternatives, and the alternative with the highest utility is chosen.

Although widely used, the above-described models of normative behaviour theory have some disadvantages. The most important, related to our research, is the assumption that the traveller knows all alternatives as well as the attributes of these alternatives (Markman & Medin 2002:

425). First of all, researchers have shown that most individuals do not start with a standard set of alternatives but construct a set of relevant options related to the goal pursued. Thus, not all individuals start with the same set of options. Furthermore, the individual may decide one option is sufficient (Markman & Medin 2002: 427). This has consequences for the purpose of the decision-making process. In the first case, the purpose of the decision maker is to select one alternative from several alternatives; however, in the second case the purpose is to gather as much information about that option. As we argued in chapter 1, the supply of recreational destinations has increased during the last decades. Hence, it seems logical that each individual constructs his own set of alternatives. Thus, for the decision-making model in this study it is necessary that it allows for the construction of the choice set.

The second assumption in normative decision theory is that the traveller is aware of all attributes of each alternative; that is, he knows everything about each alternative. This poses another problem. After all, travellers who are aware of all attributes of all alternatives do not need to search for external information to decide between alternatives. It is assumed that in comparing alternatives, each attribute is compared and the alternative with the highest utility is chosen. Simon (1955) was one of the first to argue that the fully informed decision maker does not exist; rather, he argues, individuals follow certain heuristic procedures, such as the satisficing principle, which means that the first acceptable alternative is chosen. He argued that individuals cannot or are not inclined to actively perform extensive search processes, that is evaluate all attributes, before making a decision. Thus not all costs and benefits of all alternatives are evaluated and the alternative with the highest value is not automatically chosen. Furthermore, Simon added that the processing capacity of individuals is limited, which implies that, even if the individual was disposed to compare all attributes of all alternatives, he may not able to do so. Consequently, we need a model that can deal with imperfect and incomplete information on limited numbers of attributes and alternatives.

In contrast to normative behaviour theory, descriptive behaviour theory tries to explain how individuals choose between alternatives (Sirakaya & Woodside 2005: 816), while allowing for the possibility of incomplete information and limited alternatives. The main purpose of behavioural decision models is a) to identify the decision stages decision makers pass through and b) to illustrate this process by identifying the internal and external factors influencing this process (Sirakaya & Woodside 2005: 824). As descriptive decision theory meets the requirements of incomplete information and limited alternatives, the decision-making model developed in this chapter will be based on this theory.

3.3 Choice models: information processing perspective

Within decision-making theory, there are many different approaches (Payne *et al.* 1992: 89). As the role of travel information is the central concept within this study, only approaches that consider information as a central concept are considered. A widely accepted model that specifically incorporates the role of information is based on the information processing theory (Bettman *et al.* 1998; Engel *et al.* 1995; Crompton 1992; Van Raaij & Francken 1984). The theory is central in consumer choice models and in tourism destination choice models. Information processing

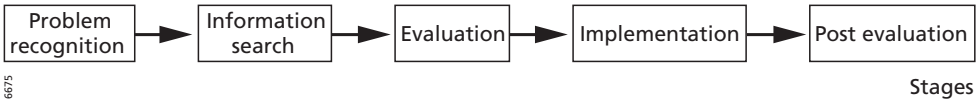

Figure 3.1 *The stages of the decision-making process*

theory divides the decision-making process into five separate stages: (1) problem recognition, (2) information search, (3) alternative evaluation and selection, (4) implementation and (5) post purchase evaluation (Sirakaya & Woodside 2005: 817).

In Figure 3.1 these stages are depicted in a sequential order. Related to the degree of involvement of the decision, stage 2 (information search) and stage 3 (evaluation) are executed to a larger or a lesser degree (see section 3.3.2 for details). For instance, the decision to use the car as the transport mode for commuter trips is made so often that the traveller no longer even considers searching for information for his mode choice. Fully based on experience, the car is selected as transport mode. However, for infrequent trips, the car trip to a theme park may present some unfamiliar aspects that warrant information search. It should be noted that although information search and evaluation are presented as two separate stages for clarity purposes, the stages are intertwined during decision-making (Engel *et al.* 1995: 207). For example, evaluating two alternatives may lead to the conclusion that additional information is needed.

Problem recognition
The first step, problem recognition, concerns the goal that the individual wants to pursue. This goal is established based on the perception of a difference between a desired state and the current situation, which in turn leads to the activation of the decision-making process (Engel *et al.* 1995: 176). For this study, these goals are selecting a recreational destination and selecting an appropriate transport mode. Since the problem recognition is already defined, this stage of the decision-making process is not described in more detail.

Information search
After the problem has been recognised, a search process for relevant information is started. Researchers distinguish between two types of information search: internal and external (e.g. Bettman 1979; Gursoy & McCleary 2004b; Engel *et al.* 1995; Srinivasan & Ratchford 1991). Internal information search involves searching the memory to determine whether enough is known about the available options (Engel *et al.* 1995: 147). How these options are selected is described in section 3.4. When there is not sufficient internal information available to make the mode or destination choice, then an external information search is started. An external information search means that information is collected from external sources.

Engel *et al.* (1995: 185) mention three characteristics of external information search, the degree, the direction and the sequence. The degree represents the total amount of search that is conducted, while direction specifies the specific content that is searched for. Finally, sequence encapsulates the order and timing of information search. Besides these three characteristics, a distinction should be made between searching and finding information. Consider the following example; a person is trying to decide whether to take the car or the bus to travel to a theme park. Based on previous

experience he knows that the bus servicing that route is very efficient and comfortable. However, that experience was three years ago and the person wants to make sure that the bus is still running. Therefore, he decides to search for the relevant information. However, even though the search process has been extensive, the relevant information cannot be found. Based on that result, the person decides to use the car as the alternative. Consequently, both searching for information (which provides information on the attributes the traveller needs to make a good decision) and finding the information (likely to be used in the decision) are relevant in determining the external information search.

Evaluation

The third step in the decision process concerns the evaluation of alternatives as to determine which one best meets the set goal (Engel *et al.* 1995: 206). Hence, the (relevant) attributes of the selected alternatives are compared. While comparing the attributes or alternatives, the individual uses decision rules to determine which alternative to select. There are a wide variety of decision rules that the traveller can deploy (see Burnett 2004). As an example, in utility maximisation theory the only decision rule is to select the alternative with the highest utility. As will be explained further on, this study does not determine which decision rules are used.

Determining the relevant attributes is the first step of the evaluation stage. As the processing capacity of individuals is limited, Bettman (1979) argues that only information (both internal and external) that is directly related to the relevant attributes is selected. Therefore, it is expected that (external) information is only sought for relevant attributes. Consequently, the information search (see previous section) is a proxy for the relevant attributes. To determine what the traveller considers relevant attributes, the actual use of the information, rather than searching for or finding information, is a more accurate proxy for the relevant attributes. As Engel *et al.* (1995: 297) suggest: "consumers should not only report what sources (or information) they consulted but also how useful and influential they found each source to be".

The second step of the evaluation stage is the deployment of the relevant decision rules that are used when comparing alternatives. As Markman & Medin (2002: 429) concluded, one theme that emerged is that there is no single process that will suffice to explain all kinds of decisions. Instead, people have a variety of strategies (decision rules) that they bring to bear on choices. For example, novel situations require specific rules not applicable to habitual situations. This is further supported by Tversky & Kahneman (1990): "*when faced with a complex decision problem, people employ a variety of heuristic procedures in order to simplify the representation and the evaluation of prospects. The heuristics of choice do not readily lend themselves to formal analysis, because their application is contingent on the method of elicitation, the formulation of the problem and the context of choice*" (Payne *et al.* 1992: 108). This has resulted in using clearly defined experimental psychological experiments to detect decision rules (Van Raaij 1977). As the main aim of this study is to determine the use and effect of travel information, the specific mechanisms behind the evaluation stage are not investigated in detail.

The third step is to select one alternative that will be implemented (see next stage). If there are no alternatives, no choice has to be made and no attributes of the alternatives have to be compared. Consequently, information is not used to compare alternatives but has another purpose. When

only one option is considered, we expect that information is used to better inform the traveller and thus decrease anxiety on whether this alternative indeed meets all the requirements or to enhance the pre-trip enjoyment. As the information is not used to compare alternatives, the evaluation stage is probably shorter than for travellers who do consider alternatives.

Implementation
This step is the implementation of the final option. In our case, travelling to and visiting a theme park are the implementation of the mode and destination choice. This stage differs from the previous and the following stage in the sense that it is not related to travel information but describes the displayed travel behaviour.

Ex post evaluation
The last step in the decision-making process is the ex post evaluation of the trip. Before the trip, the traveller had certain expectations concerning the selected alternative, and during the ex post evaluation it is determined whether or not this expectation was met. During the ex post evaluation, all previous stages of the decision-making process are evaluated. Thus, the information sought, the attributes that were compared and the alternatives considered are all assessed. As a result, the traveller evaluates both the outcome of the process and the decision-making process itself. Overall, the evaluation can take one of two forms – either satisfaction or dissatisfaction (Engel *et al.* 1995: 273). Either way, the internal information is updated for the following time such a decision needs to be made (see also chapter 4). However, it should be noted that in general negative experiences have a higher impact than positive experiences (Edwards 1996).

This analytical model provides a solid starting point for a decision-making process for recreational mode and destination choice as is presented in section 3.6. Nonetheless, the elaborateness of the stages in the model varies per decision-making process. Sirakaya & Woodside (2005: 816) argue that, based on the goal, decision-making level and type of involvement are two indicators widely used to explain these differences in the elaborateness of the individuals' decision processes. To understand how elaborate recreational mode and destination choice are, the following sections discuss which level of decision-making and type of decision can best be associated with these choices.

3.3.1 Decision levels
The first aspect is the level of decision-making. Each level affects the decision-making process in two ways; the level determines how often a choice is made and it also determines the decision's impact. For example, buying a car is an infrequent decision that influences other decisions for a long time, while the departure time choice, made several times a day, only impacts other decisions for a very short time. Moreover, decisions that are made frequently often have simplified processes, while infrequent decisions have elaborate processes.

Michon (1985) distinguishes three decision levels when driving a vehicle: strategic, tactical and operational. The latter are all elementary tasks involved in driving a car, such as steering and braking. The tactical level concerns the decisions that influence behaviour while driving, such as overtaking and changing lanes. From our perspective, the strategic level is the most relevant, encompassing all decisions made for the trip itself, such as destination, mode, route and departure time.

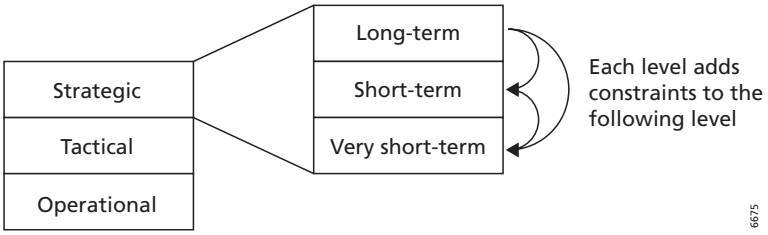

Figure 3.2 *The decision levels (based on Michon 1985 and Ben Akiva et al. 1994)*

While this distinction is valuable, Ben Akiva *et al.* (1994) proposed a further specification of the strategic level by inserting time scales as shown in Figure 3.2 (Ettema 1996: 12). They argue that at this level, decisions are long-term, short-term or very short-term and the distinguishable aspect is their time scale. This time scale relates to the planning horizon and the frequency of the decisions. The long-term decisions, also called lifestyle and mobility decisions, are made once every few years (low frequency) and then influence shorter-term activities and behaviour (long horizon). Examples are residential location, car ownership or work location. These choices affect the environment in which future decisions are made by placing restrictions on or creating possibilities for certain activities and trips. For instance, the residential location determines the access to road infrastructure and the public transport network.

The second level that Ben Akiva *et al.* (1994) distinguish contains the short-term decisions, or daily activity scheduling decisions. These are the decisions whether or not to pursue an activity or sets of activities and the implications on travel choices such as mode, duration, timing and sequencing. Thus, these concern the actual implementation to perform an activity and trip (Ettema 1996: 15). These decisions are interrelated; they influence each other's outcome by forming opportunities and constraints. For example, once the activity and the location are determined the choice for mode and route becomes constrained. Another example is that vehicles and public transport have different duration and timing considerations.

The schedule made in the previous phase is monitored and adapted in response to unforeseen circumstances. When such circumstances arise it may be necessary to re-evaluate the current schedule and revise it accordingly. These decisions are labelled very short-term decisions or rescheduling decisions. An example would be to change route after an accident has happened. The rescheduling decisions; adding or deleting an activity, use of mode, duration and route choice; are the same as the previous phase. However, there are additional constraints based on the current activity schedule.

Based on the above description of the decision horizon, we determine that recreational mode choice and destination choice are both short-term decisions. Consequently, long-term decisions, such as car ownership and residential location, may affect mode and destination choice. These are treated as external factors which are discussed in section 3.5.

3.3.2 Type of decision

The second aspect that determines the model of decision-making process needed for recreational mode and destination choice is the type of decision, which is closely related to the level of involvement into making a decision. Hereby high-involvement decisions are associated with extensive problem solving (Sirakaya & Woodside 2005: 816; Engel *et al.* 1995: 161). Engel *et al.* (1995: 156) define extensive problem solving as being open to information from various sources while being motivated to undertake the effort to make the right choice. On the other side of the spectrum, low involvement decisions are described as: *problem recognition leads to direct implementation; extensive search and evaluation are avoided because the choice does not assume great importance* (Engel 1995: 156). Many decisions belong somewhere between these two more extreme types of decision-making.

Svenson (1998) discusses the type of process by distinguishing four decision levels based on the degree of familiarity with the problem. The first and the second level consist of automated responses based on the attractiveness of the alternatives where no deliberate trade-off is made: the first level consists of habitual choices while the second allows for considering more alternatives. The third and fourth level decisions involve active consideration of the alternatives. Trade-offs between positive and negative aspects of each alternative are used. Third level decisions are somewhat familiar, i.e. they have been made before, while level four decisions concern a new and unfamiliar problem.

It is not immediately clear which type of decision recreational mode and destination choice are. After all, the majority of travel choices are made with some regularity (Gärling *et al.* 1998a). It is therefore reasonable to assume that these choices are made on a more or less habitual basis. However, recreational mode decisions are not made regularly, while recreational destination choices are made even less regularly. The type of decision is further determined by the degree to which a choice is deliberate. Gärling and Garvill (1993: 278) note that, in general, this degree is to a large extent determined by the perceived behavioural control. We expect that travellers perceive that they have more behavioural control over recreational trips (e.g. no fixed time to arrive, ability to select any destination) than over other trip motives. Based on the assumptions that recreational mode and destination choice are irregular and are to a large extent deliberate choices, it seems logical to treat these choices as third level decisions. These decisions are considered to be towards the extreme of high-involvement in the decision-making spectrum.

To summarise, recreational mode and destination choice are short-term high-involvement decisions. Engel *et al.* (1995) argues that high-involvement decisions are often elaborate choices; that is, all stages in the decision-making process are (completely) executed.

3.4 Choice set formations

An essential aspect of the decision-making process is the selection of alternatives, as the selected alternatives affect the subsequent information search. The information processing perspective does not adequately describe the selection of choice alternatives. Therefore, the theoretical model based on information processing theory needs to be extended with another approach. An

accepted approach is a construction of relevant alternatives based on the pursued goal (Bettman *et al.* 1998: 188). The first question is whether it is necessary to consider alternative modes or destinations (Markman & Medin 2002: 427). For example, for a daily decision, the traveller may no longer actively consider alternatives but will use the same transport mode daily. However, we concluded in the previous section that recreational mode and destination choices generally are expected to be high-involvement decisions with an active decision-making process. Thus, the chance that alternatives are considered is considerable.

One method that describes the selection of alternatives is the choice set formation. The choice set formation is applicable to new or modified decisions where information search and evaluating alternatives are likely (Crompton 1992: 421). In common with other behavioural decision models, choice set models attempt to identify the decision stages decision makers pass through and illustrate the internal and external factors influencing decision processes (Sirakaya & Woodside 2005: 824). However, the approach starts with the sets of alternatives that could be considered during the decision-making process (Crompton 1992). Sirakaya & Woodside (2005: 824) argue that the choice-set approach was initiated as an alternative and more practical perspective to behavioural approaches. In tourism destination choice research, the information processing theory was generally criticised as being too complicated to test empirically. To start with a set of alternatives and to investigate the selection of alternatives could mean that more applicable results are found.

Um & Crompton (1990) investigated the different research initiatives that were made in the tourism decision-making literature. Based on their analyses, they developed a funnelling process that the decision maker goes through when conducting a decision-making process. This funnelling process implies that the decision maker starts with many alternatives that are progressively eliminated until only one alternative is left over. However, not all of this process is consciously executed. The choice sets Um & Crompton (1990) distinguish are the awareness set, the evoked set and the final decision. Crompton (1992: 421) describes this process as follows; "*[A traveller] develops an initial set of destinations, widely known as the awareness set, then eliminates some of the destinations to form a smaller late consideration or evoked set and finally selects a destination from the late consideration set*". This process is illustrated in the figure below.

The first step consists of an initial (internal) information search that is conducted to evaluate and reduce the alternatives in the awareness set to a small number of probable destinations (see Figure 3.3). It is, of course, possible that the decision maker concludes that one option is sufficient. The second stage involves a more thorough active (external or internal) search to determine which of these alternatives is selected (Crompton 1992: 422).

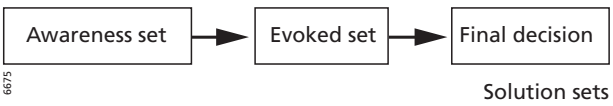

Figure 3.3 *Choice sets in decision-making process*

The construction of the choice sets is different per goal that is pursued. In particular, it seems logical that the construction of an option set is different per type of decision. Mode choice has a limited number of alternatives; decision makers would roughly have a choice between a car, public transport, a bicycle or walking. Most decision makers would have, at least, some experiences with all these transport modes. They may even have a strong preference for one of these modes. However, destination choice offers more alternatives. Most travellers may not even be aware of the recreational destinations that could be visited. Therefore, we assume that the construction of the choice set for destination choice is more complicated than for mode choice.

3.5 External factors affecting decision processes

Understanding and interpreting the decision-making process cannot be accomplished without considering the effect external factors have on this process. Therefore, the second purpose of behavioural decision models is to illustrate the decision process by identifying the internal and external factors influencing this process (Sirakaya & Woodside 2005: 824). Van Raaij (1977: 7) was one of the first to conclude that the individual properties of the decision makers and the environmental factors influence the choice process and its outcome. Several other researchers in descriptive decision theory have argued that these external factors are essential in understanding the decision-making process. It is essential to understand how external factors affect the decision-making process because it enables the policy maker, as well as the information provider, to understand which information and attributes are relevant to the different decision makers (travellers).

These external factors influence the various steps in the decision-making process such as information search and the relevant attributes. Furthermore, the formation of the choice set is affected by external factors. To illustrate how the external factors affect the decision-making process and the choice set formation, we will use some examples. The formation of the choice set can only be based on alternatives known and available to the decision maker. For example, someone living in a rural area may perceive they have no access to public transport and will therefore never consider public transport as an alternative in the choice set. Moreover, relevant information and essential attributes are constructed based on the expectations of the decision maker. Thus, that person living in a rural area may find information related to public transport irrelevant. Another example concerns the travel party. A travel party with young children may find information on special attractions for young children and facilities (e.g. changing rooms) in the park relevant, while this information is less significant for a travel party with only adults. Related to the attributes of each alternative, lower income groups may find the price (entrance fee) of the destination the most essential attribute, while a high-income group may find the attractions in the park more important.

Like Van Raaij, several other researchers have concluded that external factors are essential in understanding the decision-making process. Specifying and integrating external constraints such as the personality and the socio-demographic characteristics into consumer choice models, for example, has been shown to improve the predictive power of the estimated models (Um & Crompton 1990: 433). The impact of these situational factors and individual factors becomes even

larger when the goal pursued is more cognitively based; that is, when the decisions are made deliberately (Markman & Medin 2002: 432). Markman & Medin (p.450) even state that novice and experienced travellers (difference in individual factors) deploy different strategies when it comes to the same choice problem. To illustrate, experienced travellers may go beyond the information given to infer which alternative is best suited or the experienced traveller may be able to retrieve a possible outcome without having to compare attributes.

Thus, there are many external factors with a potential impact on decision-making processes. The question is how to incorporate these factors in the theoretical framework? The first step is to categorise the different external factors in a limited number of categories. Most researchers in the field of descriptive decision theory focus on the environmental (situational) and individual factors (Um & Crompton 1990; Payne *et al.* 1992; Markman & Medin 2002; Sirakaya & Woodside 2005). Van Berkum & Van der Mede (1996), who looked at the impact of traffic information on route choice, argued that the decision-making process is not only determined by environmental (or trip) and individual factors but also the characteristics of the external information. This study also specifically looks at the impact of travel information on the decision-making process. Therefore, the distinction environment – individual – information is applicable to explain the differences in the travellers' decision-making processes. At first glance it may seem that the individual factor cannot be seen as an external factor. However, the individual factors are often long-term characteristics that influence many short-term decision processes. However, experiences gained during the processes are used to update individual factors. To understand which environmental, individual and information factors are relevant and to determine their possible impact on the decision-making process, chapter 4 describes all relevant external factors in more detail.

3.6 Theoretical model

Thus far, several aspects of the decision-making process have been discussed. In this section these aspects are combined in a theoretical model that describes the decision-making process related to recreational mode and destination choice with an emphasis the role of information. The theoretical model will be used as a guideline for the data analyses and interpretations. The theoretical model has an analytical basis; this means that some stages may take longer than others and that feedback loops can occur. The overall theoretical model is presented in Figure 3.4.

The theoretical model is a combination of the stages the individual goes through when making a decision, and the choice sets that are considered. Since both approaches describe the same issue but from a different angle, there are many interactions between the choice sets and the stages in the decision-making process. First, shortly after the problem has been recognised, the awareness set is established. Second, information search, evaluation and the evoked set interact constantly until a choice has been made. To illustrate this interaction: several alternatives may be considered and an information search conducted on these alternatives. Subsequently, when the alternatives are compared, some alternatives are rejected but for the other alternatives, an additional information search is needed. This part of the decision-making process is most relevant to this study, since it specifically focuses on the role of information. We will return to this topic shortly. Third, the implementation starts after the final decision has been made. As Figure 3.4 shows,

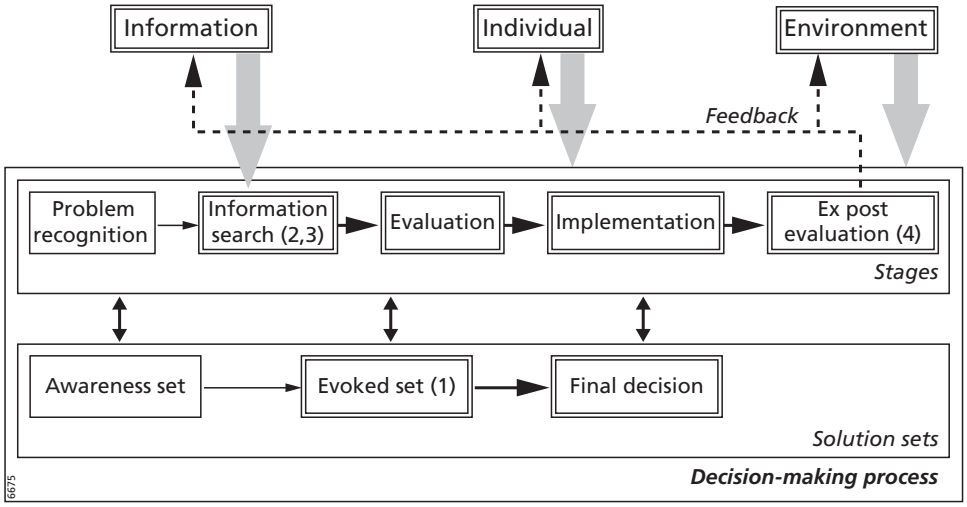

Figure 3.4 *The theoretical model*

the external factors do not all affect the same stages in the decision-making process. Thus, to incorporating external factors in the decision-making process (see also section 3.5) it is necessary to determine when, i.e. during which stages, these external factors affect the decision-making process. Um & Crompton (1990: 435) argue that the situational and individual factors affect the evoked set formation, while the external inputs and stimuli (i.e. information factors) only start to impact the decision-making process after the evoked set has been formed. This would mean that the environmental and individual factors have an impact on the entire decision-making process and choice set formation. However, the information factors only start to have an impact on the decision-making process after the decision to search for external information has been made. This is logical because only after deciding that external information is needed and the actual search process has started is it possible for the information factors to affect the decision-making process.

With the research goal in mind, it is clear that not every step in this process is equally important. Four aspects are identified to characterise the decision-making process and to uncover the specific role of information. Hence, based on these aspects the third research question is: *"What is the actual information search behaviour, which information is used in the recreational mode and destination choice and what is the impact on travel behaviour?"*. Moreover, these aspects reveal to what extent the recreational mode and destination choices are indeed high-involvement decision. As high-involvement decisions lead to an elaborate decision-making process, these travellers are more likely to search for external information and to consider several alternatives. Therefore, we expect that recreational travel behaviour can be influenced more readily by new travel information services. The numbers in the figure above present, for this study, the most relevant aspects that the individual considers during recreational mode and destination choice. These aspects are the main focus of this study.

1. Choice set formation
Markman & Medin (2002: 440) argue that in a more natural setting, the set of options considered has to be generated. Since the construction of the choice set is a funnelling process and the decision maker may only be aware of the last few alternatives, we have focussed on the alternatives present in the evoked set (see section 3.4). For some decisions, for example mode choice, there may be a habitual choice or there may not be an alternative. Or as Markman & Medin (2002: 452) have noted: experts can bring domain knowledge to bear on a choice and thus may be able to retrieve a possible solution without having to compare a set of options. In these cases no alternative is selected. Thus, the elaborateness of the process is dependent on the number of alternatives (Jeng & Fesenmaier 2002: 24). The selection of the choice set is the first central aspect in understanding the decision-making process.

2. Considering external information
The second aspect central in determining the individual's decision-making process is whether or not external information is needed. When the internal information search offers sufficient information on the relevant attributes no external information is needed. It is expected that a traveller who skips (a part of) the second stage of the decision-making process (information search) conducts a less elaborate execution of this process. Moreover, this aspect determines who uses external information in his or her decision-making process.

3. Information search behaviour
Engel *et al.* (1995: 184) have argued that the information search is characterised by three dimensions, the degree (total amount of information), the direction (content of information) and the sequence (order of information search). Each dimension discloses a part of the information search behaviour. Particularly, the content of information is relevant since we expect that travellers compare alternatives on the relevant attributes, and that the information items sought are a proxy for these relevant attributes. To fully capture the information process, we have separated the information search behaviour in several (consecutive) steps: searching, finding, using, and decisive (see also section 3.3). However, these consecutive steps only apply to travellers with an alternative, since they use the information to evaluate the alternatives. Those without an alternative only use the information to support the current decision, so only searching and finding information is relevant.

4. Ex post evaluation
The last aspect of the decision-making process that is relevant in this study is the ex post evaluation. The previous three aspects are affected by external factors. However, the relationship between decision-making processes and the external factors is reciprocal; i.e. not only do the external factors affect the ex post evaluation, the results of the ex post evaluation are used to update perceptions of the information, the individual and the environmental factors.

These four aspects are used to empirically describe the recreational mode and destination decision-making process and the use of information within this process.

3.7 Conclusions

The goal of this chapter was to establish a theoretical model that described the decision-making process behind recreational mode and destination choice. The model that presents the decision-making process is a combination of the stages the individual executes (based on information processing theory) and the formation of the choice set. The main added value of this theoretical model is that is combines several approaches to reveal the role of information in decision-processes. The theoretical model is made more realistic by incorporating external factors that colour the perception of the decision maker. Building on previous research, we concluded that recreational mode and destination choices are short-term high-involvement decisions. This means that the decision-making processes for these choices are elaborate, i.e. that all stages are executed. Four aspects of the model are particularly relevant in this study: choice set formation, using external information, information search behaviour (to understand which information is used and searched for by decision makers) and ex post evaluation. These aspects are relevant, because they reveal the role of travel information in the decision-making process, and are therefore used to answer research question three: *"What is the actual information search behaviour, which information is used in the mode and destination choice and what is the impact on travel behaviour?"* empirically. In addition, the level of involvement of recreational mode and destination choice is verified by these four factors; decision makers will perform most of these aspects when these choices are indeed high-involvement decisions.

The next step is to further tailor the model to recreational mode and destination choice. This is achieved by discussing the relevant external factors that affect the decision-making process. The external factors are examined in the next chapter.

4 External factors influencing decision-making processes

4.1 Introduction

Chapter 3 described the theoretical decision-making process for recreational trips with a special emphasis on the role of travel information. We concluded that understanding the decision-making process itself was insufficient to predict or understand travel behaviour as long as the external factors influencing this process were not incorporated. The objective of this chapter is to describe how external factors influence the decision-making model; thus it contains the conceptual relationships between external factors, information use and recreational travel behaviour based on previous empirical and theoretical research efforts. By doing so, the theoretical answer to research question 2: "*What are the key external factors that affect the decision-making process for mode and destination choice, and how do they affect the role of travel information*?" is provided.

In chapter 3 we argued that many external factors influence information use and travel behaviour and here we could mention many different research attempts (Beatty & Smith 1987; Srinivasan & Ratchford 1991; Verplanken *et al.*1997). Therefore, we started with a simple model that categorised the essential factors into a few categories. Van Berkum & Van der Mede (1996: 20) built a model with three categories of external factors that influence the decision-making process: information – individual – environmental (see Figure 4.1). This distinction between external factors is also necessary to determine the impact of the external factors on the different stages in the decision-making process. As argued in section 3.6, the main aspects of the decision-making process that are scrutinised in this study are choice set formation, considering external information search, information search behaviour and ex post evaluation. To determine information search behaviour, both degree and direction of search are required (Engel *et al.* 1995: 185). The individual and

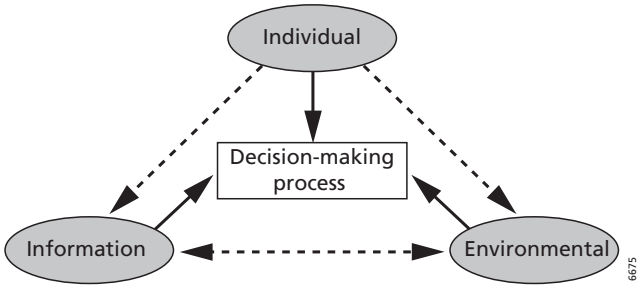

Figure 4.1 *External factors influencing the decision-making process*

environmental factors affect all stages in the decision-making process while information factors only influence information search behaviour.

Finally, the categorisation makes clear which change in an external factor may lead to changes in the decision-making process. For example, if the alternatives in the choice set are limited by a situational (or trip) factor such as bad accessibility or insufficient parking facilities, the change in behaviour could be reached by changing the spatial planning in that area. However, if behaviour is strongly based on a person's habitual mode behaviour, stimulating a change in behaviour is not easily attained.

Each aspect of this triad potentially affects the decision-making process. The information factors are discussed in section 4.2, in relation to the information search behaviour. For the individual and the trip factors (respectively section 4.3 and 4.4), the relevant factors in relation to all four aspects of the decision-making process are discussed. The chapter concludes with a short discussion on the presented theoretical model and the implications for the remaining chapters.

4.2 Information factors

The purpose of this section is to discuss, with reference to current literature, how the relevant factors of travel information affect the decision-making process. As argued in section 3.5, information factors do not affect the choice set formation or the consideration of external information search. Therefore, only the effect on information search behaviour is discussed in the following sections. To determine what the relevant information factors are, one can look at the demands placed on travel information. These demands are that travel information needs to be correct/reliable and has to be presented at the correct time (Khattak *et al.* 1999; Katteler *et al.* 2002). Thus, reliability and timing are relevant factors for the acceptance and subsequent information use. As travel information invariably comes from information sources, the reliability of both source and the actual information needs to be taken into account (Fodness & Murray 1998: 109).

To interpret how external factors affect decision-making, we need to know how information is generally classified and which classifications are relevant in our study. Therefore, we first provide a review of possible classifications before discussing the effect of information factors on information search behaviour.

4.2.1 Classification of information

Travellers acquire and process information through an ongoing information search and store the processed information in their long-term memory (Bettman 1979). Researchers distinguish between two types of search processes: internal and external. Engel *et al.* (1995: 183) define internal search as retrieval of knowledge from memory, while external search consists of collecting information from external sources. During the decision-making process, travellers first scan their memory for relevant information. Based on this information search, travellers decide to search for external information. However, when internal search reveals sufficient information, it is obvious that external information search is not needed (Beatty & Smith 1987). Interaction

between internal and external information search is obvious; once relevant external information is found, it is compared to internal information. When the external information conflicts with internal information, an interrupt occurs (Bettman 1979). This either results in more information search or in rejecting the external information.

In transport research, the focus is often solely placed on the external search (Jou *et al.* 1997; AVV 2003). This study investigates the use and effect of external information, while incorporating the use of internal information via 'experience' (see section 4.3.2). Information can be defined in many ways. Usually information is classified by its attributes; for instance by the difference between internal and external information. The following list contains the most common attributes of external information. It is by no means exhaustive, however, it does portray the different interpretations researchers attach to the term information. In Figure 4.2 the attributes are presented graphically.

- *Static* versus *dynamic*: this attribute indicates whether the information remains the same over longer periods of time or changes quickly. Static information is, for example, opening hours or attractions of a theme park, while dynamic information is travel time by car. The example illustrates that destination information generally has a more static nature than mode information;
- *Collective* versus *individual*: this attribute indicates whether the information is tailored to a specific question. Collective information is the same for all travellers while individual information is tailored to the wishes of the traveller. An example is a door-to-door travel advice (individual) versus congestion information via the radio (collective);
- *Mode* versus *destination*: this relates to the content of information. Information concerning the actual trip, e.g. travel time or accessibility, is labelled mode information. Some researchers speak of traffic information when it concerns car travel (Van Berkum & Van der Mede 1996), while travel information is used for public transport. Since both travel modes are relevant, we use the term mode information. Travel information may concern more than just the trip but can also include information on the destination (such as entrance fee or facilities in the park) or other issues. In this thesis, the term travel information is general and captures mode information and destination information. We expect that mode information is most relevant in mode decision and destination information in destination decisions;
- *Prescriptive* versus *descriptive*: this attribute indicates how the information is presented. Prescriptive information tells travellers what to do, for example 'take the next left'. Descriptive information simply conveys information on e.g. network conditions that the traveller needs to interpret (Van Berkum & Van der Mede 1996: 21).

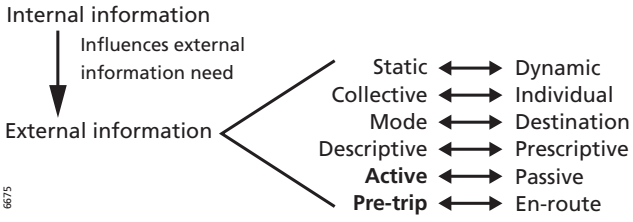

Figure 4.2 *Information attributes*

In this study the above-described information attributes are relevant in explaining information use and search behaviour. For example, a traveller's experience with theme parks may affect the use of static information (less use) differently than the use of dynamic information (same use). However, both values of attribute (either static or dynamic) are equally relevant in this study. For other attributes, the values of the attribute are not equally relevant. Rather, this study particularly focuses on only one value of these attributes. These attributes are now discussed.

- *Active* versus *passive* (pull versus push): this attribute indicates whether the individual actively sought the information. Active information search is called pull-information, while unasked stimuli such as media campaigns and advertisements are push information (Salomon & Koppelman 1992: 192). Passively acquired information is often part of an on-going search process, which may result in experience on that subject (Jeng & Fesenmaier 2002). An example of push information is the congestion reports on the radio. Although the effect of passively received information should not be underestimated (Jeng & Fesenmaier 2002; Gursoy & McCleary 2004), it is complicated (for respondents) to remember which information was used. However, recalling actively sought information is less challenging for the respondent. Furthermore, the development of an information system for recreational travel will benefit most from knowing which information is sought actively. This study focuses solely on actively searched for information;
- *Pre-trip* versus *en-route*: this attribute concerns the timing of information search. Information sought before the actual visit or trip is considered to be pre-trip information. Further information acquired during the trip is then called en-route information. Related to the decision level described in section 3.3.1, the pre-trip information is generally used to make short-term decisions while rescheduling decisions often need en-route information. Since we assumed that recreational mode and destination choice are short-term decisions, pre-trip information is most valuable in the decision-making process. Consequently, the use of information in this study is limited to pre-trip information.

Now that travel information is classified as pre-trip information that is actively sought by the traveller, we are able to describe the relevant information characteristics.

4.2.2 Information sources

The first issue is to identify the (potential) sources that the traveller may use to search for travel information. The variety of sources travellers use when searching for relevant information has received abundant attention in tourism information research, particularly related to destination choice. For example, Engel *et al.* (1995) distinguish four sources; (1) personal sources of information from friends and family; (2) commercial sources; (3) public sources such as television and newspapers; and (4) experimental sources based on direct use or observation (Fodness & Murray 1998: 109). Comparing these sources to the classification made in the previous section, we argue that, particularly in the context of a single trip, experimental sources based on direct use or observation can be classified as experience. Consequently, this source is internal rather than external. Therefore, we prefer the distinction proposed by Snepenger & Snepenger (1993), who only suggest external sources for information acquisitions. They suggest four broad external sources when planning trips: family and friends, destination specific literature, media such as newspapers, and travel consultants (Gursoy & McCleary 2004a: 356). In the same article, Gursoy and McCleary argue that the internet should be added as another external source. The internet

is another form of media (such as newspapers or television), however, the possibilities of the internet, as is discussed further on, merit mentioning it separately. The use of mobile phones and text-messages is another form of media that has become more relevant in the last few years.

How often are these types of sources actually deployed by travellers? For tourism destination choice, Gitelson & Crompton (1983) reported that 74% of all respondents had received travel information from friends and relatives, whereas 20% of the respondents had received travel information from newspapers and magazines (Um & Crompton 1990: 434). More recently, Vogt & Steward (1998: 509) showed that for holiday destination choice and trip planning, brochures and information provided by family and friends were still very popular sources of information. Related to actual trips, empirical research showed that before the rise of the internet the main sources for traffic information were radio, television, telephone and maps (Khattak *et al.* 1999; Jou *et al.* 1997).

Box 4.1 Internet access in the Netherlands

In 2004, 66 percent of the Dutch population over 12 was a regular internet user (CBS 2005a). This number strongly increases when the older generation is left out. Figure 4.3 illustrates the number of users per age group. Further analyses performed by Statistics Netherlands showed that education level correlates to the level of internet use; that is to say the higher educated are more often internet users (CBS 2005a).

Not only has the use of internet increased, the connections have become faster. According to the OECD, the Netherlands held the second position, after Korea, for highest penetration of broadband connections (2005b).

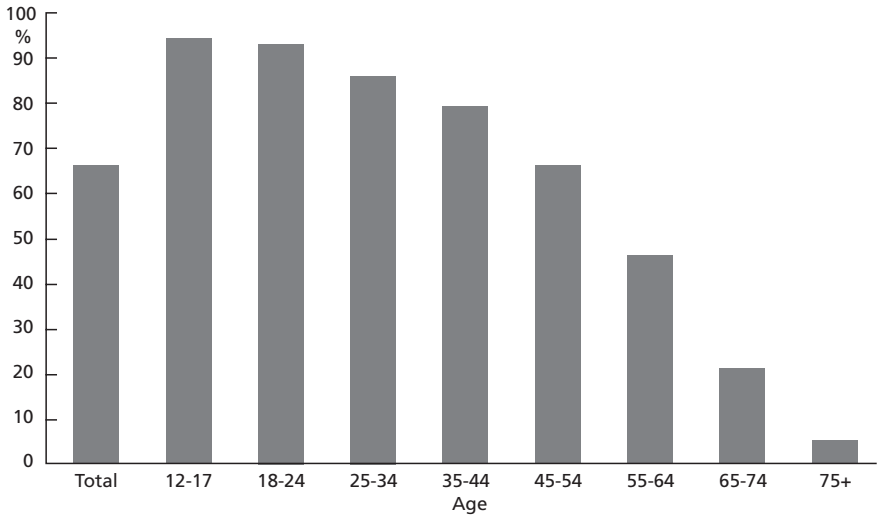

Figure 4.3 *Internet use in the Netherlands in 2004 (CBS 2005a)*

The increase in internet access has strongly affected the use of information sources. Empirical research showed that, in recent years, the internet has taken a strong hold in any information search processes (Farag 2006; AVV 2004). Patten *et al.* (2003) were one of the first to report the use of internet as an information source based on a 2001 survey conducted on the Pennsylvania Turnpike (USA). They found that the main sources were internet (26%) and television and radio (together 47%) (p.7). More recently, AVV (2004: 14) found that internet use as a pre-trip information source had risen from 0% in 2000 to 18% in 2002 (AVV 2004: 14). In this study, the internet was seen as a relevant source next to other sources such as teletext or television.

The internet has been adopted fairly quickly as a main information source (see also box 4.1). The use of text-messages has been less successful as an information source. With a higher penetration rate than the internet, the possibilities seem large. Vermeulen & de Jong (2003) found that text messages were used frequently for en-route information acquisition but infrequently for pre-trip information acquisition. We assume that this is due to the nature of text messages; the size of the message is much smaller and the available pre-trip information services limited. Furthermore, no other study was found that proved the use of text messages as a source for pre-trip information acquisition.

Given the high access to the internet, particularly for the younger generation, and the strong increase of using the internet as an information source (e.g. from 0% in 2000 to 18% in 2002 (AVV 2004: 14)), we expect that the internet will be the most utilised information source. Information search is expected to be easier: more information is available and the monetary costs are low, particularly for broadband connections. However, information search does not become unlimited with the introduction of the internet; time spent searching online and processing effort ultimately limits the information search (Gursoy & McCleary 2004a: 356). For static information, we assume that more old-fashioned sources such as newspapers, television and telephone will remain relevant information sources. Thus we expect that all sources will be used for information acquisition with emphasise on internet use.

4.2.3 Reliability

The second information factor is the reliability of information, for information quality is based on the perceived reliability, comprehensibility and timeliness of the information (Khattak *et al.* 1999; Katteler *et al.* 2002). Consequently, the perceived reliability of information partially determines whether the information is used in the decision-making process (Srinivasan *et al.* 1999: 4; Lappin & Bottom 2001: 24). If the reliability is perceived to be low, the information or the source used to gather the information is discarded. Here, the actual reliability is secondary to the perceived reliability. For example, if travel time to work generally takes 45 minutes and the travel information claims that the travel time will only be 20 minutes, the traveller will not change his departure time since the information is perceived as unreliable. More precisely, several studies (Khattak *et al.* 1991, 1999; Polydoropoulou & Ben-Akiva 1999) have demonstrated that the perceived reliability of pre-trip information determines whether the information is used in the decision-making process (Lappin & Bottom 2001: 22).

Reliability relates to both source and actual content of the information. As Wenger *et al.* (1991) and Schofer *et al.* (1993) show, the source, regardless of the content, influences travel behaviour

(Khattak *et al.* 1999: 4). Thus, the source reliability determines whether or not the source is used, while the content reliability determines whether the specific information is used in the evaluation stage (see figure 3.1). Consequently, we expect that source reliability is assessed first, followed by an assessment of the perceived reliability of the content. Since we emphasise the active information acquisition, we expect that the source reliability is in general less important to the traveller than the content reliability. Since the traveller who actively acquires information has probably already selected the source(s) he is going to use. Assuming that only credible sources are selected, only the content reliability needs to be assessed.

As described previously, the traveller's perception of content reliability is an important determinant of information use. Kantowitz *et al.* (1997) showed that information does not have to be 100% reliable. They reported a "reliability-threshold", beneath which travellers simply ignore travel information messages (Lappin & Bottom 2001: 43). Furthermore, their research showed that accurate information in familiar settings is used less effectively than in non-familiar settings. At the same time inaccurate information was more harmful in the familiar setting. Because experienced travellers can compare external with internal information the inaccurate information may lower perceived reliability. Therefore, they suppose that travellers are tolerant of a certain error in the information, although travellers with higher familiarity will expect more reliable information. Although Kantowitz *et al.* looked at the use of en-route information, we assume that the same applies to pre-trip information.

Reliability is not a fixed attribute; new experiences will lead to updating the perceived reliability. Furthermore, the actual trip reveals how far the perceived reliability of the information matched the actual reliability. A positive experience will enhance the perceived reliability of source or information, while a negative experience will decrease the perceived reliability. Furthermore, Edwards (1996) indicates that negative experiences have a stronger impact than positive experiences. We expect that information found from reliable sources is usually perceived as (highly) reliable. Otherwise the reliable source would not have been selected. However, during or after the trip, the traveller may find that the information that was found is less reliable than originally thought. This raises the question as to what extend the pre-trip reliability is similar to the post-trip reliability. This is a relevant question because the post-trip reliability is used to update internal information and too many negative evaluations may decrease the chance that information is used in the decision-making process. Since inaccurate information is more harmful for familiar travellers (Lappin & Bottom 2001: 43), we expect the difference between actual and perceived reliability to be larger for familiar travellers than unfamiliar travellers.

In conclusion, we expect that source reliability is generally high as the traveller only uses credible sources for active information search. However, the content reliability does determine whether or not the information is used in the decision. Furthermore, we expect that the perception of reliability changes over time, mostly towards finding the content less reliable.

4.2.4 Timing

The last information factor influencing the use of information is timing (Khattak *et al.* 1999). As Bettman (1979) argued, timing in the decision-making process is important, since travellers only search for information that is relevant at the time that the information is sought (relative to the

time that the trip is executed). This raises the question as to when the information is 'on time' and how often the information is needed in the decision-making process. Particularly since decisions concerning a single trip need not be taken at one moment in time, but may be spread out over a longer period (Dellaert *et al.* 1998: 314). Therefore, it may be necessary to search for information several times before the actual trip (Lindh 1998). However, no studies were found that reported frequency of information search for recreational trips. Hence, this study may indicate when and how frequently information is sought in recreational mode and destination choices.

If decisions concerning a single trip are not always made at the same time, it is interesting to determine whether destination and mode choice are made separately or jointly. For the one decision may pose additional constraints on the other (Hägerstrand 1970). For example, if the chosen mode is a bicycle, the destination choice is further constrained by the maximum action radius of a bicycle. We suspect that the goal that is being pursued determines which choice is made first. As the destination choice is more closely related to the goal, we expect that this choice to be made before mode choice. This assumption is supported for complex tourism decision-making, as Fesenmaier (1995) reported that destination choice was made first (Dellaert *et al.* 1998). The results will show whether the complexity of tourism decision-making processes and recreational decision-making processes are similar. Given that evaluation (stage three) and information search (stage two) of the decision-making process are closely related (Crompton 1992), also on a temporal dimension (Jeng & Fesenmaier 2002), we expect that information search for destination choice is performed before information search for mode choice.

Besides the recognition that timing is relevant in the information search behaviour, few studies have been found that report when information search processes start or how frequently they are executed. Since decisions relating to a single trip can be made separately, we assume that the destination choice is generally made prior to the mode choice.

4.2.5 Summary

Information can be defined in multiple ways. We argued that only the actively sought pre-trip information is considered in this study, all other classifications are not directly relevant. The purpose of this section was to describe the possible effects of the information factors on the information search behaviour of travellers related to mode and destination choice. Relevant information factors are sources, reliability and timing. To what extend are the relationships assumed between each factor and the decision-making process are correct is described in chapter 7 and 8.

4.3 Individual factors

The second external factor that affects decision-making processes is the decision maker. The decision maker brings his ideas, his attitudes and his experience to each decision; that is, he assesses the choice from his own perception of reality.

Which individual factors are essential in describing the decision maker? Jeng & Fesenmaier (2002: 18) argue that the behavioural process contains the decision maker's motivation,

knowledge, attitude, personality and socio-demographic characteristics. Engel *et al.* (1995: 291) mention nearly the same factors to explain individual differences in decision-making processes: namely, knowledge, attitudes, motivation, personality and economic resources. However, there is no consensus on a minimum set of essential factors. For example, in Information Processing Theory the essential individual factors are motivation, goals and internal information (Bettman 1979). Although internal information and knowledge can be considered the same factor (Gursoy & McCleary 2004a: 355), Bettman does not recognise the importance of attitudes, personality or socio-demographic characteristics. Another factor related to the decision maker is the amount of habit that is brought to the decision-making process. Although habit is not recognised as such by the previous researchers, its relevance has been proven within travel research and using travel information (Verplanken *et al.* 1994, 1997; Gärling *et al.* 1998b). In this study all factors mentioned above are assumed to be essential individual factors. How socio-demographic characteristics, experience (proxy for knowledge), attitudes, personality, habit and motivation affect the different stages of the decision-making process is discussed in this study.

The perception the decision maker brings to mode and destination choice extents to all stages of the decision-making process. Practically this means all three main aspects (choice set formation, the decision to search for external information, and the actual information search process) are affected by the individual factors. Consequently, the impact of each factor on these aspects is discussed. Discussing each factor separately may suggest that they are not correlated. This is partly true; the factors have different time horizons (see also 3.2.1) and are related to specific topics. However, the individual factors do affect each other. In the following sections the more specific relations between the different factors are discussed along with the effect of the factor on the decision-making process. Furthermore, possible differences between mode and destination choice are discussed.

In addition to the way socio-demographic characteristics, which also include economic characteristics such as income, affect decision-making processes, they are also used for another purpose. Since these characteristics mean the same for everyone and permit comparison over time and between decisions (Engel *et al.* 1995: 295), they are often used to determine 'market shares'. However, this traditional method of segmenting travellers is challenged by the segmentations that are based on attitudes or personality. Which segmentation is most suited for recreational mode and destination choice is determined in chapter 8.

4.3.1 Socio-demographic characteristics

An individual's socio-demographic characteristics include gender, age, household composition, employment status, education level and income. Socio-demographic characteristics offer two advantages that help divide travellers into distinctive groups. First, these characteristics are considered to be long-term variables, implying that they generally remain the same for a longer period of time particularly compared to the short-term decision-making processes, such as mode or destination choice. Furthermore, the characteristics remain constant for all trip motives. Since the individual factors affect the entire decision-making process, the possible impact of socio-demographic characteristics on all three aspects is discussed in this section. For the construction of the evoked (or choice) set, Srinivasan *et al.* (1999: 3) argue that the socio-demographic characteristics place restrictions on the budget, time and activity patterns. This would in turn

determine which alternatives in the awareness set are the feasible alternatives. These feasible alternatives could then become part of the evoked set. For example, a family with young children may find public transport bothersome and consequently feel that there is no other choice than using the car. At the same time, not all theme parks are geared towards young children, limiting possible theme park destinations. However, no studies were found that investigated the exact effect of socio-demographic characteristics on the size of the evoked set.

More studies investigated the impact of socio-demographic characteristics on travellers' information need. The distinction between the decision to search for external information and the exact information search behaviour is often not made within these studies. These studies assume that when travellers search for specific information, it automatically implies that they decided that external information was needed. An older study into the effects of pre-trip information acquisition in Birmingham (UK) and Athens (Greece) reported that age and sex influenced the utility of information (Polak & Jones 1993). More specifically, women have a higher propensity to search for public transport information than men. The (slightly) higher information need for women, especially mode related information, was also found by Srinivasan *et al.* (1999), who conducted a small experiment to determine pre-trip information use. Consequently, we assume that the higher information need, particularly for mode information, for women will be further corroborated by this study.

In the same research Srinivasan *et al.* (1999) reported that age influenced mode information use positively, i.e. older travellers are more likely to search for information. However, Engel *et al.* (1995: 195) report that older people are generally inclined to search for less information since they have more internal information to draw on. Furthermore, Srinivasan *et al.* (1999) showed that a higher income increased the chance that car-related information is sought, while a lower income tends to increase the public transport information search. The underlying relation between income and car ownership may partially affect this result since low-income groups may not be able to afford to drive cars, which leads to fewer mode alternatives for that group. We assume similar results in this study concerning the effect of income and car ownership.

The employment status of travellers affects both information acquisition and its impact. Students, retired and unemployed respondents were observed to acquire more information related to public transport (in particular concerning the cost of public transport) than other respondents. The limited and fixed income combined with considerable time flexibility of these groups may explain the extended information search and particular interest in travel costs (Srinivasan *et al.* 1999: 10). Khattak *et al.* (1999) investigated the influence of travel information on pre-trip travel decisions in the San Francisco Bay area (USA). It showed that employed respondents compared with other categories (school trips, shopping, and other personal trips) had the highest propensity to adjust pre-trip travel decisions based on travel information. Finally, based on data collected in the seventies, Van Raaij & Francken (1984: 105) concluded that the typical 'information seeker' regarding holiday trips is a female between 35 and 55 years, of a middle socio-economic level, and with an average income or above.

In conclusion, we expect that socio-demographic characteristics play an important role in the selection of the evoked set. Furthermore, literature suggests evidence of the effect the

characteristics have on information use. Unfortunately, no study was found that reported how socio-demographic characteristics affect the exact information need for recreational trips or for recreational mode and destination choice. Therefore, this study extends this body of research with specific findings in that area.

4.3.2 Experience

Experience is defined as the knowledge, practice or skill derived from observations or participations in events. It has been a key aspect in understanding information search behaviour in consumer studies (Gursoy & McCleary 2004). Experiences, e.g. concerning a trip or used information, lead to knowledge and updates of the internal memory (Bettman 1979). Since it is complicated to determine someone's internal information (or knowledge), experience is used as a proxy. Hereby it is assumed that more experience leads to greater knowledge. With every decision a person first searches for internal information to use in the decision-making process. Only when this proves to be insufficient will an external search be executed. Since internal information is based on previous experience it influences choice set formation, considering external information search and information search behaviour. Or as Stern (1998) argued, knowledge underpins all aspects of decision making from setting the goals to the evaluation of choice alternatives (Polak 1998).

First, what effect does experience have on the alternatives in the choice set? Woodside & Sherrell (1977) reported that the number of considered alternatives is larger for experienced travellers than for inexperienced travellers. We expect that experience leads to being aware of more alternatives. After all, visiting theme parks regularly implies that the traveller is receptive of information on theme parks, e.g. via advertisements. Alternatively, Mommaas *et al.* (2000) argue that travellers simply want to fulfil their goal, thus the traveller will base his decision solely on the previous experience. If that experience was positive it may lead to the exclusion of other alternatives. Another aspect is that experience may, at some point, result in habitual behaviour, discarding the active decision-making process (see section 4.3.4). Consequently, the choice between alternatives and the active information search disappears. Generally, we expect a different effects of experience on mode than on destination choice. Since there are many theme parks, which are visited infrequently, and considering that many travellers are novelty seekers (STAR 2003: 4), we assume that experience increases the likelihood of considering alternatives. However, experience with mode choice, made frequently and with limited alternatives, probably decreases the chance to consider an alternative and may even lead to habitual behaviour.

The second aspect concerns the decisions to search for external information. Based on several studies we expect that having experience results in a lower need for external information. AVV (2003: 21) investigated the need for multi-modal information systems that support the entire trip. They found that 'standard' characteristics such as socio-demographic characteristics or lifestyle hardly affected the information need, however, the only really decisive factor was if travellers had been to the destination before. The same result was reported by STAR (2003: 4), who found that novel trips to destinations led to seeking more advice on that destination. Furthermore, panel discussions among train travellers clearly showed that the information need for the inexperienced traveller was much higher (AVV 2003: 12). The same result was found for car travellers; less frequent drivers were more likely to seek route information and consult a map of their route

(Patten *et al*. 2003: 6). We assume that this higher need for external information is a result of low internal information due to inexperience.

The third aspect is the specific information search behaviour of the traveller. Generally, we assume that inexperience results in a longer and more detailed information search process. Srinivasan & Ratchford (1991: 240) argue that experienced travellers know what information they need. However, inexperienced travellers may not specifically know which information they need, nor where this information can be found, resulting in broad searching behaviour. However, this does not mean that experience ultimately leads to no information search. Experience may result in a very specific information search to update internal information. Therefore, dynamic information is particularly relevant to the experienced traveller. The panel discussions among train users showed the same result; the inexperienced needed both static and dynamic information, while the experienced traveller only needed dynamic (e.g. are there any delays, updated departure time) information (AVV 2003: 13). In addition, Srinivasan *et al.* (1999: 9) reported that non-familiar travellers were more likely to use maps (static information) to follow a route compared with familiar travellers. Wallace & Streff (1993) also reported that non-familiar (thus inexperienced) travellers are more interested in static information such as travel directions (Lappin & Bottom 2001: 40). However, commuters and familiar travellers valued dynamic information, such as travel time reliability and travel delays highly. All these studies support the assumption that the pre-trip information need differs with the level of experience.

The information that is found is assessed before it is actually used in the evaluation phase. Having experience leads to better assessment of the reliability and value of information. Mahmasanni *et al.* (2003: 320) even argue that experienced travellers may overcome inertia and choose an alternative destination or mode, if the provided information is perceived as correct. However, if the information is perceived as erroneous, it may strengthen the inertia. Based on this outcome, we expect that, in the case of erroneous information, experienced travellers sooner regret using certain information and sooner come to the conclusion that they should have searched for different information.

Socio-demographic characteristics are constant across different decisions or trip motives. However, experience is directly related to the decision that has to be made. Making a mode decision for the commuter trip is not similar to making a mode choice for an infrequent trip. Although experience from one decision may be transferable to other decisions, this is not certain. This raises the question as to whether experience affects mode choice differently than destination choice. Even though no specific studies were found that compared destination choice and mode choice, we assume, based on the above-described findings, that the role of experience in mode choice and destination choice is slightly different. Mode choice is made more frequently and the number of alternatives is limited resulting in a higher level of experience. Following the same reasoning, the infrequent visits to theme parks combined with the many alternatives available result in a low level of experience for destination choice. Thus it can be assumed that travellers need more information for destination choice than for mode choice. The other difference between mode choice and destination choice concerns the nature of the travel information. Mode information is more individual and dynamic than destination information. Once a traveller

has previously visited the theme park, he will need less destination information but the mode information need may remain constant.

Experience is one of the key factors in the consumer choice process, particularly for tourist-related destination choices. As the section has shown, the relation between information search behaviour and experience is complex. In the analyses we hope to shed some additional light on this complex relationship.

4.3.3 Attitude and personality

Attitudes are tendencies to evaluate an entity with some degree of favour or disfavour, which disposes a person to behave in a certain way towards it (Eagly & Chaiken 1993). Practically, this means that an individual already has certain fixed reactions to some stimuli and then acts on them. Thus, an attitude includes some evaluation of a situation in response to stimuli and an inclination to act (Redmond 2000: 16). If the goal were to predict behaviour, it would be more accurate to use intentions rather than attitudes. Intentions are assumed to capture the motivational factors that influence behaviour; they are indications of how hard people are willing to try, of how much of an effort they are willing to make, in order to perform the behaviour (Ajzen 1991: 181). The underlying motivational factors, although not specifically intention, are discussed in section 4.3.5. Nonetheless, the goal is not to predict behaviour, but to understand the stages in the decision-making process related to the external factors. As attitudes are relatively fixed entities that constantly affect the stages in the decision-making process they are incorporated as an external factor.

An attitude toward an object and the experience with that object cannot be completely separated. However, as Hjorthol & Berge (1997) point out, attitudes are more general and fixed over a longer period of time as opposed to experience (Redmond 2000: 16). Consequently, their impact on the four aspects of the decision-making process is different. To what extent the attitude towards an object and experience complement each other is reported in chapter 7.

Attitudes are formed toward a certain object (Eagly & Chaiken 1993). Examples of attitudes are the attitude toward a transport mode or towards travel itself. Attitudes should be measured on the level of the object to which they relate. Nonetheless it can sometimes be more relevant to determine the 'way of behaviour' of a person rather than towards a certain object. It then describes the type of person (Redmond 2000: 34). The type of person can be relevant when there is no clear attitude towards the object of investigation; examples are a person's lifestyle or personality. Engel *et al.* (1995) defines lifestyle as patterns in which people live, spend time and money (p.449), while personality is defined as consistent responses to environmental stimuli (p.433). Often attitudes or 'types' are used to identify segments within the population. An example of lifestyle is further described in box 4.2.

Since both mode and destination choice are central in this study, at least two different attitude measures are needed. The most obvious attitude related to mode choice is the attitude toward transport modes. It displays the degree of (dis)favour to travelling by car, public transport and possibly other modes. However, measuring an attitude toward destinations is more complex due to the large number of possibilities. Therefore, we have opted to select a measure that is

Box 4.2 Example of attitude: lifestyle

An example of lifestyle characterisation was performed by Need (2003), who distinguished five types of car drivers based on a survey. Based on these five types (goal orientated, environmentalists, competitors, pleasure seekers, and passives) hypotheses were drawn up for their information preferences. For example the goal-directed would value travel information the most, while *passives* would not actively acquire travel information (AVV 2003: 10). Van den Broeke & Van der Horst (2005) contrasted these hypotheses based on a survey amongst Dutch drivers and found that the information needs differed from some of the hypotheses. Going back to the previous examples, they found that the *goal-orientated* had the highest need for travel information while the *passive* did not acquire en-route information but did search for pre-trip information.

less related to travel: personality (Redmond 2000: 43). Personality could reveal if the person is an adventure seeker or someone that does not like to take risks, which could be related to their information need and the selection of theme park alternatives. The precise propositions between the personality and the decision-making process are discussed in section 7.3.3.

'Strong' attitudes have more effect on behaviour than 'weak' attitudes and may stimulate or diminish the use of information on a certain subject (Ajzen & Fishbein 2000). A strong attitude towards cars enhances search on car information items such as the route to the theme park and the parking facilities. At the same time it reduces information search on public transport possibilities. In the same line, Hato *et al.* (1999: 123) reported that drivers with a positive attitude towards traffic information have a higher tendency to access the relevant traffic information sources. As is concluded in box 4.2, the type of person also affects information search behaviour. We suspect that the attitude towards mode most strongly influences mode choice behaviour and the use of mode information. In the same way, we expect personality to influence the destination choice more strongly although it is likely to affect mode choice. However, no literature was found to establish specific assumptions related to attitude, personality and the decision-making process. As a consequence, no assumptions are proposed for the effects of personality and attitudes on information search behaviour and considering alternatives.

4.3.4 Habitual mode choice

Psychologists, such as Hull (1943), James (1890), and Triandis (1977, 1980) have been fairly unanimous in adopting a more narrow conceptualisation of habit as "learned sequences of acts that become automatic responses to specific situations, which may be functional in obtaining certain goals or end states" (Verplanken *et al.* 1997: 540). This conceptualisation is still used in current research initiatives. The habitual behaviours do not necessarily dominate the decision-making process; rather, their effect is to increase the likelihood that, in any particular decision context, the default choice will be made (Lappin & Bottom 2002). This means that the stages in the decision-making process are shortened rather than extended. Furthermore, each successful repetition of the behaviour reinforced the habitual behaviour (Aarts *et al.* 1998: 1369). As a result,

habit is an important factor that determines the alternatives considered in the choice set. Since habit may prevent a deliberate choice process external information may not be needed.

The influence of habitual behaviour cannot be seen separately from attitudes towards that subject, in our case transport modes. It was suggested by Triandis (1977) that the interaction between attitude and behaviour is strong when habit is weak and when habit is strong the attitude-behaviour relation is weak. Verplanken *et al.* (1994) uses this interaction to predict the car use based on attitudes towards choosing the car and attitudes towards choosing an alternative mode on the one hand and general car habit on the other hand. The results showed that this combination of factors explained car choice behaviour better than just attitudes.

Since recreational theme park visits are usually infrequent we assume no habitual behaviour is formed for destination choice; however, the habitual transport mode may affect the number of alternatives considered for mode choice (Verplanken *et al.* 1997). As the definition states, the habitual behaviour is related to a specific situation. Consequently, automatically selecting the car for commuting does not imply that the car is habitually selected for other trip motives. However, Kenyon & Lyons (2003: 8) concluded, based on a series of focus groups in England, that the role of habit in mode choice emerged strongly and naturally even for leisure trips. The participants tended to follow a habitual pattern of activities and mode choice. Furthermore, Kenyon & Lyon observed that participants identified some trip motives as car trips and others as public transport trips. Thus, it was concluded that even for unfamiliar trips, the mode 'genre' is decided subconsciously. Based on this study, we assume that travellers with a habitual preference for a mode do consider that mode more frequently than those without a habitual preference. Therefore, travellers without habitual behaviour are more likely to consider several alternatives compared with travellers with habitual behaviour.

Aarts *et al.* (1997) investigated the role of habit in the process of information use underlying daily travel mode choices. They questioned 72 Dutch students on their bicycle use for various daily trips. It was found that habit reduced the elaborateness of information use in judgement of travel mode choice. In comparison to weak habit students, strong habit students used fewer (trip) attributes to make their decision (p.10). In addition, strong habit students were more selective in using information of the attributes of choice options than weak habit individuals. These results suggest that habitual travel mode choices are based on a small subset of trip-related cues necessary to make these choices. Since the strong habit students knew what information they needed, we expect that they conduct a specific information search related to their preferred mode.

To summarise, we assume that habitual mode preference limits the formation of an evoked set with more than one alternative. Furthermore, the information need will be lower for travellers with a habitual mode preference. However, information that is being sought by those with a habitual mode preference will relate to their preferred mode.

4.3.5 Motivation

The traveller's motivation to behave in a certain way determines the type of decision-making process that is performed. For example, if a traveller is determined to be on time the decision-making process may be more elaborate possibly leading to additional information search on

possible delays and changing departure time. However, if it is not important to be on time the decision-making process for departure-time is less extensive or not executed. Consequently, no additional information may be sought nor may the departure time be changed. Thus it is essential to understand the goal that is being pursued. Bettman (1979) argues that goal-directed behaviour can manifest itself on many different levels. Furthermore, Bettman *et al.* (1998: 188) conclude that the choice among options critically depends on the goals of the decision maker. The traveller's motivation is not directly related to the actual goals, such as visiting a theme park or choosing a travel mode, but is captured by (underlying) meta-goals such as reducing uncertainty (p.192; Gärling & Garvill 1993: 286).

Motivation affects both the direction and the intensity of the behaviour (Bettman 1979: 18) and is therefore essential to determine the effect of the individual characteristics on the considered alternatives and the information search behaviour. Since motivation affects the intensity of behaviour, it is able to influence habitual behaviour. As Verplanken *et al.* (1994: 297) reported: individuals motivated to engage in a decision-making process show lower levels of habit, whereas a low motivational level increases habit. Furthermore, the relation between goals and motivation leads us to expect that when the goals change the motivation to search for information may also change.

Bettman *et al.* (1998: 192) distinguish several meta-goals such as minimising cognitive effort, maximising the accuracy, minimising the negative experience or maximising the ease of justifying the decision. Other studies have confirmed these meta-goals to be relevant motivations for travellers. The first important motivation in the decision-making process is the reduction of risk or uncertainty, which can be associated with minimising the risk of a negative experience. As Bonsall (2003) argues, given the complexity of the phenomena influencing travel conditions, individual travellers cannot possibly predict the conditions that they might face. Consequently, travellers may feel the need to carry out an extensive decision-making process. Research has shown that people deal differently with this uncertainty (Bonsall 2003; Edwards 1996; Stern 1998). Risk-avoiders and risk-prone travellers are sensitive towards extreme outcomes, while the choice of risk-neutral travellers only is influenced by differences in attributes between alternatives. The second motivation is to maximise the perceived quality of travel experiences (Jeng & Fesenmaier 2002; Mommaas *et al.* 2000). The primary purpose is that the overall trip is performed more smoothly (maximise accuracy). Furthermore, justifying the choice made may also enhances the perceived quality. This can be achieved by additional information search. For example, a traveller, who has decided to travel by car, may search for travel time by public transport just to confirm that travel time by car is indeed shorter. Thirdly and directly related to information search behaviour, Vogt *et al.* (1993) report that most tourists collect information and save it for future use (Jeng & Fesenmaier 2002). This means that travellers search for information without using it directly in the current process. Apperently, travellers are building a knowledge bank for future reference. As a result, information that is not directly relevant is stored in memory making the future external information searches more effortless (minimising cognitive effort).

The effect of motivation has been proven by several empirical studies (Khattak *et al.* 1999; AVV 2003; Vogt *et al.* 1993). Khattak *et al.* (1999) investigated the effects of travel information on commuter and non-commuter behaviour in the San Fransisco area (USA). One of the analyses

showed that individuals who experienced higher travel time uncertainty (measured by reported times of one-way automobile and transit commute when traffic congestion is severe) and reported occurrence of unexpected delays (car commuters and non-commuters) during a month had a higher propensity of changing pre-trip decisions in response to travel information (p.12). Thus these travellers were highly motivated to reduce uncertainty, and thus to use information to be able to change their behaviour. Furthermore, AVV (2003: 21) reported that travellers have the desire to research and plan the trip themselves. They prefer to stay in charge of the trip, reducing uncertainty while maximising quality. As stated above, motivation affects both intensity and direction of behaviour. However, it is complicated to predict how the different motivations affect choice set formation and information search behaviour.

To summarise, motivation can often be captured by meta-goals such as reducing uncertainty, maximising perceived quality and minimising cognitive effort. Since motivation affects both intensity and direction of behaviour, it is complicated to assess the effect of motivation on the decision-making process. Therefore, this study will shed additional light on the relationship between motivation and information search behaviour.

4.3.6 Summary

This section discussed the effect of individual factors on all stages of the decision-making process. The factors that were identified were socio-demographic characteristics, experience, attitude and personality, habit and motivation. Although these factors were described separately, we saw that they also affect each other. Consequently, the factors should be analysed both separately (see chapter 7) and in conjunction (chapter 8). Furthermore, the factors socio-demographic characteristics and attitude & personality can be used for segmenting the population in distinctive groups. It remains to be seen which segmentation is most constructive. Finally, we conclude that the relevance of each factor has been established but that the specific effect on the decision-making process could not be determined.

4.4 Environmental factors

Environmental factors are the last aspect of the triad of external factors. It concerns the factors that are directly related to the decision but are not (directly) related to the individual factors. Therefore, Jeng & Fesenmaier (2002: 18) call these factors the *decision context*. There are many environmental factors could potentially affect the specific decision-making process. However, this study limits the environmental factors to the factors that are closely related to recreational mode and destination choice. Most directly related are the trip characteristics. TCRP (2003: 15) argues that the purpose of the trip, the stage of the journey and the trip frequency are most relevant trip characteristics. Schofer *et al.* (1993: 114) add destination alternatives, mode alternatives, and travel party to these characteristics.

In this study some key assumptions regarding the trip characteristics were made a priori. First, recreational trips have been selected as trip purpose. Second, the only stage of journey considered is pre-trip decisions. Since the trip purpose and the stage of journey are similar for all respondents in this study, they cannot explain differences in the decision-making process. As is explained in

chapter 5, trip frequency is not used as an external factor but as a determinant of the traveller's level of experience. This clearly shows that some external factors are closely related. As a result, the trip frequency will not be considered in this section.

The travel party and access to destinations and modes remain as environmental factors that affect the choice set formation, the external information need and the information search behaviour. These factors are discussed in the following sections.

4.4.1 Travel party

The influence of children in family decisions is becoming larger (STAR 2003: 3). Additionally, influence of family and friends can be just as strong, since these are trusted friends whose value and judgement are accepted. Besides providing judgements, family and friends can be a part of the travel party. Therefore they also partially decide what they want to do, based on their experiences.

Van Raaij & Francken (1984) were one of the first to emphasise the importance of family members' influence on the decision-making process on tourism purchases. They report that information search is often executed separately but that the decisions are made jointly (1984: 107). Thornton *et al.* (1997) assessed the role of children in the decision processes. They concluded that children are influential in directing decisions by their needs and negotiating skills (Sirakaya & Woodside 2005: 822). This is plausible, as parents will first consider theme park destination alternatives that are suitable for their children. Furthermore, when selecting a travel mode the children's preferences may also be incorporated.

A family is often identified as travel party (Engel *et al.* 1995; Van Raaij & Francken 1984); however, theme parks can also be visited with friends or colleagues. Nevertheless, we expect that, regardless of the composition, the travel party affects the decision-making process. The travel party determines which attributes are important when alternatives are weighed (in evaluation stage, see figure 3.4). When the value of an attribute is unknown, it triggers an information search. It is feasible that the specific impact varies with the type of travel party.

4.4.2 Access to destinations and modes

All travel modes available to the traveller as well as all destinations within reach of the traveller constitute the access to modes and destinations. Although no relevant literature was found, the effect of access to transport modes or destinations on the decision-making process appears straightforward. First, access to more modes or destinations increases the chance that an alternative is selected. At the same time, travellers who do not have access to a certain mode or destination, will never consider it in their choice set.

Furthermore, having access to more than one alternative increases the likelihood that information is sought (Jeng & Fesenmaier 2002: 22). Since more alternatives means that attributes need to be compared across alternatives, it is more likely that the traveller is not aware of all values of these attributes. Hence, additional information search is needed. It is expected that the information searched for is related to the destinations and modes selected in the choice set. That this leads to different information need is more apparent for mode than for destination choice. After all, information related to public transport or cars is very different. But most destinations have similar

attributes and thus need similar information. Since information related to travel modes is more dynamic in nature, we assume that having access to more modes results in more information search compared with destination choice.

4.4.3 Summary

In conclusion, the environmental factors considered in this study are all closely related to the actual decision-making process. Other, less related, factors are expected to only have a limited impact and have therefore not been selected. Furthermore, several environmental factors are used as the starting values of this study and can therefore not be used as external factors affecting the decision-making process. Therefore, travel party and access to destinations and modes are the environmental factors considered in this study. The assumed effect of these factors on the decision-making process is discussed in chapter 7.

4.5 Conclusions

The purpose of this chapter was a) to identify external factors that affect the recreational mode and destination choice and b) to determine how these factors affect the process. In chapter 3, the external factors were categorised in three groups; information factors, individual factors and environmental factors.

The sources used to gather the information, the reliability of source and information, and the timing of information search are selected as the most relevant information factors. For the individual factors, the socio-demographic characteristics, experience with theme park visits and habitual mode choice are selected. Furthermore, the underlying attitudes and personality as well as the motivation to search for information are incorporated. Finally, travel party and the access to transport modes and destinations are selected as the most relevant environmental factors. Now that all relevant external factors have been identified, an updated theoretical model is presented in Figure 4.4.

Based on the number of research initiatives, it can be concluded that the importance of external factors in the decision-making process has been acknowledged. However, most studies only use a few external factors. Other studies only incorporate either individual, environmental or information factors. This study attempts to integrate all relevant factors for recreational mode and destination choice. This is necessary as all these factors affect the decision-making process. By concentrating only a few external factors it is possible that displayed behaviour is not explained adequately. However, the relation between the external factors should also be considered. Although each factor presents a part of the external world it is possible that some factors overlap. To illustrate, for some travellers the attitude towards a transport mode is directly related to the habitual mode choice. Therefore, it is more realistic when the impact of all external factors combined on the decision-making process is considered.

Some factors discussed in the previous sections are considered to be more relevant for policy makers or service providers. This is because these factors may determine which groups appreciate certain information the most. Thus the factors may be used as a segmentation of distinctive

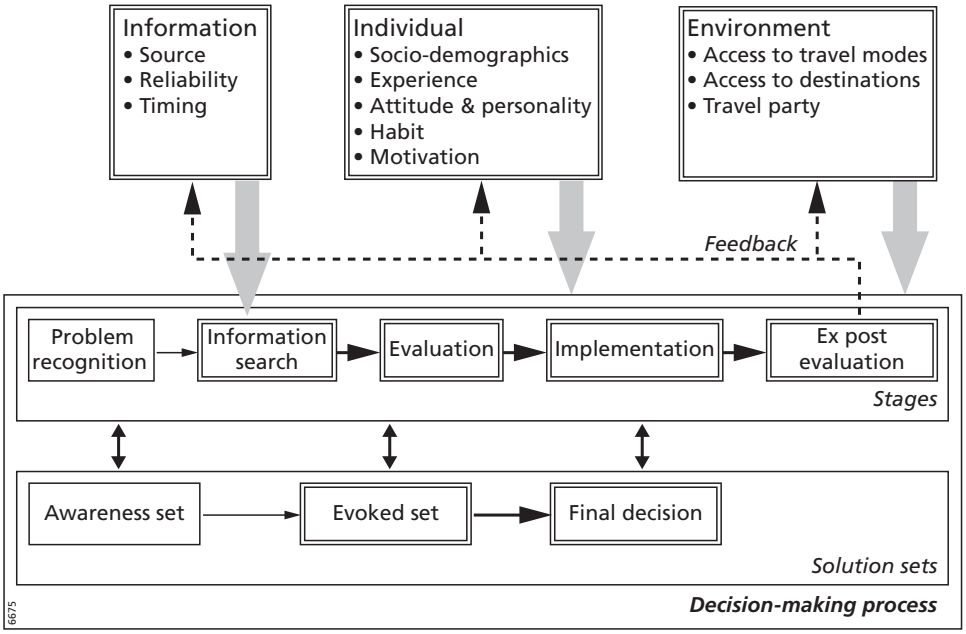

Figure 4.4 *The extended theoretical model*

groups that need specific information. Generally, socio-demographic characteristics are used as the main segmentation factor. However, attitude and personality have become more important. Consequently, it needs to be determined which combination of factors may be most relevant for classifying information use.

In chapter 7 and 8 it is determined to what extent the selected external factors represent the external world that affects the choice perception. In chapter 7 each external factor is discussed separately, while chapter 8 discusses to what extent the combined external factors explain displayed behaviour. The data needed for these analyses is described in the following chapter.

5 The data collection

5.1 Introduction

The relationships discussed in the theoretical model presented in chapter 4, have to be tested empirically. The aim of this chapter is to discuss the data needed to test these relationships and consequently answer research questions 2, 3 and 4. As such this chapter acts as a bridge between the theoretical chapters (2 to 4) and the empirical chapters (6 to 8). The research questions are related to two different aspects; first to the individual's decision-making process and second, to the effect on transport policy. Hence, two different types of data need to be collected.

Collecting data is a process that should be carried out carefully since it determines whether the research questions can be answered adequately. The first step is to understand which data is required. Then an appropriate data collection method can be selected (section 5.2). The second step is to translate the required data into measurable variables (section 5.3). The last step is a short description as to how the data was collected and a description of the sample. All three steps are discussed for both types of data that are required to answer the overall research objective. The chapter ends with conclusions.

5.2 Selecting data collection methods

5.2.1 The individual's decision-making process

The first part of this study concerns the information use for recreational mode and destination choice. More specifically, the actual use of information and the effect of external factors on the decision-making process are investigated empirically. The collection method should thus enable the collection of a broad array of data per individual. Furthermore, individuals should be able to describe their specific information search and use behaviour. This section discusses the most appropriate method to collect the necessary data.

Qualitative versus quantitative methods

Both qualitative and quantitative data collection methods could be deployed. The advantage of a qualitative method is that the individual could describe the decision-making process and the information search behaviour in an extensive manner. Furthermore, it would allow the analysis of the individual's reflection on the information use (Bargeman 2001: 54). As this study aims to generalise the results, which is more complicated for qualitative research methods, a quantitative method is more appropriate. With quantitative methods it is still possible to gather a broad array of information while it allows, providing that guidelines are followed, the generalisation of the results. Consequently, a quantitative research method is deployed.

Stated preference versus revealed preference methods

The main distinction in quantitative methods is between stated preference and revealed preference methods. The principal difference is that stated preference draws data from people's responses to hypothetical questions rather than from observations of real-world choices (revealed preference) (Freeman 2003: 24). Or as Louviere & Street (2000: 131) state: "the term stated preference refers to a wide array of possible ways of asking consumers about preferences, choices, ways of using options […] and so forth". In a stated preference experiment, respondents are given a set of hypothetical alternatives, each described by a number of relevant attributes. Based on the value of these attributes, the respondent chooses an alternative. Correspondingly, stated preference methods focus on the evaluation stage (see figure 3.1) of the decision-making process. Yet, information search behaviour (stage 2) is central in this study and this cannot be captured using stated preference methods. Particularly since the relevant attributes (on which information search behaviour is based) are unknown for recreational destination and mode choice.

Besides information use, measuring the external factors also requires a revealed preference method. Since external factors are different for each respondent, it is necessary to determine the unique characteristics per respondent. This can only be achieved by asking the respondent to reveal certain behaviour. Consequently, a revealed preference method is most applicable to determine the external factors and the specific information use.

Generally respondents are provided with a survey, which contains questions regarding their displayed behaviour. Stopher (2000: 229) distinguishes between prospective and retrospective surveys. The former contacts the respondents several days before the actual survey is administered. It is assumed that this advance notification ensures that the respondent has a better recollection of his behaviour. In retrospective surveys the respondents are confronted with a survey in which they are asked to recall certain behaviour. Retrospective surveys are often applied to situations that do no occur frequently. Since it may be complicated to recall certain behaviour, particularly when performed some time ago, Lindh (1998: 70) proposed to link behaviour to certain actions (such as going on a recreational trip) to prompt the recollection of behaviour. Conducting a prospective survey for infrequent trips, such as recreational trips, is more complicated. Consequently, a retrospective survey will be carried out to collect the data on external factors and specific information use.

Administering the survey via telephone, mail-back, face-to-face or the internet?

There are many ways to administer surveys, the most common being face-to-face, telephone, mail-back, internet or a combination of these methods. Nowadays most methods are supported with computer software, for example the computer aided telephone interviewing (CATI) or computer aided personal interview (CAPI) for telephone and face-to-face interviews respectively. This software facilitates data entry for analyses. Web surveys are relatively new compared to other methods. Each method has practical and methodological advantages and disadvantages. Therefore, Couper (2000: 466) argues that survey quality (minimising survey errors) should be evaluated relative to other (more practical) features of the design (such as accuracy, cost, timeliness etc.). In the remaining section relevant advantages and disadvantages are discussed based on Nauta (2003), Schonlau *et al.* (2002) and Stopher (2000).

The most relevant method of increasing the quality of the survey is by minimising the *survey errors*. Dillman & Bowker (2001: 54) argue that, regardless of survey method, coverage error, sampling error, measurement error and non-response error can occur. A good survey design seeks to reduce all types of errors (Schonlau *et al.* 2002: 13), thus increasing the validity of the responses.

The first type is coverage error, which occurs when some part of the target population cannot become part of the sample (Schonlau *et al.* 2002: 13). This happens when either the target population cannot be reached or it is impossible to determine the frame population. The target population is the set of persons to which one wants to make inference. The frame population is a list with all possible respondents, e.g. a telephone book. The target population in this study is the population that has access to internet (see chapter 1). Determining the frame population is complicated since there is no list of internet users. Thus coverage error is a problem for all data collection methods. For face-to-face, telephone and mail-back a frame list could be made for the Dutch population based on the telephone book. Using internet use as a selection criterion, a more specific frame list could be established. The telephone book is often used to select respondents from the Dutch population. However, Nauta (2003: 24) argues that many households do not have a fixed phone line nowadays. Particularly, the younger generation can no longer be reached this way. Furthermore, the number of unlisted telephone numbers has also increased while filtering of calls through caller-ID or answering machines has also risen (Bonnel & Le Nir 1998: 154). Consequently, the frame population is not completely accurate for these methods either.

The second type is sampling error, which arises when only a subset of the target population is surveyed yet inference is made about the whole target population (Schonlau *et al.* 2002: 15). Since it is nearly impossible to survey the target population, this error occurs frequently in surveys. Without a frame population, the sample is generally regarded as biased because the probability of being selected in the sample is unknown (Schonlau *et al.* 2002: 16). Nonetheless, Arentze *et al.* (2005) reported on the reliability of web surveys. In one case the sampling frame was not available. Their solution was that the interest in the survey should be sought through various announcements, which resulted in credible results (Arentze *et al.* 2005: 206). Another consideration is given by Bonnel & Le Nir (1998: 150), who argue that travel surveys with the purpose to analyse individual travel behaviour and the external factors influencing this travel behaviour have less need for an accurate sampling frame. Since such travel surveys are often used to construct hypotheses based on a wealth of data, more attention is given to the quality of the data than being statistically representative.

The third type is measurement error is the result of inaccurate responses that stem from poor question wording, poor interviewing, survey mode effects and/or some aspect of the respondent's behaviour, and data entry errors (Couper 2000: 475). Immediate data entry increases the accuracy of the data. Thus web surveys or computer-assisted interviews are more accurate than mail-back surveys. Respondents also provide more accurate responses when the survey is self-administered. When asked directly, respondents often feel pressure to give socially accepted responses. Combining these two aspects, web surveys may provide the most accurate responses, by providing immediate data entry and accurate responses to "difficult" questions.

The last type of error that occurs is non-response error. Schonlau *et al.* (2002: 16) state that this error occurs when respondents do not participate in the study (unit non-response) or when they do not answer individual survey questions (item non-response). The response rate, the percentage of respondents that finished the survey compared with the number invited to participate in the survey, is often seen as a measure of quality. This rate is declining for mail-back and telephone surveys despite sending out reminders and offering financial incentives (Arentze *et al.* 2005: 193). For web surveys it is not possible to measure response rates when the frame population is unknown. Item non-response can be high in mail-back surveys since respondents can determine themselves whether a question is answered. However, instructing the interviewer in face-to-face and telephone interviews and making it mandatory to provide answers in web surveys can control item non-response.

So far only the methodological issue of survey errors has been discussed. However, there are also several practical issues that should be considered before a survey method is selected. These practical issues are discussed in the following sections. *Survey design* is the first practical aspect. Originally, surveys could not be adapted to the answers of the respondent. Even now, mail-back surveys instruct respondents when certain questions need to be skipped. Since respondents see all questions, the survey appears lengthy, possibly lowering response rates. Furthermore, mail-back surveys allow the respondents to look at previous answers, which may decrease the validity of the answers. Computer software has solved this problem for face-to-face and telephone interviews, e.g. by enabling automatic skip patterns. Web surveys can also integrate an automatic skip pattern or use earlier answers in later questions. The distinctive advantage of web surveys is the ability to integrate multimedia content such as figures or movies. Basic figures are also possible in mail-back surveys and face-to-face interviews; however, telephone surveys have to rely solely on text.

The second practical aspect is the *data collection period.* The amount of time available for the data collection partially determines which method is most appropriate. Face-to-face interviews are most time consuming. Although CAPI has made the duration shorter, by allowing direct data entry, the travel time to and from the respondent is still a major factor. No travel time is needed to perform telephone interviews, thus the overall data collection period can be brief. The data collection period for self-administered surveys, such as mail-back and web, is more difficult to determine. After all, the respondent is free to fill out the survey whenever he wants. The data entry period of mail-back surveys prolongs the total collection period, while answers given in web surveys are entered immediately. Even though the data collection period for web surveys is potentially long, Nauta (2003: 12) pointed out that the collection period for web surveys can also be short, sometimes even less than three days.

A third practical consideration is the *costs* associated with conducting a survey. Face-to-face interviews tend to be the most expensive because of the time that interviewers must spend (Stopher 2000: 233). Telephone interviews cost less compared with face-to-face since no travel is required. However, compared with self-administered surveys they are expensive. Schonlau *et al.* (2001: 11) argues that the cost difference between mail-back surveys and web surveys depends on the required sample size. While the costs for printing and sending mail-back surveys do not apply to web surveys, the start-up costs related to survey design are much higher. Therefore, the costs associated with mail-back surveys are per respondent, as the cost of a web survey are fixed.

Thus as the number of respondents increase, the overall cost of web surveys becomes lower in comparison with other methods.

To summarise, each survey method has its own distinctive methodological and practical advantages and disadvantages. In order to decide which method is most appropriate, Couper (2000) argued that the selection of the method should be based on the aims of the survey confronted with the accuracy, costs, and timeliness. One of the aims of the survey is to specifically target the internet population. The internet population is selected for two reasons. The first reason is that we expect that new travel information systems will use an advanced method of dissemination, such as the internet. Consequently, only the travellers that have access to the internet are targeted. The second reason is that it is only a short matter of time before the entire population has access to internet, either themselves or through friends or relatives. This is clearly shown by figure 4.3. Since this study specifically focuses on the internet population, a web survey immediately selects the target population. Consequently, a web survey is chosen for the data collection. Due to this specific focus establishing a frame population would have been difficult for all survey methods. Therefore, the coverage error and the non-response error would have played a role in any survey method. However, the advantages of the web, such as high accuracy in answers, complex design possible and low costs, resulted in selecting a web survey as survey method.

5.2.2 The implications for transport policy

The empirical results from the survey are interpreted in light of travel information as an instrument in transport policy. In other words: what recommendations for transport policy can be made based on the empirical results. Chapter 2 discussed transport policy and the current role of travel information. However, interpreting the empirical results requires more than current transport policy. It requires a vision on the future of transport policy and the potential role of travel information based on the empirical results of this study.

As stated previously, qualitative methods are applicable to understanding new ideas or opinions and determining the respondents' reflection on the provided situations. Qualitative methods are, therefore, very suitable for determining such expert opinions. As Ritchie & Lewis (2003: 5) argue: qualitative methods are particularly well suited to exploring issues that hold some complexity and for studying processes that change over time.

Interviews allow for a type of discussion where one person – the interviewer – asks the other person – the informant – to respond to a set of questions or ideas (Boeije 2005: 57). A specialised form of interviews is the expert interviews in which informants are selected because of their knowledge on the subjects that are studied. They are able to say something about the history, the current policy and the future plans of the 'company' or the chosen subject (Baarda *et al.* 1996: 14). Interviews can follow a structured or an unstructured approach. The latter allows for flexibility during the interview, by adapting the interview in light of responses. Since the aim is to determine the potential role of travel information in (future) transport policy an unstructured approach is thought to collect superior data.

Consequently, in-depth expert interviews were conducted with several key players in the transport policy environment. How these experts were selected is described in section 5.3.3.

5.3 Data Needs

After selecting the data collection method, the next step is to translate the theoretical concepts into empirical variables. Furthermore, a specific focus is chosen for the data collection. Translating these concepts into measurable variables is essential for the quantitative part of this study. This translation is necessary, since it enables the empirical analyses of the collected data and, more importantly, provides a basis for the interpretation of the results. But it is less appropriate for the qualitative part of the study because the concepts are deliberately not defined specifically. On the contrary, the unstructured interviews are used to define the concepts. In the following sections, each translation is described in detail, starting with the quantitative data collection.

5.3.1 Selecting recreational trips to theme parks

The traveller can pursue many recreational activities; however, the most commonly used destinations are: the nature areas, beaches, historic city centres (or other cultural heritage sites), and attractions (theme parks). For the data collection, only one of these destinations is investigated. Nonetheless, the results can be extended to the other recreational destinations; Peters (1998) compared these destinations and found that overall they are very similar, particularly from a policy perspective. Furthermore, the overall information needs are also expected to be similar. That is, the attributes that are compared when choosing between alternative destinations will be similar.

The recreational destination that is investigated empirically is theme parks. Theme parks were selected for a number of reasons. From a policy perspective, they often cause local congestion and parking problems as the visiting population arrives and leaves at approximately the same time. Unlike events that have to deal with a large influx of a visitor population, most theme parks have a more permanent nature, leading to frequent congestion issues. From a research perspective, theme parks have several distinctive characteristics facilitating the comparison of information use between theme parks. To give an idea of possible destinations in this study the following table contains the top fourteen theme parks the Netherlands.

For clarity purposes the main distinction in the type of activities offered by the destinations have been added in the table. The type of activity at zoos and museums are rather obvious. Attractions offer a mixture of fast moving rides, shows and play areas for younger children.

Table 5.1 *The top-fourteen visited theme parks in the Netherlands*

Attraction	Zoo	Museum
Avonturenpark Hellendoorn	Artis, Aquarium, Planetarium	Keukenhof
Duinrell	Burger's Zoo	Madurodam
De Efteling	Diergaarde Blijdorp	Openluchtmuseum de Zaanse Schans
Ponypark Slagharen	Noorder Dierenpark (exl. Safaripark)	
Six Flags Holland	Ouwehands Dierenpark	
	Zeedierenpark Harderwijk	

5.3.2 The web survey: data needs

The main theoretical concepts are external factors and the decision-making process. Chapter 3 and 4 discussed both theoretical concepts in detail. The external factors were divided into information, individual and environmental factors. Furthermore, four aspects from the decision-making process were selected to map the role of travel information. Each concept is now translated into measurable variables. Together these form the web survey as conducted (see appendix A).

External: information factors

Two steps determine the chance that *information sources* are used. First, access to a source determines if the source can be used. Second, the frequency of using a source determines the familiarity of using that source. Finally, the actual use of a source is determined per information piece sought. *Reliability* is related to both sources and information. Source reliability is measured on an ordinal five-point scale ranging from very unreliable to very reliable, while information reliability is measured on a three-point scale ranging from low to high. Since source reliability is considered to be more constant it is only measured once. However, information reliability is measured twice; the first time related to the actual information search and the second time during the ex post evaluation stage. *Timing* of information search is measured for car-related, public transport-related and destination-related information using a five-point scale ranging from the same day to more than two weeks before travel.

External: individual factors

The *socio-demographic characteristics* that are measured in this study are: age, sex, household composition, income, employment, and education level. Having visited the theme park before (yes/no) and frequency of visits (ranging from more than once a week to less than once every two years) to theme parks in general are the two indicators that determine the level of *experience* related to theme parks. *Attitude* towards transport modes is measured using four attitudinal statements related to travel modes. For each statement the respondent can indicate on a five-point scale to what extent he agrees (ranging from strongly agrees to strongly disagrees). *Personality* is measured in much the same way; however, 17 words and phrases are used to describe personality. This is a trait-based approach to measure personality (Engel *et al.* 1995: 436). It is expected that each trait relates in some way to an individual's orientation towards travel and theme parks (Moktharian *et al.* 2001: 366). *Habitual behaviour* can be measured in several ways. The self-reported frequency of performing a certain action (past behaviour) has long been the determinant for habitual behaviour (Verplanken *et al.* 1997: 543). However, several researchers, such as Ajzen (1991) and Eagly & Chaiken (1993), argue that this method is a sub optimal solution since habitual behaviour is performed automatically and may therefore be underrepresented in the self-reported frequency (Verplanken *et al.* 1993: 543). Furthermore, it would be logical if automated behaviour were measured on an automatic basis. For this reason, Verplanken *et al.* (1997) developed a new method called the response frequency measure. They describe this measure in the following way (Verplanken *et al.* 1997: 543):

"In order to measure habit strength concerning travel mode choices, participants are presented with a number of globally described trips (e.g. `going to the supermarket', `visiting a friend in a nearby town'). For each destination, they are requested to mention as quickly as they can the first mode of transportation that comes to mind as the one they would use. The frequency of choices for

one particular travel mode (e.g. car) across the stimulus destinations serves as a measure of habit strength for choosing that behavioural alternative in general."
The assumption is that, when respondents are asked to respond to general (non specific) stimuli, there is little possibility to engage in making elaborate tradeoffs between the pros and cons of various travel modes (Verplanken *et al.* 1994: 290). Rather, it is expected that the responses are based on pre-existing scripts about mode choice in general. This response frequency measure is also deployed in this study using eight different destinations. Respondents have to type their answers rather than pick from a list, as the latter may affect their mode choice[1]. Finally, to determine the relevant motivation for searching information, respondents can pick the motivation that applied most. These motivations are interest, efficiency and the reduction of uncertainty.

External: environmental factors
Travel party is measured by asking respondents to choose from a list of possible travel parties. *Access to transport modes* is measured by determining car ownership, driving licence and public transport cards. Furthermore, the mode alternatives considered also indicate the access to transport modes. Finally, access to destinations is measured by the considered alternatives.

Decision-making process
In the description of the theoretical model (see section 3.6) four aspects were selected to characterise the decision-making process and to uncover the specific role of information. To reveal the decision-making process for mode and destination choice, the respondent had to answer the questions related to these aspects twice. The *choice set formation* is measured by asking the respondent if he had considered an alternative (yes/no) and if so to indicate the alternatives. *Considering external information* is also measured by asking the respondent whether external information had been sought (yes/no). Asking respondents to indicate if they had searched for or found certain travel information assessed their *information search behaviour*. The respondent could use a list of relevant information items to indicate which content was relevant. Additional information items could be added. The information content is seen as a proxy for relevant attributes in the decision. Knowledge on relevant attributes is necessary for respondents with a choice alternative, for they are able to change their behaviour. Therefore these respondents were also asked whether they had used the information in their decision and if so, if that information had been decisive. Thus, the method proposed by Engel *et al.* (1995: 297), to let respondents indicate how useful and influential they found the information, is used. Since data on previous information use (partially) exposes the internal information and because it provides the first idea on what relevant attributes are, respondents were asked to indicate their generic and their specific information search behaviour. The specific search behaviour is related to the last theme park visit, while the generic search behaviour is not related to any specific visit. Finally, to measure *ex post evaluation,* respondents were asked if they had regretted not using certain information. If so, they could indicate which information they had missed. To determine the effect of the information, they were also asked if they would have changed their mode or destination provided that they had received that information. Furthermore, the post-trip information reliability was assessed as an indication of the future use of the information.

Together these empirical variables cover all concepts of the theoretical model and the empirical data should therefore allow us to answer the underlying research questions.

5.3.3 Interviews: the data needs

Open interviews are by definition not completely predefined. Therefore it is not logical to translate the theoretical concepts into empirical variables. It is important to determine the topics that have to be discussed. Two concepts are central during the interviews. The informant needs to react to the empirical results presented and secondly provide a vision of transport policy based on these insights. This study combines the use of travel information with recreational trips. Within transport policy, travel information is not automatically seen as a relevant instrument for changing recreational travel. Therefore, there are experts on recreational travel or on travel information but no experts who combine this knowledge. Consequently, the informants need to be selected from both domains.

Since transport policy is formulated at central government level, it is appropriate that informants should also be selected at this level. The central government (V&W) responsible for transport policy has two different departments. On the one hand the policy makers and on the other hand the research institutes. Both contribute to the future of transport policy, thus informants from both departments should be interviewed.

In the selection of informants, we need to take the topic – travel information or recreational travel – and the type of informant – policymaker versus research employees – into account.

5.4 The collected data

The last step in the data collection is to describe how the data was collected and to describe the sample characteristics of the survey.

5.4.1 Web survey: characteristics of the sample

The data was collected from June to August 2004. This collection period was chosen since theme parks are visited most frequently in the summer months. This ensured that many respondents would still remember their visit. Respondents were approached in several ways as to decrease coverage error (Arentze *et al.* 2005: 206). First of all, respondents were recruited through advertising the survey on several well-known Dutch sites, including travel information sites and theme park sites as well as non-related websites. Furthermore, respondents were approached via the TNO newsletter (sent out to 1000 people) and an email list (approximately 5000 people). Finally, to stratify for high number of heavy internet users a sample of 300 email addresses of low internet users was bought. Respondents willing to participate were routed to a website, where they filled out the survey online.

In total, 1880 respondents completed the survey. Since there was no sampling frame, the unit non-response cannot be calculated. However, approximately 30% of the respondents that started filling out the survey actually completed it. The item non-response of the survey was, particularly considering the length of the survey, acceptably low. Not all 1880 responses could be used in this study. Since no age limit was imposed on the respondents, we first needed to remove all responses given by those younger than 16 years of age, for Couper *et al.* (1993) indicated that this is the age when one first takes some responsibility for travel decision-making (Litvin & Kar 2001: 309). In

addition, these respondents are unlikely to have mode choice alternatives. From the remaining 1794 respondents, 360 visited theme parks less than once every two years. It was expected that these respondents would not adequately recall their last theme park visit. Consequently, they did not fill out the questions regarding specific information search behaviour. Thus for the analyses related to information use a sample of 1434 responses was used. The remainder of this section describes some of the sample characteristics (based on n=1794). Detailed analyses and discussion is presented in chapters 6 to 8.

Theme parks

The most visited theme parks are displayed in the table below. Only theme parks visited by at least 2% of the sample are displayed. Compared to Table 5.1 nine parks appear on both lists. Parks that are on both lists are marked with an (x). The most popular theme park is *de Efteling*. This is the oldest and most famous theme park in the Netherlands. Besides fast moving rides it also contains many attractions for young children. Furthermore, several zoos (Artis, Diergaarde Blijdorp, Noorder Dierenpark, Burger's Zoo and Beekse Bergen) are mentioned. Obviously these are very

Table 5.2 *Most visited theme parks (n=1794)*

Theme park	Visited	Theme park	Visited
De Efteling (x)	26%	Burger's Zoo (x)	3%
Six Flags (x)	15%	Ponypark Slagharen (x)	2%
Artis (x)	10%	Zeedierenpark Hardewijk (x)	2%
Diergaarde Blijdorp (x)	4%	Beekse Bergen	2%
Noorder Dierenpark (x)	4%	Disneyland Paris	2%
Duinrell (x)	3%	Other	27%

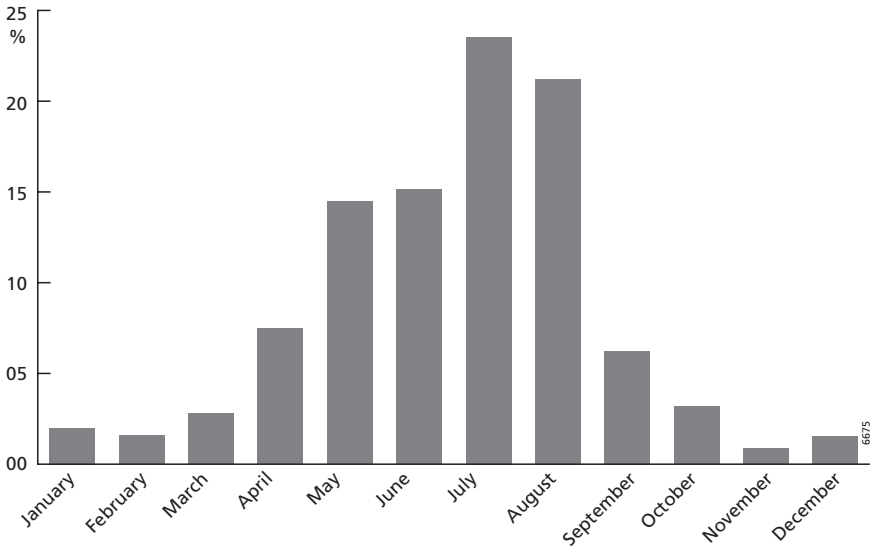

Figure 5.1 *When are theme parks visited? (n=1794)*

popular theme parks in the Netherlands. Another interesting find is that 2% indicated that their visit was to Disneyland, which is located in France.

Most theme parks are visited in summer months (see Figure 5.1). This is partially due to winter closure of many theme parks and to the data collection period. Zoos are an exception: they are visited several times per year. Respondents indicated that zoos are visited more frequently because they have season tickets. These provide unlimited access for a relatively low fixed price, which, particularly for families with young children, leads to frequent visits. Most respondents indicated that they had visited a theme park in 2004 (59%), followed by another 25% who visited a theme park in 2003.

Visiting theme parks is not only the pastime of families with young children. As is shown in Figure 5.2, travel parties of friends or families with older children each account for 25% of all visits. However, with 32% families with young children remain the largest group. Finally, 3% of the respondents indicated that they had visited a theme park with colleagues.

The car is by far the most popular mode to get to a theme park (see Figure 5.3). Since car occupancy is high for theme park visits[2], this is probably the most economic way to travel to the theme park. Furthermore, many theme parks are located in more rural areas and are therefore

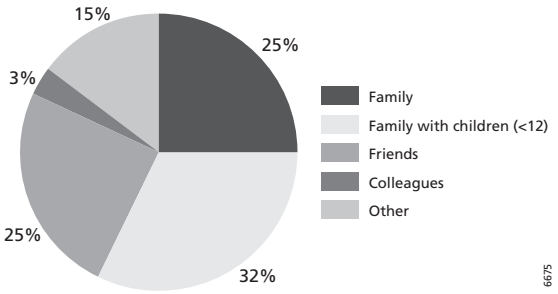

Figure 5.2 *Composition of the travel party for the last theme park visit (n=1794)*

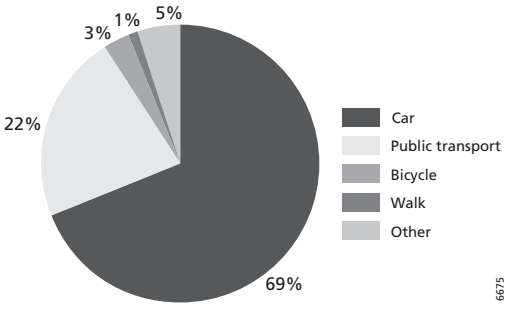

Figure 5.3 *Selected transport mode for the last theme park visit (n=1794)*

less accessible by public transport. The (touring) bus was mentioned most frequently in the 'other' category, probably by large groups (e.g. travel party consisting of colleagues).

Demographic characteristics
The sample mostly consisted of females (nearly 75%); however, we assume that their answers reflect the joint decision-making process that has taken place on the household level. The mean age of respondents is 36 years. As Figure 5.4 clearly shows, the younger age groups are over represented compared with the older age groups. This was expected since we specifically targeted the Dutch internet population. However, even compared with the Dutch internet population, young people (age categories 16-25 and 26-35) are still slightly over represented.

Related to household composition, the majority of the sample is married or cohabitate (56%), while 39% of the households have children. 16% of the sample is single, while single parent families represent 5% of the sample. The sample resembles the Dutch internet population based on the education level. Nearly 29% received a tertiary education (college or university), while 35% are considered to have received a primary education (primary school or lower secondary school). For the Dutch population these numbers are 28% and 35% respectively (CBS, accessed 2005).

In Figure 5.5 the income level of the respondents is shown. The distribution is fairly even over the lower categories, while the higher categories are smaller. It should be noted that only 20% of the respondents declined to answer this question. Normally, the item non-response to income level is higher, for example the telephone survey conducted to determine travel patterns in The Hague region had an item non-response of more than 60% (Vonk & Van der Horst 2005). Using this question as a measure of general item non-response we conclude that the completed surveys were filled out in all earnestness.

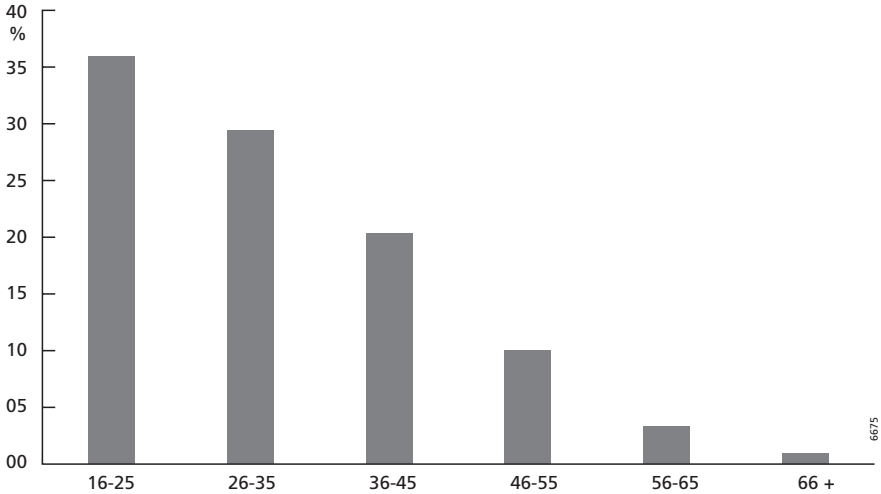

Figure 5.4 *The distribution of age groups of theme park visitors (n=1794)*

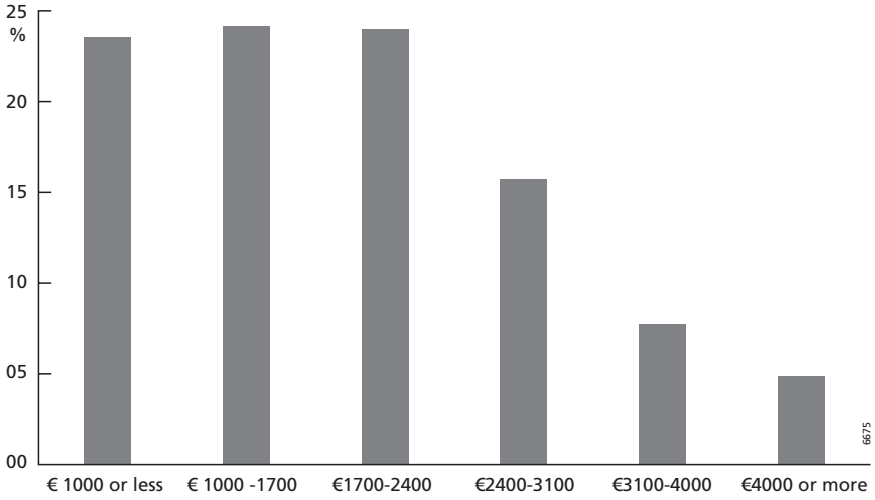

Figure 5.5 *The distribution of income level of theme park visitors (n=1794)*

Finally, the car ownership of the sample resembles that of the Dutch population: 50% own one car and 25% own two cars while 26% do not own a car. Driving licenses are held by 72% of the respondents, which is comparable to the national average of 75%. Furthermore, 34% has some form of public transport card. The most common card is the discount card for off-peak hours (NS kortingskaart), while all students possess a free travel card for all public transport modes (OV studentenkaart).

To summarise, the sample represents the Dutch internet population fairly well. Therefore, with some caution, the sample and thus the results can be used as input for the policy goal of this study.

5.4.2 Interviews: the collected data

After selecting the fields that were relevant in this study, i.e. recreational travel and travel information, the first interview was planned. Based on this interview the other relevant names were obtained. New interviews were planned. In total 6 interviews, 3 with policy makers and 3 with research employees, were held in a two-week period in February 2006. The list and data of interviews are attached in appendix B.

5.5 Conclusions

The goal of this chapter was to describe the methodological aspects needed to answer the research questions empirically. For the research questions related to the individual decision-making process (i.e. questions 2 and 3) it was determined that a web survey would be the most appropriate method to collect the necessary data. Although it is impossible to determine the frame population, and thus determine the coverage error, the data seems to represent the Dutch internet population to some extent. Theme parks were selected as the main 'subject' of the data collection

because of their (permanent) impact on local congestion and the similarity between destinations. The results and the implications found specifically for theme parks can be transferred to other recreational destinations (Peters 1998). Conducting in-depth interviews is the most appropriate method to investigate the role travel information may play in recreational travel policy. Since transport policy is formulated at central government level, it is suitable that informants should be selected at this level. Both policymakers and employees at the central government's research institute were selected. The results from both data collections are analysed and described in detail in the following three chapters.

Notes

1 However, we should consider that typing in an answer might provide the respondent with sufficient time to change their mind, possibly limiting the accuracy of the outcomes.
2 Average car occupancy for the Efteling is 3.8 people (Van Zijl 2005).

6 The decision-making process

6.1 Introduction

The objective of this chapter is to examine the empirical results related to the decision-making process. Each of the four aspects selected in chapter 3; choice set formation, considering external information, information search behaviour, and ex post evaluation; is discussed using the empirical results from the web survey. Based on these four aspects it is possible to determine the potential of travel information as an instrument in changing travel behaviour. Furthermore, the information needs, or more specifically the relevant attributes for recreational mode and destination choice are brought to light. Thus, these results can be used to determine the necessary information in new information provision services. Related to the research questions posed in chapter 1, this chapter answers the question: "*What is the actual information search behaviour, which information is used in the mode and destination choice and what is the impact on travel behaviour?*".

In chapter 3, we concluded that recreational mode and destination choices are high-involvement decisions with an elaborate decision-making process. Accordingly, the extent to which the four aspects of the decision-making process are executed reveals the level of involvement of recreational mode and destination choices.

The structure of the chapter follows the four aspects of the decision-making process. In the following section (6.2) the choice set formation and considering external information search are discussed. In section 6.3 the information search behaviour is discussed on the basis of degree and direction of information search. In section 6.4 the last aspect of the decision-making process is discussed, the ex post evaluation stage. This ex post evaluation stage is geared toward evaluating the information. The chapter ends with a conclusion and the relation to the following chapters.

6.2 Choice set formation and considering external information search

Considering more than one alternative has several implications for travel information use and travel behaviour. Changing travel behaviour, and more particular mode or destination choice, is only possible when a viable mode or destination alternative is considered. A traveller who has already decided to travel by car will no longer search for information on other transport modes, unless an interrupt occurs (Bettman 1979). Consequently, the chance to persuade him to change travel mode has passed. This brings us to the second implication of choice set formation. The choice set reveal, to a degree, which information is relevant for the traveller because only information is sought on the relevant attributes of each alternative. Finally, from a theoretical

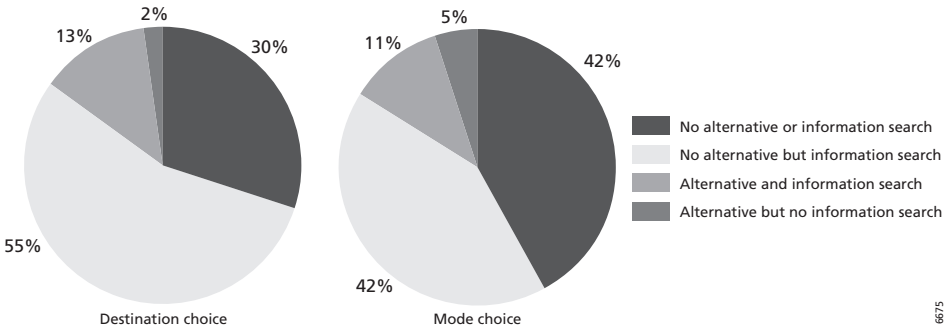

Figure 6.1 *The distribution of respondents who consider an alternative and external information search (n=1434)*

point of view, the choice set formation provides the first indication whether the recreational decisions are high-involvement decisions.

Approximately 16% of the respondents consider a mode alternative while 15% of the respondents have a destination alternative (see Figure 6.1)

Most travellers who consider a mode alternative choose between public transport and car (50%). From these travellers the majority finally selects to travel by car. Furthermore 12% of choice travellers choose between different types of public transport. In this study no distinction was made between the different types of public transport, such as train, bus, metro or tram. The remaining travellers had a choice between other types of transport in combination with either car or public transport. The alternatives in the choice set for destination choice varied. Table 5.1 contains the 11 most visited theme parks; however, many more theme parks were visited. Since many theme park alternatives are available, there are also many choice sets available. This complicates a sensible comparison of choice sets.

Travellers who consider more than one alternative are often called 'choice travellers'. Is the number of choice travellers in this study high or low compared with other studies? Strictly speaking, all travellers who have access to more than one mode for a specific trip are choice travellers (Beyen de Hoog 2004: 1331). This disregards the fact that even though a travel mode is available, the traveller might not consider it a viable alternative. For example, nearly every Dutch traveller owns a bicycle but only some will consider it an alternative for a trip over seven kilometres. Several studies have reported a high percentage of choice travellers. For instance, in 2003 Noord-Brabant[1] considered 60% choice travellers, which included travellers that might choose public transport once a month, while Ferro suggests that the Netherlands has 45% choice travellers (travelling by public transport at least once a year) (Beyen de Hoog 2004: 1334). These studies measure choice travellers over a period of time and over different trip motives, while this study focuses on one travel decision. This complicates comparison between studies. Normally a travel party and not just one individual visit theme parks. For a travel party there are many advantages of travelling by car. The travel party often shares travel costs, it is more fun travelling together and less accessible locations can easily be reached. This is reflected in an average car occupancy of 2.2 persons per

vehicle (Van Veggel & Peeters 2005: 626). Although we cannot determine whether the number of choice travellers found in this study is high or low, we conclude that there is a significant percentage that could change their travel behaviour.

The potential of travel information in changing travel behaviour is further determined by considering external information search. In many decisions travellers have sufficient experience or internal information to decide between alternatives or to execute the trip. As a result searching for external travel information is not needed. When choosing between alternatives external information may provide the values for the relevant attributes (see chapter 3), and consequently affect the decision. Therefore, not using external information limits the possibility of affecting travel behaviour. Furthermore, this second aspect of the decision-making process reveals the level of involvement in the decision-making process.

The results show an overall need for external information of 53% for mode choice and 68% for destination choice. Compared with other Dutch studies, travellers in this study have a slightly higher need for external information. AVV (2004) investigated the ownership of information sources, use of traffic information, and the subsequent effect on travel behaviour for both commuter and recreational trips. The study focused on car trips. Related to recreational trips they found that 42% of the travellers (n=159) had searched for traffic information (AVV 2004: 54). More generally, Vonk & Van der Horst (2005: 13) report that 20% of recreational travellers searches for travel information regularly while 38% searches occasionally (n=327). The higher information need may be because theme park visits require more information than other recreational trips. No studies were found that reported the need for external information related to theme park destination choice.

Having an alternative leads to a higher need for external information. For mode choice 68% of choice travellers need external information in contrast to 50% for non-choice travellers. The same result is found for destination choice, where 85% of choice travellers need external information as opposed to 65% without a destination alternative. The higher need for external information can be explained by the number of attributes that have to be compared (Jeng & Fesenmaier 2002). Since it is unlikely that the traveller is aware of all values of these relevant attributes this leads to a higher chance that external information is needed.

The need for external information is higher for destination choice than for mode choice. Several explanations are plausible. For one, theme park destination choices are less frequent than mode choices. If knowledge on mode choice is transferable it is plausible that many values of the relevant attributes are already known. As a result, the experience of mode choice may limit the need for external information. Another explanation may be that pre-trip enjoyment is part of visiting theme parks. Searching for additional travel information related to the destination may increase pre-trip enjoyment. Both explanations are based on external factors. Therefore, this point is further discussed in chapter 7 and 8.

Both choice set formation and considering external information search provide indications as to whether recreational mode and destination choice are high-involvement. With only 15% considering an alternative and more than 50% needing external information there is a clear

indication that not every traveller considers recreational trips to be high-involvement decisions. Based on the subsequent aspects of the decision-making process we will determine the level of involvement. However, based on these results the possibility to affect travel behaviour is substantial. It is therefore interesting to discuss the specific information search behaviour.

6.3 Information search behaviour

Next to the choice set formation and considering an external information search, the third aspect of the decision-making process is the information search behaviour. Engel *et al.* (1995: 184) argued that information search behaviour is characterised by three dimensions, degree (amount of information), direction (content of information) and sequence (order of information search). This section discusses the degree and direction of information search. Sequence is closely related to timing of information search. Timing is an external information factor and is examined in section 7.2.3.

Another element that is important is the extent to which information is used in the decision. As indicated in chapter 3, we assume that information is sought on those attributes that are relevant. To further determine whether information actually affects mode and destination choice more data is needed. Engel *et al.* (1995: 297) proposed to let respondent indicate how useful and influential they found the information, to determine whether it could affect the final decision. Therefore a distinction is made between searching for information and the information being decisive (i.e. actually used in the decision).

6.3.1 Degree of information search

The degree of information search is directly related to the type of decision-making process. An extended decision-making process (high-involvement) will usually entail a considerable amount of search (Engel *et al.* 1995: 186). Searching for several items of information is an indication of a high-involvement decision-making process. The number of information items sought also indicates the number of attributes that the traveller generally compares before making a decision. Assuming that travellers first perform an internal information search and try to compare as many attributes as possible, the external information search could be limited to only a few attributes. Consequently, the number of items sought for is a partial indication of the elaborateness of information search behaviour.

The degree of information search varies strongly. In Figure 6.2 we see that most travellers who look for travel information, search for either two, three of four information items related to mode choice. The degree of information search is higher for destination choice. Most travellers search for three, four or five information items. No other studies were found that reported the degree of travel information search. Hence, no comparisons can be made.

Considering an alternative mode or destination increases the degree of information search. Nearly 40% of destination choice travellers need at least four or five items of information. For mode, less difference can be found between choice traveller and non-choice traveller. On average, the mode choice traveller searches for 1.9 information items compared with 1.3 for the traveller

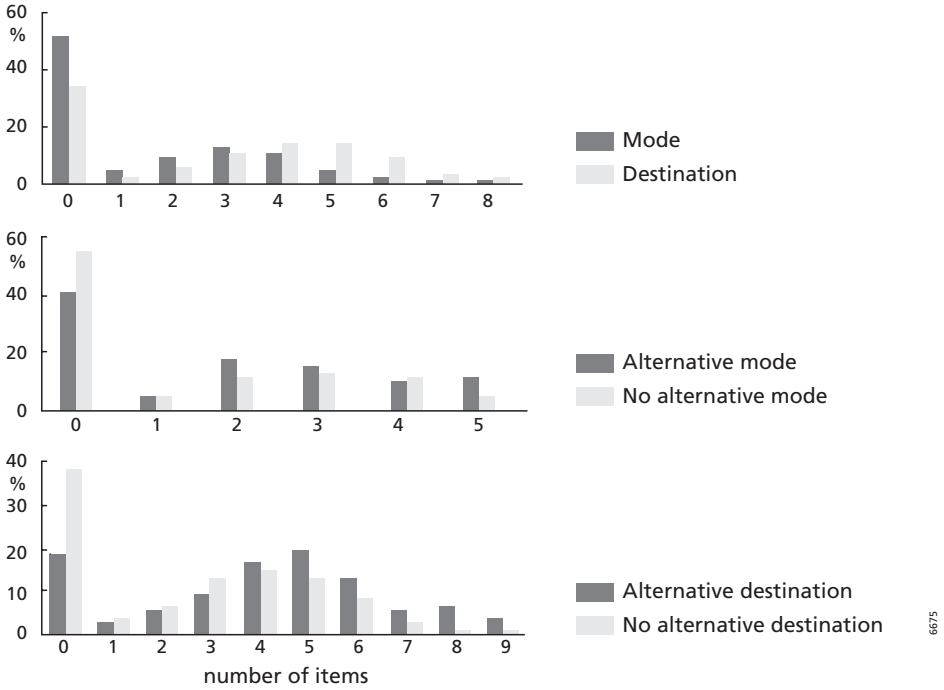

Figure 6.2 *The degree of information search (n=1434)*

without a mode choice. For destination choice, the travellers with an alternative need, on average, 3.3 information items, while those without an alternative only need 2.5 information items. The distribution in degree of information search further indicates that mode and destination choice are not high-involvement decisions for all travellers. This raises the question as to whether external factors affect the level of involvement. In the following chapter the relation between external factors and level of involvement will be explained in more detail.

Next to being an indicator for the level of involvement, degree of information search also is an indicator for the number of relevant attributes during the decision-making process. Travellers only consider a limited number of relevant attributes. The results show that out of the travellers who search for external information nearly everyone searches for at least two attributes. Furthermore, the traveller uses four (mode) or six attributes at most. Based on the external information search, the idea of the traveller as someone who compares all attributes before making a decision is thus rejected. Theoretically it is possible that internal information search is used to compare the other attributes. However, these results underline the idea that people are only inclined to search for a limited number of attributes (Simon 1950) and that travellers have a limited processing capacity (Bettman 1979). From a practical point of view we conclude that the amount of travel information provided by service providers should be tailor-made. This means tailoring travel information to the specific wishes of the traveller. Tailoring information requires both a knowledge of the type of traveller and the specific categories of information that they need. The following section discusses

the information items that the traveller requires. Explaining these differences in information search behaviour related to the external factors are explored within the subsequent chapters.

6.3.2 Direction of information: searching & finding

Specific content used by travellers reveals which attributes are relevant in their decision-making process. Travel information provided to change travel behaviour should therefore correspond to these attributes. It is often assumed that information needs to be dynamic and individualised (Adler & Blue 1998). The content of information shows whether dynamic information is also preferred for pre-trip recreational decisions.

Information needs differ with regard to the type of decision. More specific decisions require more specific information. Travellers use different attributes to choose between two transport modes than between two alternative destinations. This study distinguishes between specific information search behaviour, related to the last theme park visit and geared toward mode and destination choice, and generic information search. The latter is neither directly related to a specific visit nor to a specific choice (such as mode or destination choice). Thus, generic information search explains which information is relevant before travelling to theme parks without making a specific decision.

Generic information

Since generic information search does not apply to a specific visit, respondents could indicate how frequently the information was searched for. Assuming that the category 'always' indicates which attributes are most relevant, we find that entrance fee, opening hours and to a lesser degree special offers are most relevant to the traveller (see Table 6.1). The attribute car costs and facilities in the park are least essential. Interestingly, there is not much difference in the generic search for public transport or car related information. Since most travellers use the car (69%) to visit theme parks, we had expected that generic search on car related information would be more relevant than search on public transport information. This result suggests that travellers who use or

Table 6.1 *The frequency of searching for information items before a theme park visit (n=1434)*

	Generic information search				Mode	Destination
	Never	Sometimes	Usually	Always	Yes	Yes
Parking facilities	39%	34%	19%	9%	19%	20%
Travel time car	23%	27%	31%	19%	28%	27%
Cost car	70%	18%	8%	4%	7%	
Cost public transport	44%	26%	17%	13%	7%	
Travel time public transport	38%	24%	20%	18%	22%	20%
Accessibility by public transport	35%	23%	19%	23%	21%	22%
Entrance fee	3%	10%	32%	54%		54%
Special offers	7%	21%	32%	40%		42%
Attractions in park	9%	26%	35%	29%		40%
Opening hours	3%	8%	33%	56%	42%	59%
Facilities in park	42%	43%	11%	5%	7%	9%
Other information	95%	1%	1%	2%	2%	2%

consider public transport have a higher information need than car travellers. This is discussed at more length in section 7.4.2. The overall conclusion from generic information search is that nearly all destination attributes are more relevant than mode attributes.

Mode choice information
On the whole, travel time by car is the most relevant item of information in the mode process, while travel costs are least relevant. However, the difference between searching for public transport or car information is small; particularly considering the fact that there are more car users (69%) than public transport users (22%). Furthermore, travellers are most likely to search information on their chosen mode of transport (Jou *et al.* 1997: 129). This small difference in information search behaviour is expected; knowledge on public transport is not as easily transferred to other trips as car knowledge, so information need for public transport users is generally higher than for car users. To illustrate, for someone who knows the Dutch motorways it may be easier to estimate travel time to a theme park that is situated along a motorway. However, estimating travel time by public transport not only requires knowledge of the train (or bus) network but also on departure times and transfer points. Another possibility is that car travellers search for public transport information, even when they do not intend to travel by public transport. Further analyses distinguishing between chosen mode is needed to determine which information is most relevant for which traveller (see section 7.4.2). A remarkable result is that 42% of the travellers search for opening hours during their mode decision-making process. A possible explanation may be that departure time, although outside the scope of this study, is an integral part in the mode decision-making process of the traveller. Consequently information on opening hours is sought during the mode decision-making process. Jeng & Fesenmaier (2002) also reported a strong interdependency between these two choices.

Destination choice information
As with generic information search, all attributes related to the destination are relevant. Opening hours is also relevant information during the destination decision-making process. Nearly 60% searched for the opening hours of one or more theme parks. Entrance fee (54%) and special offers (42%) are also relevant information. This result is not surprising since, on average, theme parks in the Netherlands are quite expensive, particularly when visited by a large travel party. Although destination related information is searched for most frequently, approximately a fifth of the travellers indicate that they have searched for mode related information (see Table 6.1). In particular, travel time by car to the destination is searched for by 27% of the respondents. We expect that this mode related information is used as an accessibility measure within the destination decision-making process. This could mean that poor accessibility could deter travellers from visiting a theme park.

The survey distinguished between searching for information and finding information. Searching for information indicates the relevant attributes within the decision-making process. Nonetheless, searching for information does not automatically imply that the information is found. Furthermore, it is plausible that an information search process results in finding additional information. Only information that was found can actually be used in the decision-making process. Therefore we compared searching for and finding travel information. The results show that the majority find the information they were searching for. Yet, there are some exceptions.

Information on park facilities was easily found by 10% even though they were not interested in that information. In contrast, information on special offers to theme parks cannot easily be found; 21% of the travellers indicated that they did search for special offers but could not find the information. As argued previously, theme parks are relatively expensive, particularly for a larger travel party. As a result, the traveller hopes to find a special offer that reduces entrance fees. A simple explanation for not finding the information may be that special offers are not always available.

Overall, we conclude that the information is directly related to the decision at hand. Thus, mode information is most relevant for mode choice and destination information for destination choice. However, the results also reveal that attributes relevant in the decision-making process do not necessarily have to be limited to either mode or destination choice. Examples are, accessibility in destination choice and opening hours (departure time choice) in mode choice.

6.3.3 Changing travel behaviour: used and decisive information

The previous section discussed searching and finding information relevant in the decision-making process. This section discusses the following steps of information search behaviour: actually using the information in travel choices and assessing if the information is decisive. This distinction was made to further determine which attributes are considered crucial in the decision-making process when travellers can actually change their travel behaviour. Information used by travellers determines which attributes are essential when choosing between two alternatives. This is different than searching for information, because it also includes the search behaviour of the travellers who do not consider alternative modes or destinations. Finding which items are ultimately decisive in the decision is the last step of information search behaviour and highlights the crucial attributes to change travel behaviour[2].

Only choice travellers are able to change their travel behaviour. As they have an actual choice between two alternatives, the information may be needed to determine which alternative is best suited for its purpose. Accordingly, only information that is used (or for that matter is decisive) can influence the outcome of the decision-making process. The results discussed in this section are based on the subset *choice travellers*: n=236 for mode choice and n=219 for destination choice.

Mode choice information

At first glance, the results are similar to those reported in the previous section. Destination related information is used for destination choice, while mode related information is used for mode choice. Even so, a more detailed comparison reveals several nuances. Information on opening hours is less relevant in choosing between two modes; only 20% of the choice travellers used is in their decision-making process while only 16% found it decisive (Table 6.2). As a contrast, the relevance of price (either car or public transport) has increased. 33% of the choice travellers use cost of public transport in their decision, and 24% find it a distinctive attribute in their final decision. Finally, public-transport related information is more relevant in the choice decision than car related information. This is not entirely surprising since nearly 30% of the choice travellers ultimately select public transport (as opposed to 22% in the entire sample). Furthermore, the nearly 50% of choice travellers who ultimately select the car may also be interested in public transport information. Based on using public transport information, the maximum potential change of

Table 6.2 *The percentage of respondents who used items in their mode (n=236) and destination choice (n=219)*

	Mode choice		Destination choice	
	Used	**Decisive**	**Used**	**Decisive**
Parking facilities	19%	11%	13%	6%
Travel time car	30%	19%	20%	17%
Cost car	17%	6%		
Cost public transport	33%	24%		
Travel time public transport	39%	24%	19%	12%
Accessibility by public transport	39%	25%	20%	14%
Entrance fee			37%	37%
Special offers			23%	17%
Attractions in park			45%	38%
Opening hours	20%	16%	32%	22%
Facilities in park	7%	2%	7%	3%
Other information	2%	2%	5%	4%

mode choice is 39%; as this percentage of choice travellers uses public transport information in their decision. A more realistic number is the 25% that actually found the information decisive in the decision. Even though this is only a small percentage of the total sample, it does indicate that behavioural changes based on providing travel information are possible.

Destination choice information
The most relevant attributes when choosing between destinations are attractions in the park followed by entrance fee. This result is not surprising since theme parks are marketed by their attractions and the recreation goal set by travellers will mostly be related to the experience they want to have. Again opening hours are less relevant when choosing between two theme parks. The relevance of the attribute entrance fee varies. Although less used in the decision than sought for, all choice travellers who use the information also find it decisive. The accessibility to the destination is slightly less relevant when choosing between two alternatives in comparison to all respondents; still approximately 20% uses travel time per car or public transport to decide between theme parks.

In short, there are several differences between the relevant attributes for the choice traveller as opposed to the non-choice traveller. Perhaps the external factors, and in particular motivation, may shed additional light on this difference in relevant attributes. Furthermore, potentially 39% of choice travellers could change their mode decision towards public transport. If we assume that many travellers have misconceptions regarding public transport, then it is worthwhile to supply public transport travel information. To further investigate to what extent the choice traveller could be persuaded to use public transport is discussed in section 7.4.2.

6.3.4 Summary
We have discussed two aspects of the information search behaviour of travellers; degree and direction of information use. Overall, more than half the travellers search for travel information.

On average, three items of information are being sought. The information need is strongly dependent on the subject of the decision-making process. Thus, destination choice mostly requires destination related information, while mode choice requires mode related information. However, interdependency between these choices is present. Finally, we conclude that different information is needed when only searching on alternatives compared to using the information in a choice process. For mode choice, public transport information became more relevant, while for destination choice the attractions in the park emerged as essential in the decision.

6.4 Ex post evaluation: regretting information use

The last aspect of the decision-making process that determines the role of information is the ex post evaluation of travel information. Ex post evaluation of the trip, and in this study of the information used, is an essential step in the process of travellers (see figure 3.4). During ex post evaluation, travellers compare the received information with the actual situation and determine whether or not the information was accurate and if it was appropriate. For future information use, the traveller's opinion on the used information is important. Information that was seen as unreliable may prevent the information (or the information service) from being used again (Kantowitz *et al.* 1997), whereby negative experiences have more impact than positive ones (Edwards 1996). Thus, during ex post evaluation, internal information is updated and experience, habitual behaviour or attitudes may be adjusted. These are key indicators in predicting future use and effect of travel information. Consequently, many researchers are interested in how travellers learn and update their perceptions (Chorus *et al.* 2006, Bogers *et al.* 2005). This study only briefly touches on the ex post evaluation stage; only information used or not used is assessed. Consequently, only the actual reliability of the information and regretting additional information search are investigated. The reliability of travel information after the trip is discussed in section 7.2.2.

Not searching for certain information may, in hindsight, have caused regret. This regret is often a good determinant of the outcome of ex post evaluations (Engel 1995: 382). After recalling their last trip to a theme park, travellers could indicate whether, in hindsight, they had wanted additional information. If that were the case, they could also indicate if that information would have influenced their decision.

Table 6.4 shows that only few travellers have a need for additional information. When additional information was needed, 12% thought that it would influence their destination choice, compared to 8% for the mode destination. The results can only be interpreted tentatively because so few travellers indicate that they regretted not using certain information. One observation is that

Table 6.4 *Percentage of respondents with post-decision information regrets (n=1434)*

	Additional information	Influenced decision (% of additional)
Destination choice	5%	12%
Mode choice	3%	8%

destination choice is more prone to change due to circumstances. This may be caused by the large number of alternative destinations and the lower familiarity the respondents have with these destinations. The additional information that was required mostly encompassed more specific information, such as current renovations in the park and walking distance from the parking area to the park entrance. Furthermore, travellers would appreciate knowing which are particularly busy days. If they had known how crowded it was going to be, they might have chosen a different park. Finally, the small number that indicated that they would have changed their mode choice indicated that they would have preferred public transport.

6.5 Conclusions

The goal of the chapter was to discuss to what extent the four aspects of the decision-making process were executed. These aspects were choice set formation, considering external information search, information search behaviour and ex post evaluation. In doing so, the third research question: *"What is the actual information search behaviour, which information is used in the mode and destination choice and what is the impact on travel behaviour?"* is answered.

The need for pre-trip travel information for theme park visits is quite high. Approximately 53% of travellers use information for their mode choice while 68% use information for destination choice. These percentages are relatively high compared with pre-trip commuter information search. Furthermore, the use of pre-trip information in this study is even high compared to leisure trips (also including trip to relatives and shopping trips) reported elsewhere (AVV 2004; Vonk & Van der Horst 2006). Therefore, we conclude that the main assumption that recreational trips require more information is confirmed. The need for external information is larger for destination choice (68%) than for mode choice (53%). This underlines the idea that less familiar choices need more information; in general the mode choice is made more frequently than the destination choice.

Most travellers, who do search for external information, search for two to four information items for mode choice and for three to six information items for destination choice. For destination choice, static information such as opening hours and entrance fee are the most relevant attributes. More dynamic information, such as travel time by car or by public transport, is necessary for mode choice. However, travel time by car and by public transport does not have to be dynamic. Unfortunately, it cannot be determined to what extent the traveller really needs dynamic travel time or whether static travel time (e.g. by time tables or based on historical data). The results do show that travellers have a dispersed information need; different attributes are considered relevant in the decision-making process. Consequently, tailoring the travel information to the needs of the travellers foremost requires a careful selection of relevant attributes rather that making all information dynamic. For provision of travel information it is therefore crucial to understand which groups have which information needs (see following chapters).

Although the use of travel information is high, the potential for travel behaviour changes is rather small. Only 16% and 15% can be considered a mode respectively destination choice traveller. However, these choice travellers do have higher and slightly different information needs. Nearly 85% search for information for their destination choice and 68% for their mode choice.

Between 30 to 40% of these choice travellers actually use the information in their choice process. Furthermore, the number of information items required is also higher, particularly for destination choice. The relevant attributes have shifted to public transport attributes for mode choice, which have become more essential than car attributes, and to attractions in the park and entrance fee for the destination choice traveller. Consequently, deploying travel information to change recreational travel behaviour will not be very effective in changing travel behaviour. This raises the question as to what the threshold level is for central government to consider travel information provision. In other words: what percentage of expected change in travel behaviour is needed before travel information services for recreational trip are deployed?

For mode choice travellers, the public transport attributes have become more relevant (see also section 7.4.2) than the car attributes. Practically this means that the need for accurate public transport information is higher than for car information. The first step in convincing choice travellers to choose for public transport is to ensure that there is sufficient high quality information.

Considering the limited execution of all four aspects of the decision-making process, the assumption that recreational mode and destination choice are indeed high-involvement decisions is challenged. It may be more likely that only some travellers consider the choices to be high-involvement decisions and do execute all aspects of the decision-making process. Nevertheless, the level of involvement may be lower for other travellers.

Although these results are valuable by themselves, they become more relevant when they are considered in light of the external factors. These factors may help explain the specific information needs and help determine which travellers consider the choices to be high-involvement decisions. As there were so few travellers that had a negative ex post evaluation, this aspect is no longer considered in the remaining analyses. The following chapter discusses the impact of each external factor on the three aspects of the decision-making process.

Notes

1 Noord-Brabant is a province in the Netherlands
2 Therefore a limit was placed on the number of decisive items of information. It was thought that being able to select only three items of information would lead to the identification of the most relevant attributes.

7 The effect of external factors

7.1 Introduction

The previous chapter discussed the decision-making process of the respondents regarding their last theme park visit. We concluded that external factors could explain differences in displayed behaviour. Therefore, the aim of this chapter is to discuss the relations between the external factors and the main aspects of the decision-making process. As the ex post evaluation was positive for nearly all respondents, this aspect will no longer be examined in this chapter. The relations assumed between the external factors and the decision-making process as discussed in chapter 4 are tested empirically. Consequently, this chapter answers the second research question: "*What are the key external factors that affect the decision-making process for mode and destination choice, and how do they affect the role of travel information?*" empirically.

As in chapter 4, the triad of factors namely information, individual and environmental is used. Each factor is discussed on the subsequent sections; the information factors information sources, reliability and timing are discussed in section 7.2; the individual factors including socio-demographic characteristics, experience, attitude & personality, habit and motivation, are then discussed in section 7.3; finally, environmental factors including the travel party and access to mode and destination alternatives are examined in section 7.4. The chapter concludes with a discussion on the presented results related to transport policy and the implications for the analyses in chapter 8.

7.2 Information factors

In chapter 4 we concluded that information sources, reliability (source and information) and timing are the key information factors affecting the decision-making process (Fodness & Murray 1998; Katteler *et al.* 2002; Khattak *et al.* 1999). As information sources, reliability and timing are related to specific information items, the information factors only affect information search behaviour. Each factor is now discussed individually; starting with an empirical description of each factor followed by an examination of the relation between the factor and the displayed information search behaviour.

7.2.1 Information sources

A variety of pre-trip information sources can be used to acquire travel information. Based on Snepenger & Snepenger (1993) and Gursoy & McCleary (2004a) we distinguish between four external sources: family and friends, media, destination specific literature and the internet. Media contains the sources mobile telephone, text-messages and television (see Table 7.1). Access to and familiarity with information sources reveals which information items could potentially

Table 7.1 *Access to and use frequency of information sources (n=1434)*[1]

	Accessibility	Frequency of use						
	Yes	2-6 per week	1 per week	2-3 per month	1 per month	2-11 per year	1 per year	Never
Internet – home	95%	89%	8%	2%	1%	0%	0%	0%
Internet – work	65%	68%	16%	4%	3%	3%	1%	4%
Mobile phone – calling	95%	61%	17%	8%	5%	4%	2%	3%
Mobile phone – texting	88%	44%	19%	11%	6%	6%	3%	11%
TV with teletext	94%	54%	19%	10%	7%	6%	2%	3%
Friends & family	99%	58%	23%	8%	5%	4%	1%	1%
Other	36%	46%	22%	8%	4%	6%	5%	11%

be attained, and how easy, by the traveller. Furthermore, this information is also useful for determining the appropriate channel for future information services.

General access and use frequency

Common access to and frequency of use determine the familiarity with the different information sources. The use frequency of the sources concerns the use for information search on any topic. Table 7.1 displays the access to and use frequency of information sources. The destination specific literature is not present in the table as it is a specific source, while the table only contains common sources.

Most respondents have access to nearly all sources (see Table 7.1). For example, nearly all respondents have access to friends and family (99%). Only access to the internet at work is relatively low, with only 65% having access. When access to information sources is compared with other studies, we find similar accessibility levels for mobile phone and television (AVV 2004: 41); though numbers on internet access vary. AVV (2004: 41) report a lower access to internet at home (89%) but a higher access to internet at work (also 89%). However, Vonk & Van der Horst (2005: 11) found that 77% have access to internet at home, while 56% have internet access at work. In any case, the reported access to internet at home as found in this study is higher than average in the Netherlands. This is due to the nature of the data collection as all respondents were approached via the internet. Furthermore, 36% of the respondents had access to "other" sources; the source mentioned most frequently was newspapers and magazines.

Not only access but also the frequency of using information sources is very high, as approximately 75% uses every source at least once a week (see Table 7.1). Text messages are used the least as an information source. The fact that text messages contain limited information, information services can be expensive and the fact that many travellers are unfamiliar with the feature are among the reasons why the use is lower than for other sources. The frequency of internet use is very high: 89% uses it between 2 to 6 times a week. This is in line with expectations (see section 4.2.2); the use of the internet as a source of many different types of information is becoming more important. Overall, we can conclude that all respondents are (very) familiar with the different

information sources. Therefore, unfamiliarity with the sources cannot be the reason why a specific information source is not used. In other words, all sources could potentially be used for specific information search.

Table 7.2 *The use of information sources to search for information items (n=1434)*

	Generic			Mode choice			Destination choice		
	Internet	Brochure	Other	Internet	Brochure	Other	Internet	Brochure	Other
Parking facilities	93%	5%	2%	89%	7%	4%	83%	11%	6%
Travel time car	91%	1%	8%	90%	1%	9%	86%	5%	9%
Cost car	78%	3%	19%	79%	2%	19%			
Cost public transport	94%	1%	5%	92%	2%	6%			
Travel time public transport	96%	1%	3%	94%	1%	5%	88%	4%	8%
Accessibility by public transport	94%	2%	4%	93%	3%	4%	93%	3%	4%
Entrance fee	90%	8%	2%				74%	15%	11%
Special offers	85%	9%	6%				87%	5%	8%
Attractions in park	85%	13%	2%				85%	14%	1%
Opening hours	90%	7%	3%	87%	11%	2%	84%	12%	4%
Facilities in park	87%	7%	6%	88%	4%	8%	79%	10%	11%
Other information	78%	3%	19%	56%	4%	40%	81%	3%	16%

Use of sources for information search behaviour

What information sources are used for information search related to recreational trips? We assumed that the internet would be used most often for most information items (see section 4.2.2). Furthermore, based on tourism literature, we assumed that destination related literature would be relevant for static information concerning the destination. Which sources were used for generic and specific information search is depicted in Table 7.2. The information sources telephone, text messages, television and friend & family were hardly ever mentioned (1% or less) and they are grouped together in the "other" category. As expected, the internet is used by most respondents to search for the different information items. Perhaps this shows that once people use internet as an information source, other sources become less relevant. In contrast to this study, AVV (2004) reported that the pre-trip use of television with teletext was higher than the internet use. A plausible explanation is the difference in trip motive. AVV investigated commuter trips, and pre-trip congestion information is available of the teletext pages. The information items required for visiting a theme park are not available on the teletext pages. In addition, destination related literature, i.e. brochures, is indeed used for destination related information such as entrance fees and attractions in the park. Based on the static nature of this information, the internet may not offer additional information, while brochures may increase the pre-trip enjoyment. Finally, within the 'other' category many respondents mentioned that they had used their experience or knowledge as an information source. This shows that, even when not specifically probed, internal information is relevant for travellers.

Looking at Table 7.2 in more detail, it seems that most respondents overestimate the internet as an information source; for generic information search the use of the internet is higher than in the specific information search. Perhaps as Lindh (1998: 70) suggests, the respondent assumes that he uses the internet for searching information, while focussing on the last visit reveals increases the recollection of actual behaviour. The exceptions are the use of internet to search for the items car cost and special offers. The use of brochures and other sources of information increase for information search related to mode and destination choice. No apparent explanation is available for these differences.

Overall, we conclude that the use of information sources in decision-making processes of recreational trips corresponds to a large degree with the types of sources proposed by Snepenger & Snepenger (1993) and Gursoy & McCleary (2004a). However, the internet and brochures are the most relevant for travellers. The assumed relations discussed in chapter 4 are therefore empirically confirmed.

7.2.2 Reliability

One measure of information quality is the reliability of information source and the actual information (Khattak *et al.* 1999). Kantowitz *et al.* (1997) demonstrated that travellers do not use (perceived) unreliable information in their decision-making process (Lappin & Bottom 2001: 41). This section discusses to what extent information sources and information items are found reliable. In addition, it examines whether perceived reliability changes during ex post evaluation of information items.

Reliability of information sources
In addition to access to information sources, the reliability further determines whether the source is used. It is assumed that travellers only select information sources that are perceived reliable. In the table below the perceived reliability of information sources is displayed.

Most sources are seen as reliable, though a small subset indicates that the information source is very reliable. Approximately a fifth of the respondents indicated that the source is neither reliable nor unreliable. Kantowitz *et al.* (1997) found that travellers have a certain reliability-threshold; thus not all information needs to be correct all the time but most of the time (they found that information needs to be correct in at least 71% of the cases). Kantowitz's study also points towards a reliability threshold; even though respondents indicate that the source has a neutral reliability or is perceived reliable does not lead to limited use of that source. Text messages are an exception, 22% of the respondents find this source (very) unreliable, which explains the lower frequency of use of text messages.

In general we expected that only reliable sources would be used to acquire information. Table 7.2 shows that this is indeed the case, as 76% find the internet (very) reliable. However, source reliability does not guarantee the use of that source, otherwise the other information sources would have been used more frequently.

Pre-trip and post-trip reliability for mode choice information
When a traveller has found relevant information the perceived reliability of that information is determined. Based on this reliability, the traveller may decide to use the information. The reliability of the information is based on the perception of the traveller rather than the actual reliability. Therefore, the (perception of) reliability is susceptible to change. As negative experiences have a larger impact on future decisions than positive experience (Edwards 1996), the possible change in reliability is relevant to determine potential future use of travel information. In this study reliability of information is determined twice, before and after the actual trip, to reveal the change in reliability[2]. As argued in section 4.2.2, it is assumed that in general the post-trip reliability of information will be lower than the pre-trip reliability.

Table 7.3 *The reliability of information sources (n=1434)*

	Very unreliable	Unreliable	Neither	Reliable	Very reliable
Internet	1%	3%	21%	65%	11%
Telephone	1%	3%	19%	63%	14%
Mobile phone – texting	5%	17%	43%	32%	3%
TV with teletext	1%	3%	18%	68%	11%
Brochures	1%	4%	23%	61%	11%
Books	1%	3%	22%	65%	10%
Newspapers	1%	3%	26%	63%	8%
Friends & family	1%	2%	24%	56%	16%
Other	3%	5%	38%	43%	11%

Table 7.4 *Pre-trip and post trip reliability of information items related to mode choice (n=236)*

	Pre-trip reliability			Post-trip reliability		
Information item	**Low**	**Average**	**High**	**Low**	**Average**	**High**
Parking facilities	2%	25%	73%	3%	28%	69%
Travel time by car	2%	37%	62%	3%	42%	55%
Cost of car trip	4%	37%	59%	na	na	na
Travel time public transport	4%	28%	68%	8%	33%	60%
Accessibility by public transport	2%	28%	70%	7%	26%	66%
Cost of public transport	1%	22%	77%	3%	18%	79%
Opening hours theme park	0%	14%	86%	1%	15%	84%
Facilities theme park	4%	43%	54%	15%	44%	41%
Other information	8%	17%	75%	7%	26%	67%

The difference between perceived and actual reliability was only measured for the choice travellers. Thus, the analysis is based on a sample of 236 and 219 respondents for mode choice and destination choice respectively.

As can be seen in Table 7.4, respondents generally find the information to be highly reliable, with information item opening hours being the most reliable. Information on facilities in the park is perceived to be least reliable. Based on the numbers, it is likely that this information is actually used within the decision-making process. This was confirmed by the actual use of information to decide between mode alternatives (see section 6.3.3).

After the trip, the respondents still generally thought that the information had been reliable, even though the reliability decreased. With the exception of public transport costs, the percentage of high reliability has decreased for all information items. However, compared with the pre-trip reliability, the percentage of average and low reliability has increased for post-trip reliability. The information items facilities in the park, travel time and accessibility by public transport were perceived to have the lowest post-trip reliability. Why the post-trip reliability of these information items is perceived lower than pre-trip is unclear. These results support the assumption that pre-trip reliability is higher than post-trip reliability. Assuming that average reliability is still within the threshold found by Kantowitz *et al.* (1997), we conclude that the reliability of most pre-trip mode information is sufficient.

Pre-trip and post-trip reliability for destination choice information
The same analysis was performed for information search behaviour related to destination choice. The results for destination choice reveal a similar pattern as was found for mode choice (see Table 7.5). The pre-trip reliability was generally high for most information items. Furthermore, few respondents find the pre-trip reliability of information items low; with 'other' information being the exception. For example, the information item "facilities in the park" was found least reliable but only 7% found the pre-trip reliability low. In contrast, 11% found that the information item 'facilities in the park' has a low reliability after the trip. The information items that are used in both

Table 7.5 *Pre-trip and post trip reliability of information items related to destination choice (n=219)*

	Pre-trip reliability			Post-trip reliability		
Information item	**Low**	**Average**	**High**	**Low**	**Average**	**High**
Parking facilities	1%	27%	73%	2%	24%	75%
Travel time by car	1%	40%	59%	5%	38%	57%
Travel time public transport	2%	32%	67%	8%	38%	53%
Accessibility by public transport	3%	28%	69%	7%	28%	65%
Entrance fee	1%	13%	86%	2%	15%	83%
Special offers	2%	23%	76%	5%	29%	66%
Attractions in the park	1%	23%	76%	2%	29%	69%
Opening hours theme park	1%	13%	86%	1%	12%	87%
Facilities theme park	7%	36%	57%	11%	46%	42%
Other information	19%	22%	59%	21%	13%	67%

mode and destination choice have a similar pattern of lower post-trip than pre-trip reliability. Again facilities in the park, travel time and accessibility by public transport are perceived to have the lowest reliability after trip.

Mode-related information is perceived to be less reliable than destination-related information, both pre-trip and post-trip. As destination-related information has a more static nature (i.e. less likely to change often), it is reasonable that the perceived pre-trip reliability of this information is higher. The chance that the information matches the idea that the traveller had is larger when information changes seldom. Perhaps the fact that information does change occasionally is reflected in the post-trip reliability of these information items.

To summarise, the pre-trip and post-trip reliability is sufficient to warrant the use of the information in the decision-making process. However, the decrease in reliability may be troublesome. Assuming that the lower reliability is a result of a negative experience with the information, the use of information may eventually decline. Although this may, in the long run, be damaging to the policy instrument "travel information", the decline will possibly be delayed by the reliability-threshold (Kantowitz *et al.* 1997). The traveller only 'changes' his internal memory after information has been very inaccurate or frequently inaccurate. Nevertheless increasing the actual reliability of travel information is recommended.

7.2.3 Timing

The last information factor is timing. With timing, the traveller establishes which timeframe before the trip is most suited for information acquisition. The timing-aspect of information search is therefore relevant in determining the best time to offer information services. As timing clarifies the chance the information is used, and because it determines the interdependency between mode and destination choice (Bettman 1979; Jeng & Fesenmaier 2002).

Instead of all information items, as used in the previous sections, the items are grouped per subject. The subjects are car-related, public transport-related and destination-related information search. Table 7.6 shows when travellers search for information on each of these subjects[3].

Table 7.6 *The timing of the information search (n=1434)*

Travel information	Same day	Day before	Week before	One to two weeks before	Longer than two weeks before
Car	10%	35%	21%	8%	8%
Public transport	6%	24%	19%	6%	8%
Theme park	9%	32%	38%	17%	16%

Table 7.7: *The relation between mode and destination timing (n=1434)*

Destination / Mode		Same day	A day before	A week before	1 to 2 weeks before	Longer than 2 weeks before
Car	Same day	5%	3%	2%	1%	1%
	A day before	2%	19%	13%	5%	2%
	A week before	1%	5%	14%	4%	3%
	1 to 2 weeks before	1%	2%	2%	5%	2%
	Longer than 2 weeks before	1%	1%	1%	1%	6%
Public Transport	Same day	3%	3%	3%	1%	1%
	A day before	2%	16%	12%	4%	2%
	A week before	1%	5%	16%	4%	2%
	1 to 2 weeks before	0%	2%	2%	5%	2%
	Longer than 2 weeks before	1%	2%	3%	2%	7%

Most respondents have a preference for searching either a day before or within a week before the actual travel date. In section 4.2.4 we assumed that destination choice would be made before mode choice. This assumption is supported by these results, as 38% searched for information a week before the trip and a further 33% started to search for information more than a week in advance. Based on the results we conclude that travel decisions for recreational trips are made shortly before the actual trip. One of the characteristics of a high-involvement decision is that the time pressure is often low, i.e. travellers have and make time to make a careful deliberation (Engel *et al.* 1995: 164). The results indeed indicate that most destination and mode information is sought in advance of the actual trip, thereby implying that that destination choices and, to a certain extent, mode choices are high-involvement choices.

To further determine the timing of different decisions, we contrasted the timing of destination-related information search with the mode-related information search. The results are depicted in Table 7.7.

The table above shows that nearly half of respondents look for the information at the same time (48% versus 46 % for car-destination and public transport-destination respectively). The respondents with a car-destination combination prefer to search a day before the trip. However,

those with a public transport-destination combination have an equal preference for a day or a week before. We therefore conclude that public transport information is sought before car information. Furthermore, only 17% (car) and 20% (public transport) of the travellers search for mode information before destination information. This means that over a third of the respondents indicated that they sought destination information before mode information. However, most travellers seem to search for destination and mode information at roughly the same time, indicating that the decisions are most likely made simultaneously.

An implication of this result is that travel information services should address both decisions simultaneously. When the objective is to change travel mode, then the information should emphasise the overall 'experience' of the theme park and thus integrate mode choice within the destination choice. When the objective is to get more visitors to a specific theme park, the accessibility of the theme park should be stressed. Further discussion on changing travel behaviour is provided in chapter 9.

Frequency of information search
The second timing aspect is how frequently the information is sought for. If travellers only search for information once, it needs to be comprehensive and individualised immediately. If travellers look more often, it might be feasible that information search starts at a more generic level to become very specific just before the trip. Such search behaviour would be expected with first time visits or longer visits such as holiday trips (Lindh 1998; Vogt & Steward 1998).

As can be seen in the Figure 7.1, most respondents search for each type of information once. An exception is public transport related information; just as many respondents indicate that they do not search for information on public transport than respondents that search for information

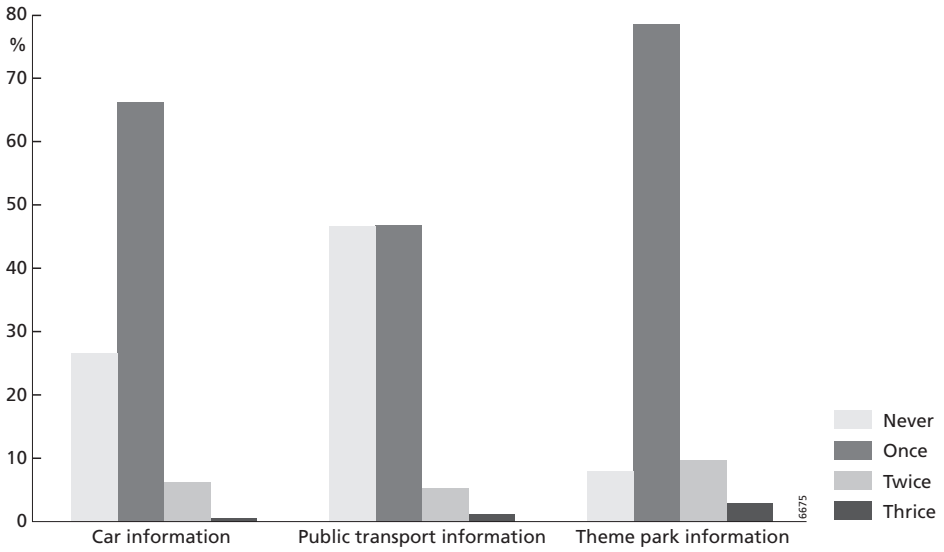

Figure 7.1 *The frequency of searching for external information (n=1434)*

once. This can be explained by the fact that public transport users only constitute 20% of the sample. Most car users do not search for public transport information. Since most travellers, who do search for information, only search once, service providers also need to present the relevant information in such a manner that it can easily be accessed at once. In tourism destination choice, the tourist often searches for information several times prior to the trip. Consequently, we conclude that with respect to the frequency of information search, recreational trips and holiday trips cannot be compared.

7.2.4 Summary

In this section we discussed the empirical relations between the information factors and the decision-making process. More specifically, the relations between information sources, reliability and timing on the one hand and information search behaviour on the other hand. All assumed relations as proposed in section 4.2 were confirmed, except for timing of information search. It was assumed that destination choice would be made before mode choice; however, most travellers make these decisions at roughly the same time. Consequently, it is useful to provide information on both decisions at the same time. Related to providing travel information services, the internet is the most commonly used information source and new information services could benefit from deploying this source as well. In addition, theme park owners can still count on information brochures to inform travellers on the destination specific details. Overall, the reliability of information is high but improving reliability should remain a priority.

7.3 Individual factors

The effect the characteristics of the traveller have on the decision-making process has long been recognised (Bettman 1979; Engel *et al.* 1995; Jeng & Fesenmaier 2002). However, no consensus was found amongst researchers on a minimum set of factors that adequately describe the traveller. Based on these studies, we have selected a combination of individual factors to establish a basic set of factors to describe the traveller. These factors are socio-demographic characteristics, experience, attitude & personality, habit and motivation (see section 4.3). As the perception of the traveller affects every aspect of the decision-making process, the impact on choice set formation, considering external information search and information search behaviour is discussed separately. Each factor is now discussed individually[4]; starting with an empirical description of each factor followed by an examination of the relations between the factor and the aspects of the decision-making process.

7.3.1 Socio-demographic characteristics

The socio-demographic characteristics used in this study are age, sex, household composition, employment status, education level and income. These characteristics have already been described in section 5.4.1. Consequently, we directly start with the effect of these characteristics on the aspects of the decision-making process.

Choice set formation & external information search

Socio-demographic characteristics place restrictions on budget, time and activity patterns (Srinivasan 1993: 3). The available alternatives and the possibility to search for external

information could therefore be limited for certain travellers. As no specific relations were found between the socio-demographic characteristics and the choice set formation, no specific assumptions were made. No differences were found in destination choice set formation related to the socio-demographic characteristics. However, several characteristics led to significantly different behaviour for the mode choice set.

First, men are more likely to consider a mode alternative than women (21% versus 16%). As men use the car more frequently than women for commuter and recreational trips (Vonk & Van der Horst 2005: 10), we had expected that women would sooner consider alternative modes. Perhaps women do prefer to use the car, but are not always able to use the car because it is not available. Second, students consider mode alternatives more often than other household types (30% versus 15%). Students in the Netherlands have free access to public transport. Since the accessibility of many theme parks requires a car to reach the destination, the students consequently may be 'forced' to consider other transport modes than public transport. Third, respondents with a low income (€1000 and less) are significantly more inclined to consider an alternative compared with higher income groups. This difference in considering an alternative related to income can be attributed to a similar explanation as the lowest income group have the lowest car ownership. Last, respondents who have different education levels display different choice set formation behaviour. Those with secondary degrees are least likely to consider an alternative (12%), while respondents with tertiary and primary degrees are more likely to consider an alternative (20 and 21% respectively).

The other decision the traveller has to make in his decision-making process is whether or not external information is needed. Studies that report information use usually do not distinguish between considering external information search and specific information search (see section 4.3.1); therefore no specific relations are expected. As with choice set formation, there are no differences in behaviour concerning destination choice related to socio-demographic characteristics. For mode choice, the household composition influences the decision to search for external information. Students and single parent families have a higher need for external information, with 68% and 60% respectively compared to other household types. The high pressure on single-parent families to make sure that the trip is pleasurable within the limited free time (Mommaas *et al.* 2002: 10) is probably the explanation for their higher information needs. In addition, both students and single-parent families have the lowest level of car availability. As we argued in chapter 6 more information is required when travelling by public transport than by car; this results in higher external information needs.

Socio-demographic characteristics are often used to segment the travellers into distinctive groups. This segmentation is then used to tailor travel information to the specific wishes of these groups. Thus far the socio-demographic characteristics have not revealed any differences in behaviour for destination choice. Consequently segmenting the travellers is not possible. Other external factors should be considered for segmenting the travellers related to destination choice. Another aspect is that the socio-demographic characteristics seem to explain the same differences in behaviour (e.g. differences can be traced back to car availability). Models in which all factors are combined are therefore needed for a complete picture of the factors affecting the decision-making process. These models are estimated in the following chapter.

Information search behaviour: generic information search
Generally, most travellers search for information before visiting a theme park. However, are there any socio-demographic differences between those who search and who do not search for specific information items? As reported in chapter 4, other studies reported that age, sex, income and employment status all affect information search behaviour. This section describes the differences for generic information search. The analyses showed that there are many differences in information search behaviour related to socio-demographic characteristics; however, the relations differ per information item. The following section shortly discusses the significant relations found.

Women search for significantly more information on nearly all items than men. This result further supports the empirical findings of Polak & Jones (1993) and Srinivasan *et al.* (1999) who also report that women search for more information than men. Only for the information items car cost, attractions and facilities of the park is there no significant difference between women and men. Information search behaviour varies strongly per age group.

Depending on the construction of age groups, different information search behaviour was found. However, the overall tendency is that the younger travellers (up to 35 years) search for more information on most items than their older counterparts. Information items that were more relevant to the older travellers were parking facilities, facilities in the park and other information. Srinivasan *et al.* (1999) reported varying information needs related to different age groups. They conclude that it is possible that there are different tradeoffs between travel time and access considerations among different age groups (1999: 10). Consequently, age is an important factor in determining the information needs of the traveller.

Household type affects the information search behaviour for mode-related information, entrance fees and special offers significantly. Single parent families and students are most interested the entrance fee of the park. Families with children are most interested in special offers, whilst singles are least interested in special offers. This probably has to do with the financial situation of the traveller. Not surprisingly, families with children are significantly less interested in information on public transport; they are more interested in parking and car travel time information. Furthermore, students are most interested in public transport information specifically travel time and accessibility.

Finally, the information items on public transport become less relevant for the higher income groups (starting from €1700). Srinivasan *et al.* (1999) also found that income level decreases the interest in public transport. Furthermore, they found that higher income groups find car-related information more relevant than lower income groups. However, we found that higher income groups are less interested in car-related information than lower income groups. Entrance fee and special offers are significantly less relevant attributes for the highest income group (€3100 and higher). It is likely that money is less of an issue for these travellers, thus information on these attributes is less relevant.

Information search behaviour: mode choice information
The previous section discussed the generic information search; that is, not explicitly related to a specific visit or a specific choice. This section discusses the differences in information search behaviour particularly related to mode choice. As with generic information search behaviour, the influence of age remains complex. For example, young respondents (25 or younger) are significantly more interested in car costs and all public transport information items than other age categories. This can probably be attributed to the low level of car ownership of this group. The age group 25-45 years old are most interested in the attractions of the park. This group may perceive the most time pressure and are most likely to have (young) children and therefore want to make sure that they are visiting the theme park that best fits their expectations. Finally, the older respondents (56 and older) are less interested in the attributes entrance fee and facilities in the park. Interestingly, older travellers were more interested in facilities in the park in their mode choice. Arguably, the attribute 'facilities in the park' plays a different role in mode than in destination choice.

Household composition affects the interest in mode-related information items. Families (with and without children) are less interested in public transport information compared with the other household types. Furthermore, respondents living in student accommodation are most interested in public transport attributes. These results are similar to the generic information search. Education level affects information search behaviour for mode choice. Those with lower secondary degrees are significantly less interested in public transport information and opening hours than other education levels.

Finally, travel time by car is significantly more relevant for middle-income groups (€1700 to €3100) than for other income groups. Furthermore, the highest income group finds information items on public transport more relevant than the middle-income groups. This result is somewhat unexpected as high income is associated with high level of car ownership. However, these groups may be more interested in using another transport mode for visiting theme parks, thus leading to a higher information need.

Overall, we conclude that there are more differences in information search behaviour on public transport attributes than on car attributes.

Information search behaviour: destination choice information
The second aspect of specific information search behaviour is related to the destination choice. The same relations between socio-demographic characteristics and information search behaviour for destination choice were examined.

Household composition has a similar effect on search behaviour of public transport attributes. Families are least interested in these information items, while respondents living in student houses are most interested in these items. This confirms that travellers mostly search for information that is related to their selected transport mode. Furthermore, (single parent) families find attractions in the park and opening hours more relevant attributes than other household types. It is reasonable that the attractions in the park are particularly relevant when travelling with children, as not all theme parks are equally suited for children.

Several results found for destination choice are similar to the results found for mode choice. The effects of income level on the search behaviour for the mode-related attributes are the same. Furthermore, age led to the same differences in behaviour as discussed previously. Finally, those with lower secondary degrees were significantly less interested in information on accessibility by public transport. However, they were more interested in the attribute attractions in the park compared to those with other degrees.

To summarise, socio-demographic characteristics point toward several differences in the execution of the decision-making process related to mode and destination choice. The relation to mode choice and mode-related information items is stronger than with destination choice and destination-related items. Furthermore, the relations between the characteristics and the aspects clearly differ, making a segmentation based on these characteristics complicated. Consequently, it may be more appealing to select other external factors to base the segmentation on.

7.3.2 Experience

Experience is defined as the knowledge, practise or skill derived from observation or participation in events. It is considered a key factor in understanding decision-making processes (Gursoy & McCleary 2004), as experience is used to determine additional (external) information needs. To what extent experience changes displayed behaviour concerning the central aspects of the decision-making process is discussed in this section. Travellers have experience on many topics. This study focuses on three variables: having previously visited the theme park, frequency of theme park visits and the frequency of information source use. This last factor did not reveal distinctive groups, as nearly all travellers had access to information sources and used them frequently (see section 7.2.1). Therefore, this variable is not considered in further analyses.

Most respondents (76%) had previously visited the selected theme park (see Table 7.8). Thus three quarters of the sample was familiar with the available facilities and the "experience" the park has to offer.

Table 7.8 further displays that the majority of the travellers visit theme parks several times per year. Only 10% of the respondents visit theme parks at least once a month. Thus, the respondents in this sample are not new to visiting theme parks. Nonetheless, the high number of destinations may limit the transferability of the traveller's knowledge. Overall, this means that in general travellers know what to expect when visiting a theme park, but that they may not be aware of the values of the relevant attributes of each destination. To distinguish between experienced and inexperienced travellers we tested various definitions of frequent/infrequent theme park visitors. The displayed behaviour differed the most between travellers who visit a theme park *at least once*

Table 7.8 *The distribution of the experience variables (n=1434)*

Visited before		Frequency of theme park visits				
Yes	No	≥ 1x per week	2-5x per month	1x per month	2-11x per year	1x per year
76%	24%	1%	4%	5%	60%	31%

Table 7.9 *The impact of experience variables on the choice set and considering external information search (n=1434)*

		Visited before		Frequency	
	Yes	**Yes**	**No**	**≥ 1 per month**	**< 1 per month**
Destination	Information	**65%**	**78%**	**56%**	**69%**
	Alternative	**13%**	**24%**	15%	16%
Mode	Information	**50%**	**65%**	**40%**	**55%**
	Alternative	17%	17%	16%	17%

* Bold figures are significant at α=0.05

a month and those who visit *less than once a month*. Consequently, this distinction is used in the remaining analyses in chapter 7 and 8.

Choice set formation & considering external information search
To what extent does experience with theme parks affect the choice set formation and the decision to search for external information? As discussed in section 4.3.2, some disagreement exists between researchers as to the effect of experience of the choice set. Woodside & Sherrel (1977) found that experienced travellers consider more alternatives than inexperienced travellers. However, Mommaas *et al.* (2000) argue that travellers want to fulfil their goal and will therefore simply rely on their last visit. The results depicted in Table 7.9 point towards the idea presented by Mommaas *et al.* (2000), that familiar travellers prefer to do what they did before. For destination choice, only 13% of the familiar travellers considered and alternative compared with 24% of the unfamiliar travellers. Familiar travellers know what to expect at the theme park and are therefore better able to determine if the visit will fulfil the recreational goal. Having previously visited the theme park did not lead to considering more or less mode alternatives, nor does the frequency of theme park visits result in different choice set behaviour.

Familiar travellers and frequent visitors both search less for external information than the unfamiliar traveller and infrequent visitor (Table 7.9). This result confirms the general assumption that experience limits the need for external information as suggested by AVV (2003: 21), STAR (2003: 4) and Patten *et al.* (2003: 6). As both variables significantly affect the decision to search for external information, the influence on information search behaviour is particularly relevant.

Information search behaviour: generic information search
Those who are familiar with the theme park display similar information search behaviour to the unfamiliar travellers. Table 7.10 shows that the familiar traveller only finds parking facilities and attractions in the park less relevant information items. As generic information search is not associated with a specific theme park visit, we expect that the variable 'having previously visited the theme park' is not relevant. Consequently, this explains why there is no difference in information search behaviour between familiar and unfamiliar travellers.

Table 7.10 *The impact of having visited the park before and searching for information (n=1434)*

Information item	Generic		Mode choice		Destination choice	
	Yes	No	Yes	No	Yes	No
Parking facilities	**59%**	**66%**	**17%**	**25%**	**18%**	**25%**
Travel time car	76%	81%	**25%**	**36%**	**23%**	**39%**
Cost car	30%	28%	7%	5%		
Cost public transport	56%	55%	18%	15%		
Travel time public transport	63%	62%	22%	20%	21%	18%
Accessibility by public transport	65%	64%	21%	21%	22%	20%
Entrance fee	97%	97%			**52%**	**62%**
Special offers	93%	94%			42%	42%
Attractions in park	**90%**	**94%**			**35%**	**54%**
Opening hours	97%	97%	**39%**	**50%**	**55%**	**70%**
Facilities in park	57%	63%	**6%**	**12%**	**8%**	**14%**
Other information	5%	4%	1%	3%	1%	3%

* Bold figures are significant at α=0.05

Frequent visitors to theme parks do have significantly lower interest in most of the information items as is shown in Table 7.11. This is an indication that frequent visitors already have a certain perception of theme parks, which has led to a selection of relevant attributes. Although information is still required, frequent visitors only require information on this limited number of attributes. Information items that are significantly less relevant for the frequent traveller are, entrance fee and special offers. Nevertheless, facilities in the park and 'other' information are more relevant for the frequent traveller. This result supports the assumption that experienced traveller knows what information he needs.

Information search behaviour: mode choice information

Familiar travellers are less inclined to search for information than unfamiliar travellers. As Table 7.10 shows, they search for less information on car-related information and destination-related information. This decline in information need does not extend to public transport-related information. Familiar travellers even search, though not significant, for more information on cost, travel time and accessibility by public transport. In chapter 4 we argued that experience would lead to a reduction of information search on static information but not for dynamic information. Thus, at first it diminishes information need, mostly on simple issues. The complexity of the road infrastructure is much lower than the complexity of the public transport system. The knowledge gained by the previous visit can thus be used more satisfactory. The public transport system is more complex and it is also more dynamic, which leads to higher information needs. These results support this dual role of experience that is also present in recreational trips.

The frequent traveller is less interested in nearly all information items, although the differences often are not significant (see Table 7.11). The dual role found for the familiar versus the unfamiliar traveller is not found as clearly for the frequent versus the infrequent visitor. We suspect that the frequent traveller has a small selection of relevant attributes and therefore requires less information search. However, even for the frequent visitor of theme parks the specific values of

Table 7.11 *The impact of visit frequency and searching for information (n=1434)*

Information item	Generic		Mode choice		Destination choice	
	≥ 1 per month	< 1 per month	≥ 1 per month	< 1 per month	≥ 1 per month	< 1 per month
Parking facilities	63%	61%	13%	20%	17%	20%
Travel time car	70%	78%	**20%**	**29%**	**16%**	**28%**
Cost car	34%	29%	6%	7%		
Cost public transport	49%	56%	15%	18%		
Travel time public transport	58%	63%	18%	22%	16%	21%
Accessibility by public transport	59%	65%	17%	21%	20%	22%
Entrance fee	**92%**	**98%**			**36%**	**56%**
Special offers	**87%**	**94%**			**32%**	**43%**
Attractions in park	90%	91%			36%	40%
Opening hours	95%	97%	**30%**	**43%**	**45%**	**60%**
Facilities in park	**71%**	**57%**	9%	7%	6%	10%
Other information	**9%**	**4%**	**4%**	**1%**	3%	2%

* Bold figures are significant at α=0.05

the relevant attributes may be unknown. To further investigate this assumption, the number of information items (the degree of information search) sought by frequent and infrequent visitors was compared. The frequent visitors search for significantly fewer information items than the infrequent visitors. Consequently, we conclude that frequent visitors have limited the number of relevant attributes and therefore require less external information.

Information search behaviour: destination choice information
Information search behaviour on many information items is significantly different between experienced and inexperienced travellers. The results for destination choice are comparable to the results discussed in the previous section for mode choice. Similar results were found for the impact of familiar travellers on information search behaviour. Static information, such as entrance fee, attractions in the park, opening hours and facilities in the park are less relevant for the familiar traveller. Again, items on public transport are more relevant for the familiar traveller than for the unfamiliar traveller, although this difference is not significant.

The selection of relevant attributes by frequent travellers reveals that items such as entrance fee, special offers, opening hours, and travel time by car, are less relevant. However, attractions in the park remain an important attribute even for the experienced traveller. This supports the conclusion made in chapter 6, that attractions in the park is one of the most important attributes in destination choice.

To summarise, we conclude that experience lowers the information search behaviour of travellers. However, the impact of both variables, familiarity and frequency, is different. Familiarity lowers information needs on static information but not on dynamic information, while frequency of visits limits the amount of relevant attributes thus leading to an overall lower information need.

7.3.3 Attitude & personality

Attitudes are tendencies to evaluate an entity with some degree of favour or disfavour, which disposes a person to behave in a certain way towards it (Eagly & Chaiken 1993). Practically, this means that an individual already has certain fixed reactions to some stimuli and then acts on them. For example, a traveller who has positively evaluated the car as transport mode is more inclined to use the car for all trips than someone who has evaluated the car negatively. Attitudes are directed towards certain objects but sometimes it is more relevant to determine a way of behaviour regardless of a specific object. As recreational trips contain many different objects, we selected a way of behaviour, namely the personality of the traveller. Thus, in this study the attitude towards transport modes and the personality of the traveller are used to describe the 'fixed' responses to certain stimuli. The attitude towards transport modes is expected to affect the use of mode-related information. As personality is not specifically related to a certain object, we expect that personality affects both mode and destination related information search.

Attitude toward transport modes and personality are based on the responses to several related items. Using factor analysis the relatively uncorrelated underlying dimensions of the traveller can be determined (Redmond 2000: 33). A characteristic of factor analysis is that the interpretation of the factor depends on the researcher's judgement (Fodness & Murray 1998: 113). Therefore, interpreting and labelling the underlying dimensions should be done cautiously. The following labels for attitude towards transport modes and the personality types are constructed based on the factor loadings on each of the variables.

Attitude towards transport modes

The attitudes towards transport mode are based on four variables concerning the use of public transport and car (Clay & Moktharian 2002: 4). Using a principal component analysis, two relevant factors were extracted. To extract the relevant factors, we conducted a principal component analysis. Together these factors explain 70% of the variance. The results of the factor analysis are presented in Table 7.12.

The first factor loads strongly on two of the variables; positively on enjoys public transport and negatively on public transport depresses me. Clearly this factor indicates a high degree of preference for public transport. Accordingly, the factor has been labelled *PT fan*. The second factor loads strongly on the two remaining factors, negatively on enjoys the car and positively on the car depresses me. This factor presents the dislike of travelling by public transport. Therefore the label attached to this factor is *car dislike*. We expect that travellers who have a strong PT fan attitude or car dislike attitude are less prone to consider an alternative. As they prefer to use public transport

Table 7.12 *The factor loadings on each attitude towards transport mode (n=1434)*

Variable	PT fan	Car dislike
Enjoys the car		-0.825
Enjoys public transport	0.854	
Car use depresses me		0.829
Public transport use depresses me	-0.842	

or not to use the car. Furthermore, these travellers prefer to search for public transport-related information while those with a car dislike search for less information on car-related information.

Personality

Baron and Byrne (1991) describe personality as a combination of relatively enduring attitudes that are expressed consistently and predictably in various situations (Redmond 2000: 12). Redmond also explains that the personality variables do not specifically relate to travel (p.43). Thus, the factors distilled from these variables should be able to explain the information search behaviour. The personality factors are based on 17 variables, all words and phrases that respondents rated from 'not at all' describing their personality to 'almost completely' fitting. These characteristics range from 'risk-taking' and 'loner' to 'ambitious' and 'like routine' (see for all variables Table 7.13).

The underlying dimensions were extracted using a principal component analysis with a varimax rotation. The initial solution yielded six different factors (cut off point at eigenvalue = 1). The cumulative explained variance is 59 %. As it was not straightforward to interpret all six factors of the initial solution, a five-factor solution was sought. This solution had five clear dimensions; compared with the six-factor solution we noticed that two unclear factors had merged into one apparent factor. Based on these results, the five-factor solution was accepted. In the table below the factor loadings of each variable are depicted. Although researchers differ in their opinion to what constitutes a 'high loading' for interpreting the factors, Hair *et al.* (1998) consider loadings of minimal 0.5 as practically relevant while Garson (2004) considers loadings of 0.6 or more as strong (Zandvliet 2006). As a result, a minimum value of |0.5| was chosen for the interpretation of the factors.

Table 7.13 *The factor loadings on each personality type (n=1434)*

Component Variable	**Organiser**	**Thrill-seeking**	**Impatient**	**Routine-based**	**Loner**
Risk taking		0.792			
Like being outdoors					
Patient			-0.725		
Like to stay close to home				0.510	
Variety seeking	0.538				
Ambitious	0.598				
Like moving at high speeds		0.740			
Efficient	0.639				
Like being independent	0.747				
Aggressive			0.645		
Like a routine				0.744	
Like being alone					0.816
Restless			0.533		
Like being on time				0.605	
Adventurous		0.678			
Like being in charge			0.537		
Spontaneous					-0.533

As can be seen in Table 7.13, all factors load strongly on at least two variables. We now interpret and label the different factors. Furthermore, the possible impact on the decision-making process is discussed.

The first factor loads strongly and positively on independence and efficiency. Furthermore, variety seeking and being ambitious also load positively on this factor. These variables all point toward an *organiser* dimension. Travellers with an organiser dimension are more prone to search for alternatives because of their ambitious and variety seeking nature. External information needs are higher for this personality as they are precise in planning their trip (efficiency). The fact that they like to be independent probably leads to a preference for car, which offers more independence, and therefore more interest in car-related information.

The second factor has a *thrill-seeking* dimension. This factor loads strongly and positively on risk taking, enjoying high speeds and being adventurous. This adventure seeking personality resembles the Type-T personality as described by Farley (1986). The Type T personality has been described as a personality dimension referring to individual differences in stimulation seeking, excitement seeking, thrill seeking, arousal seeking, and risk taking. Exactly these characteristics of this personality type will result in considering more alternatives. However, travel information is not necessary for this personality as it would decrease the risk.

The third personality type is restless, aggressive, impatient, and likes to be in charge. Therefore, this factor has an *impatient* dimension. Travellers with an impatient personality are less prone to consider alternatives or search for information. However, the restlessness can lead to travellers being bored quickly and therefore may increase the alternatives that are considered. They are too impatient and restless to conduct a thorough information search.

The fourth factor has a *routine-based* dimension. It loads positively on liking a routine, being on time and preferring to stay close to home. This personality type does not like to take risks. It is therefore unlikely that these travellers consider an alternative. They prefer to use the familiar transport mode and visit a familiar theme park. The interest in information is high for this personality type. Not wanting to be surprised by unexpected events, a thorough information search is conducted.

The last personality type likes being alone and is not spontaneous. Therefore this last factor is labelled to have a *loner* dimension. Loners prefer to travel by car and therefore we expect that they consider fewer mode alternatives. Because loners do not like to be spontaneous it is likely that they will plan their theme park visit carefully, resulting in extensive information search. Furthermore, for mode choice only car-related information will be relevant.

Choice set formation & considering external information search
Do respondents with different attitudes have different choice sets for destination choice and mode choice? In the analyses, travellers either have a weak or a strong attitude/personality and the behaviour of these groups are compared. Table 7.14 contains the attitudes that significantly impact upon either choice set formation or the decision to search for external information. For destination choice, the PT fans are more likely to consider an alternative destination. Most

Table 7.14 *The impact of attitude & personality on the choice set and considering external information search (n=1434)*

	Yes	PT fan		Impatient		Thrill seeker	
		Weak	Strong	Weak	Strong	Weak	Strong
Destination	Information	67%	69%	70%	66%	67%	68%
	Alternative	14%	17%	13%	17%	13%	17%
Mode	Information	49%	58%	53%	54%	53%	54%
	Alternative	15%	19%	16%	18%	16%	18%

* Bold figures are significant at α=0.05

destinations are less accessible by public transport. As these travellers prefer to use public transport, they may consider more alternatives to ensure that they can travel by public transport. In addition, PT fans consider more mode alternatives. The data revealed that many PT fans choose between different public transport modes. However, the majority considered both public transport and the car as travel modes, whereby more PT fans ultimately choose for the car. This implies that even though PT fans prefer to travel by public transport, it may be much easier to travel by car.

Personality types 'impatient' and 'thrill-seeker' are both more prone to consider alternative destinations (both 13% versus 17%). It was expected that the thrill-seekers would consider more alternatives because of their adventurous nature (Farley 1986). For the impatient type it is not completely clear whether they would consider more alternatives. On the one hand, they may not have the patience to consider alternatives; however, on the other hand their restlessness may turn into boredom with familiar destinations. The results support the second reasoning; new alternatives are considered to diminish boredom.

The personality types do not display different behaviour concerning external information search; however, the attitude towards transport modes does. Travellers that load strongly on the PT fan attitude are more likely to consider an external information search than travellers that do not load strongly on this personality type. Travellers that have a PT fan attitude mostly travel, or at least consider travelling, by public transport. As explained previously, public transport users require more information than car users. Therefore, the higher information need for PT fans is consistent with expectations.

Information search behaviour: generic information
As depicted in Table 7.15, attitude toward transport modes and personality affects the use of information items for generic information search. As expected, PT fans are less interested in car-related information but significantly more interested in public transport items. Furthermore, it shows that attitudes are indeed aimed at a certain object: there are no differences in search behaviour related to non-mode information items. Travellers with a strong car dislike have similar information search patterns as PT fans. Car-related information is less relevant while information

Table 7.15 *The impact of attitude & personality on generic information search (n=1434)*

Information item	PT fan		Car dislike		Loner		Routine-based	
	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Parking facilities	63%	59%	**66%**	**53%**	61%	61%	**58%**	**64%**
Travel time car	**81%**	**73%**	**81%**	**71%**	**80%**	**74%**	76%	77%
Cost car	31%	28%	30%	29%	**32%**	**27%**	31%	27%
Cost public transport	**42%**	**70%**	**50%**	**65%**	**51%**	**59%**	56%	55%
Travel time public transport	**48%**	**79%**	**57%**	**72%**	**57%**	**67%**	63%	62%
Accessibility by public transport	**50%**	**82%**	**60%**	**73%**	**60%**	**69%**	65%	65%
Entrance fee	97%	97%	97%	97%	97%	97%	97%	97%
Special offers	93%	93%	94%	92%	94%	92%	93%	93%
Attractions in park	90%	91%	91%	90%	91%	90%	**89%**	**92%**
Opening hours	97%	97%	97%	97%	97%	97%	97%	97%
Facilities in park	58%	59%	57%	61%	59%	58%	**55%**	**63%**
Other information	5%	5%	5%	5%	4%	5%	4%	5%

* Bold figures are significant at α=0.05

on public transport is more so. Nonetheless, those who dislike cars search for even less car information, while the need for public transport information is not that high as for PT fans.

Travellers with a strong loner personality are more interested in public transport information than those with a weak loner personality. Furthermore, those with a loner personality are less interested in travel time by car. Contrary to expectations, the loner personality does travel to theme park by public transport. This explains the higher information needs for travellers with this personality. The routine-based personality searches for significantly more information on parking facilities, attractions and facilities in the park. For generic information search, this type of travellers may want to confirm their current expectation of theme park visits. It is odd that the routine-based type do not search for more dynamic information to further plan their trip. No differences in information search behaviour were revealed for the other three personality types.

Information search behaviour: mode choice information

Having a strong attitude towards transport modes also influences search behaviour for mode choice. The results are similar to the differences found for generic information search behaviour. As Table 7.16 shows, a strong PT fan attitude leads to more information search on public transport. Interestingly, travellers with a strong PT fan attitude significantly search for more information on car costs. Perhaps PT fans, as frequent public transport users, have a habit of acquiring travel costs. For PT fans the travel cost may be a relevant attribute that needs to be compared, thus necessitating searching for car costs. Similar results were found for the attitude car dislike; less information on car information items but more information search on public transport items. Moreover, for public transport items the difference in strong and weak PT fan attitude is greater than between strong and weak car dislike attitude. The attitude of car dislike does not necessarily mean that public transport is used or preferred. Therefore, information on public transport is less relevant for travellers who dislike cars compared with travellers with a PT fan attitude.

The influence of personality type changes per information search process. For generic information search, loner and routine-based personality types lead to different search behaviour. However, strong loner, thrill-seeker and organiser personality leads to different information search behaviour for mode choice. Travellers with a strong loner personality are less likely to search for parking facilities and travel time by car. This effect is similar to the effect on generic information search behaviour. It was anticipated that travellers with a strong thrill-seeker personality would search for less information than those who have a weak thrill-seeker personality. However, thrill-seekers search for more information on nearly all items, although only the difference for the item "accessibility" by pubic transport is significant. Maybe, the thrill-seeker personality only affects the selection of alternatives but not the specific information search behaviour.

Information search behaviour: destination choice information
Both attitudes towards transport modes have a similar effect on search behaviour for mode-related information items. However, travellers with a strong attitude towards a transport mode do not have different search behaviour on destination-related items. Attitudes are formed towards a certain object (Eagly & Chaiken 1993) and it is consistent that these attitudes only affect behaviour related to these objects. Hence, it is understandable that attitudes towards transport modes do not affect the search behaviour of destination items.

The influence of personality on the search behaviour for destination choice is again slightly different. Unlike the attitude towards transport modes, the impact of personality is different per information search (either generic or specific). For destination choice, only the impatient personality type does not lead to different information search behaviour. A strong loner personality leads to less information search on parking facilities and attractions in the park. The preference of the routine-based personality type for arriving on time may have resulted in the higher information search for opening hours. All the same, the result that thrill-seekers also search for significantly more information on opening hours is surprising, since thrill-seekers are characterised by risk-taking and being adventurous. Finally, travellers with strong organiser personalities are more likely to search for facilities in the park.

Table 7.16 *The impact of attitude & personality on information search for mode choice (n=1434)*

Information item	PT fan		Car dislike	
	Weak	Strong	Weak	Strong
Parking facilities	20%	17%	**22%**	**14%**
Travel time car	**30%**	**25%**	**30%**	**24%**
Cost car	**5%**	**8%**	7%	6%
Travel time public transport	**14%**	**30%**	**18%**	**28%**
Accessibility by public transport	**13%**	**30%**	**17%**	**28%**
Cost public transport	**12%**	**24%**	**14%**	**24%**
Opening hours	**38%**	**45%**	41%	43%
Facilities in park	7%	8%	7%	8%
Other information	2%	2%	1%	2%

* Bold figures are significant at α=0.05

Table 7.17 *The impact of attitude & personality on information search for destination choice (n=1434)*

Information item	Loner		Routine-based		Thrill seeking		Organiser	
	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Parking facilities	**22%**	**17%**	18%	21%	20%	19%	19%	20%
Travel time by car	29%	25%	28%	26%	27%	27%	25%	29%
Travel time public transport	19%	21%	21%	19%	**18%**	**22%**	20%	20%
Accessibility by public transport	19%	23%	21%	22%	**19%**	**23%**	22%	21%
Entrance fee	56%	52%	53%	56%	53%	56%	54%	54%
Special offers	43%	41%	40%	44%	38%	45%	43%	41%
Attractions in the park	**42%**	**36%**	38%	41%	38%	41%	39%	40%
Opening hours theme park	60%	57%	**56%**	**61%**	**56%**	**61%**	57%	60%
Facilities theme park	9%	10%	9%	10%	8%	11%	**8%**	**11%**
Other information	1%	2%	2%	1%	1%	2%	2%	2%

* Bold figures are significant at α=0.05

To summarise, attitudes towards transport modes and personality do indeed affect the decision-making process for recreational trips. The attitude towards transport modes only affects the object that it is related to, i.e. the selection of the transport mode. This effect extends to all aspects of the decision-making process, and was found similar in generic and specific information search behaviour. As the attitude shows, there are some travellers who prefer travelling by public transport or prefer not to use the car. Many of these travellers do ultimately select the car to visit a theme park. Although the reasons for finally selecting the car may be diverse, it does suggest that these travellers could be motivated to switch transport modes. Seeing that recreational trips have many objects that attitudes could be related to, we selected the more generic personality type to further describe the individual. Five personality types were determined based on the data set. Although some of these types do affect the choice set formation and the information search behaviour, the effect has been diverse. As opposed to attitudes towards transport modes, personality affects generic information search behaviour differently from specific information search behaviour. In addition, personality usually affects the search behaviour for only a few information items. The interpretation of the differences in information search behaviour was therefore not straightforward. However, despite these limitations, the results show that in general, attitudes do influence the information use of travellers and should therefore be considered.

7.3.4 Habitual mode

Habit is conceptualised as learned sequences to act that become automated responses to specific situations (Verplanken *et al.* 1997: 540). In the survey, habit was measured by the response frequency measure as developed by Verplanken *et al.* (1994) (see for explanation section 5.3.1).

The habitual mode choice of travellers is determined by the frequency that a transport mode is selected for eight different destinations. Whenever a respondent selected the same transport mode

Table 7.18 *Distribution of respondents habitual transport mode (n=1434)*

	%
Car	45
Public Transport	5
Bicycle	26
No habitual mode	24

Table 7.19 *The impact of habitual mode on the choice set and considering external information search (n=1434)*

	Yes	Car	Public transport	Bicycle	No habitual mode
Mode	Information	**51%**	**71%**	**55%**	**52%**
	Alternative	**12%**	**8%**	**23%**	**21%**

* Bold figures are significant at α=0.05

for more than half the destinations, it was assumed that this was his habitual mode (Verplanken 2005). Transport modes were not counted when respondents cited more than one transport mode for the same destination. After processing the responses to all eight destinations, four habitual travel modes remained: car, public transport, bicycle and walking. Furthermore, the respondents that use a mixture of transport modes were labelled as having no habitual mode. The following table shows how many travellers have a habitual preference for a certain mode.

As can be seen, nearly 77% have a habitual mode. Most respondents indicated that the car is their habitual mode, and more than 24% have the bicycle as the habitual mode. The bicycle was particularly popular to reach recreational destinations such as shops, restaurants and bars. Habitual mode rates for public transport are low. Results showed that public transport was often used in combination with another mode of transport (for access and egress).

Choice set formation & considering external information search
To what extent does having a habitual mode influence the choice set formation? Habitual mode affects the choice set formation for mode but not for destination choice. Travellers who habitually use public transport are least likely to search for mode alternatives (8%) followed by habitual car users (13%) (Table 7.19). However, habitual bicycle users are most likely to search for a mode alternative. As bicycles cannot be used to reach most theme parks, it stimulates these travellers to consider alternative transport modes. In that sense they are no different than those without habitual mode. These results support the assumption that having a habitual mode decreases the chance to consider an alternative; for Lappin & Bottom (2001) argue that having a habitual mode decreases the number of alternatives since it increases the likelihood that, in any particular context, the default choice will be made.

Travellers with a habitual travel mode also display different behaviour related to the decision to search for external information. More specifically, the habitual public transport users most frequently need external information (71% versus the average of 54%). When we assume that

Table 7.20 *The impact of habitual mode on generic information use (n=1434)*

Information item	Car	Public transport	Bicycle	No habitual mode
Parking facilities	**71%**	**36%**	**52%**	**60%**
Travel time car	**86%**	**44%**	**70%**	**78%**
Cost car	31%	18%	28%	33%
Cost public transport	**37%**	**83%**	**72%**	**67%**
Travel time public transport	**43%**	**90%**	**80%**	**73%**
Accessibility by public transport	**46%**	**94%**	**81%**	**76%**
Entrance fee	98%	99%	97%	96%
Special offers	94%	93%	92%	90%
Attractions in park	**93%**	**92%**	**90%**	**87%**
Opening hours	98%	96%	97%	96%
Facilities in park	**61%**	**68%**	**53%**	**57%**
Other information	5%	7%	3%	6%

* Bold figures are significant at α=0.05

having a habitual travel mode means that the traveller is experienced with using that mode, then the results support the assumption that experienced public transport users need more information than experienced car users. Habitual car users do not have significantly less need for external information than travellers without a habitual mode. This contradicts the expectation that habitual mode behaviour limits the entire decision-making process. Having a habitual mode may decrease the chance that an alternative is considered but it does not decrease the need for external information. However, Aarts *et al.* (1997) showed that strong habit reduced the extensiveness of information use. Therefore it is now interesting to analyse the effect habitual mode has on information search behaviour.

Having a habitual mode does not affect the choice set formation and decision to search for external information for destination choice. It is logical that having a habitual mode mainly affects the decision-making process for mode choice. This supports the idea that habitual mode behaviour does not readily extend to other decision processes. Furthermore, it indicates that external factors may affect certain decisions more than other decisions.

Information search behaviour: generic information

Generic information search behaviour varies between travellers with and without a habitual mode. Not surprisingly, the transport mode that is considered habitual greatly affects which information items are relevant to the traveller. The habitual car user is mostly interested in car information, while the habitual public transport user searches for public transport information. Travellers that do not have a habitual transport mode search for less information than the travellers with a habitual transport mode. For example, 60% of the travellers without habitual transport mode search for information on parking facilities compared with 71% of the habitual car users (Table 7.20). Consequently, having a habitual mode does not limit the information search on the relevant attributes. It is possible that the number of attributes that are relevant to the habitual traveller is lower than for the non-habitual traveller. This will be discussed in the following section on specific information search behaviour.

For destination related information, habitual mode behaviour only affects the information search behaviour related to attractions and facilities in the park. The results show that habitual public transport users search for more information on the facilities in the park, while those without a habitual mode search for significantly less information on attractions in the park. Why having a habitual travel mode results in different search behaviour for destination related items is not readily apparent.

Information search behaviour: mode choice information
The differences in information search behaviour for mode choice are similar to the results discussed for generic information search behaviour (see Table 7.21). The habitual car and public transport users search for significantly more information on their preferred mode. We compared the number of relevant attributes for those with and without a habitual travel mode and found that, for mode choice, the habitual car users search for fewer attributes and the public transport users for more attributes than the travellers without habitual travel mode. This contradicts Aarts *et al.* (1997) who reported that strong habit decreases the extensiveness of information use. Compared with travellers without a habitual transport mode, habitual cyclists search for more information on public transport. This suggests that habitual cyclists prefer to use public transport when they cannot use the bicycle. Thus, 10% of the habitual cyclists use the bicycle to reach a theme park, whilst a further 35% uses public transport (compared to 28% travellers without a habitual mode). Consequently, the preference for public transport (when unable to use the bicycle) is not supported. However, compared with generic information search, there is no longer a difference in car-related information search between bicycle users and those without habitual mode.

As was found for generic information search, habit affects the search behaviour for opening hours and facilities in the park for mode choice as well. As Table 7.22 shows, habitual public transport users are more interested in these information items than other travellers. Possibly, public transport users need to know the opening hours of the destination to plan their trip to and from the theme park.

Table 7.21 *The impact of habitual mode on information search for mode choice (n=1434)*

Information item	Car	Public transport	Bicycle	No habitual mode
Parking facilities	**24%**	**14%**	**13%**	**16%**
Travel time by car	**36%**	**15%**	**22%**	**22%**
Cost of car trip	6%	3%	9%	6%
Cost of public transport	**11%**	**50%**	**32%**	**24%**
Travel time public transport	**11%**	**50%**	**32%**	**23%**
Accessibility by public transport	**9%**	**42%**	**24%**	**21%**
Opening hours theme park	**41%**	**56%**	**43%**	**38%**
Facilities theme park	**8%**	**13%**	**5%**	**7%**
Other information	2%	3%	2%	1%

* Bold figures are significant at α=0.05

Table 7.22 *The impact of habitual mode on information search for mode choice (n=1434)*

Information item	Car	Public transport	Bicycle	No habitual mode
Parking facilities	**26%**	**11%**	**13%**	**16%**
Travel time by car	**35%**	**11%**	**20%**	**25%**
Travel time public transport	**9%**	**51%**	**29%**	**25%**
Accessibility by public transport	**10%**	**51%**	**30%**	**25%**
Entrance fee	56%	53%	52%	51%
Special offers	43%	40%	42%	39%
Attractions in the park	**43%**	**42%**	**32%**	**37%**
Opening hours theme park	61%	67%	56%	57%
Facilities theme park	**11%**	**17%**	**5%**	**10%**
Other information	2%	3%	2%	1%

* Bold figures are significant at α=0.05

Information search behaviour: destination choice information
Habitual mode affects generic and specific information search behaviour in a similar way. The impact it has on the destination information search behaviour is again like that for mode choice. Car users and public transport users are most interested in information on their preferred travel mode. Travellers without a habitual mode search for all information items but to a lesser extent than habitual users. Furthermore, habitual cyclists are, compared with those without a habitual mode, more interested in public transport information than in car information. As for generic information search, the habitual mode influences the search behaviour for attractions and facilities in the park. Habitual cyclists (5%) search for significantly less information on facilities in the park as opposed to public transport users (17%)(see Table 7.22). Again, it is not clear why habitual mode affects the information search behaviour on destination items.

Overall, habitual transport mode affects the decision-making process to a large extent. Particularly the effect on mode choice and the search behaviour for mode-related information items is strong. The effect is similar for both generic and specific information search behaviour. The idea that habit prevents the execution of the decision-making process is rejected for recreational trips. Habit does limit the number of alternatives considered, but not the degree of information search behaviour. Furthermore, it does affect the attributes the traveller finds relevant; habitual travellers find information on their own mode most relevant.

Habitual mode does not extend to the choice set formation and the decision to search for external information of destination choice. This supports the assumption described in section 4.3.4 that habit foremost applies to the level on which information is displayed. Whenever habitual mode does influence the search for destination related items, it is difficult to explain the effect.

Approximately 24% does not have a habitual transport mode. These travellers search for information on either transport mode. In addition, 26% are habitual cyclists. With only 10% of all habitual cyclists using the bicycle as transport mode, there is a potential of nearly 50% that could be persuaded to change travel mode.

7.3.5 Motivation

The traveller's motivation to behave in a certain way determines the type of decision-making process that is performed. The traveller's motivation is not directly related to the actual goals, such as visiting a theme park or choosing a travel mode, but is captured by meta-goals (Bettman *et al.* 1998: 192; Gärling & Garvill 1993: 286). Examples of these meta-goals are efficiency, reducing uncertainty and interest. To determine what meta-goal is relevant for destination information search (not particularly theme parks), respondents were asked to indicate their motivation to conduct such a search. The most mentioned motivation was efficiency, indicating that travellers like to plan their trip carefully. This supports research findings of AVV (2003: 21), who found that travellers have the desire to research and plan their trip themselves. The second most important motivation was interest. As many travellers do not consider an alternative mode or destination, it seems plausible that information is sought for interest purposes. We suspect that the information is used to increase pre-trip enjoyment, as information on what the destination has to offer may start the 'experience' at home. Furthermore, it is plausible that the information is used for the planning on another trip decision (such as route). The least important motivation is the reduction of uncertainty. This is somewhat surprising, as several researchers, such as Bonsall (2003) and Edwards (1996), have pointed out that the reduction of uncertainty is the most common meta-goal for travellers. Bettman (1979: 43) argued that motivation determines both the direction of behaviour and the intensity that behaviour. As respondents indicated that they find more than one motivation relevant, they were asked to indicate importance of each motivation. This importance is an indication of impact of motivation on the intensity of behaviour. Efficiency was also the most important motivation; 34% found it very important and another 52% found it important. The other motivations were slightly less important; both were very important to 25% and important to another 48%.

The relation between motivation and the decision-making process was only investigated for information search behaviour. As a result, the effect on choice set formation and the decision to search for external information is not discussed.

Information search behaviour: generic information search

With what motivation do travellers search for information items? Does it help their planning, reduce their uncertainty or do they search out of interest purposes? Table 7.23 displays the motivation for searching for the information items. The motivation for generic information search behaviour is diverse. Although the most relevant motivation varies per information item, a few general observations can be made. Overall, most mode-related information (except car cost) is sought for efficiency purposes, while the search for destination-related information (except opening hours) was motivated by interest. Furthermore, to search for information to reduce uncertainty is least relevant for recreational day travellers. It is unclear why most studies find that the reduction of uncertainty is the most relevant motivation while this study shows that it is the least relevant. Most of these studies focus on commuter trips. As we discussed in chapter 1, the time pressure on commuter trips is much larger than on recreational trips. Consequently it is possible that recreational travellers have less need to reduce uncertainty in itself. Planning the trip (efficiency) may be more important with the added benefit of reducing the uncertainty.

Table 7.23 *The motivation to search for items in generic information search (n=1434)*

Information item	Interest	Efficiency	Reduce uncertainty	Other
Parking facilities	15%	63%	20%	2%
Travel time car	24%	66%	8%	2%
Cost car	43%	40%	10%	7%
Cost public transport	36%	49%	12%	4%
Travel time public transport	25%	63%	11%	1%
Accessibility by public transport	23%	60%	16%	1%
Entrance fee	53%	31%	12%	4%
Special offers	67%	26%	3%	5%
Attractions in park	90%	6%	3%	2%
Opening hours	31%	55%	14%	1%
Facilities in park	79%	11%	6%	5%
Other information	31%	42%	19%	8%

Table 7.24 *The motivation to search for items in mode (n=236) and destination choice (n=219)*

Information item	Mode choice			Destination choice		
	Interest	Efficiency	Reduce uncertainty	Interest	Efficiency	Reduce uncertainty
Parking facilities	27%	58%	13%	21%	60%	14%
Travel time car	20%	73%	5%	18%	73%	7%
Cost car	26%	71%	0%			
Cost public transport	27%	63%	7%			
Travel time public transport	17%	68%	12%	25%	60%	11%
Accessibility by public transport	17%	66%	17%	25%	61%	11%
Entrance fee				42%	42%	13%
Special offers				48%	40%	6%
Attractions in park				77%	16%	6%
Opening hours	38%	47%	15%	26%	58%	16%
Facilities in park	69%	29%	3%	60%	28%	8%
Other information	0%	60%	40%	8%	67%	17%

Based on the motivation for generic information search we conclude that travellers want to streamline their trip as much as possible by planning the actual travel beforehand, which confirms the results reported by AVV (2003: 21). At the same time they want to increase the pre-trip enjoyment by investigating the possibilities of the theme park, which corroborates the conclusions presented by Jeng & Fesenmaier (2002) and Mommaas *et al.* (2000).

Information search behaviour: mode and destination choice

Travellers with an alternative probably have a different motivation to search for information. The information is used to determine the values of relevant attributes and therefore which alternative is ultimately selected. Searching for information has a different purpose for travellers without an

alternative; for example the information can be used to plan a trip. Choice travellers are more relevant for policymakers because they are able to change their behaviour. Understanding the motivation for information search is therefore more relevant. Consequently, the motivation for specific information search is only determined for choice travellers. Therefore, the results presented in Table 7.24 are based on the sample of choice travellers (n=236 for mode and n=219 for destination choice).

If choice travellers search for information with a different motivation, then the specific information search behaviour will be different from the generic information search behaviour. Overall, the motivation efficiency has become more relevant for mode choice, while information search for interest and reduction of uncertainty purposes have decreased. However, the results are again varied; although the information items opening hours and parking facilities are still mostly searched for out of a desire for efficiency, the motivation "interest" has increased. Perhaps the static nature of these information items can account for the difference in motivation.

The motivation to search for destination-related information has switched for destination choice compared with generic search. For nearly all information items, the interest motivation has become less relevant. Interest motivation has increased for search behaviour on parking facilities and accessibility by public transport, though at the expense of the purpose to reduce uncertainty. Thus, for choice travellers the destination-related information becomes more relevant in the planning of the trip. Once again, we had expected that reduction of uncertainty would be relevant in the destination choice; however, this is not confirmed.

Overall, information is sought with different meta-goals in mind. The motivation to search for information does differ between types of decisions, although the impact is diverse. This indicates that motivation is indeed a relevant external factor that affects the decision-making process. However, more research is needed to understand the relation between the different types of motivation and the possible correlation between motivations.

7.3.6 Summary

In this section, we discussed the empirical relations between the individual factors and the decision-making process. The individual factors that were discussed are socio-demographic characteristics, experience, attitude & personality, habitual mode and motivation. The relations between these factors and all aspects of the decision-making process were discussed. All factors were found to impact the decision-making process, albeit to a different extent. As it was not possible to determine all relations between individual factors and the decision-making process (see section 4.3), not all relations found could be compared to other studies. Furthermore, not all relations that were found could be confirmed. For example, the reduction of uncertainty was not the most relevant motivation to search for information. Nor did the socio-demographic characteristics affect the choice set formation and decision to consider external information search, even though this was expected.

We expect that some of the individual factors are interrelated; that is, the factors explain the same differences in displayed behaviour. Therefore, it would be valuable to also investigate the effect

of all individual factors at the same time. In the following chapter we discuss the connection between the individual factors and their impact on the decision-making process.

7.4 Environmental factors

The last aspect of the triad of external factors is the system characteristics. These factors are directly related to the decision, but not (directly) to the individual; hence, they are sometimes labelled decision-context factors (Jeng & Fesenmaier 2002: 18). Although there are many environmental factors that could be studied, this study focuses on the trip characteristics, as they are most likely to seriously affect the decision-making process. These characteristics are the travel party and the access to transport modes and destinations. The impact on all aspects of the decision-making process is discussed (see section 3.6); however, the impact on generic information search behaviour is not analysed. As these factors are closely related to the specific trip, they do not affect generic information search.

7.4.1 Travel party

The decision to visit a theme park is often made jointly with other members of the travel party (van Raaij & Francken 1984: 107). Moreover, wishes of other members in the party (such as young children) could also be taken into account (Thornton *et al.* 1997). As a result, the travel party may have a large influence on the decision-making process.

The most common travel party is family (57%), whereby 32% travel with children younger than 12. Another 25% visit theme parks with friends. 18% visit with some other form of travel party (see section 5.4.1). We expect that families with young children are limited in the alternative destinations and modes. We assume that families, and particularly with young children, will therefore use the car and, as a consequence, mostly search for car-related information.

Choice set formation & considering external information search

The travel party affects the choice set formation for mode but not for destination choice. For mode choice, a travel party of friends is more likely to consider a mode alternative (22%), while a family is less likely to search for an alternative (13%, see Table 7.25). The differences of individual factors within one group of friends are potentially large. Therefore, it is not surprising that several transport modes are considered. The assumption that families with young children are less likely to consider transport alternatives is not confirmed; they are more likely to consider an alternative mode than families (without young children). Perhaps this shows that young children have a large influence on the mode choice. Young children like to travel by train and there are cheap travel tickets available for young children[5]. The new combination ticket promoted by the Efteling and the Dutch railways[6] demonstrates that families with children are identified as a group that could potentially switch transport modes. Why travel party does not affect the destination choice set formation is unclear.

Considering external information search for destination choice differs significantly per travel party. Travel parties of friends or other travel parties are relatively more interested in external information than families (Table 7.25). Since travel parties with friends or other individuals

Table 7.25 *The impact of the travel party on the choice set and considering external information search (n=1434)*

	Yes	Family with children (<12)	Family	Friends	Other
Destination	Information	**29%**	**31%**	**36%**	**38%**
	Alternative	17%	15%	14%	15%
Mode	Information	49%	47%	46%	43%
	Alternative	**16%**	**13%**	**22%**	**16%**

* Bold figures are significant at α=0.05

Table 7.26 *The impact of the travel party on information search for mode choice (n=1434)*

Information item	Family with children (<12)	Family	Friends	Other
Parking facilities	**31%**	**27%**	**27%**	**23%**
Travel time car	6%	6%	9%	5%
Cost car	15%	21%	27%	27%
Travel time public transport	**15%**	**21%**	**26%**	**27%**
Accessibility by public transport	**14%**	**18%**	**22%**	**18%**
Cost public transport	42%	41%	40%	44%
Opening hours	7%	9%	6%	7%
Facilities in park	1%	1%	2%	1%
Other information	31%	27%	27%	23%

* Bold figures are significant at α=0.05

consist of many different types of individuals, it is possible that the number of relevant attributes differs strongly between these types. Consequently, more external information is needed. If this reasoning is correct, then the overall information search on most items should be larger than for other travel parties. No significant difference was found for mode choice.

Information search behaviour: mode choice information

To what extent does mode information search behaviour differ per type of travel party? Families with young children search for significantly more information on parking facilities but use public transport related information the least (Table 7.26). Perhaps the parking facilities are a relevant attribute because it reveals the average walking distance to the theme park. Furthermore, friends and other travel parties are significantly more interested in travel time by public transport. These travel parties were also more likely to consider an alternative transport mode, which may have increased the relevance of this attribute, ultimately leading to more information search.

In the previous section we argued that travel parties of friends or other compositions would search for more information items as more relevant attributes had to be compared. Based on Table 7.26 we cannot conclude with certainty that these groups indeed compare more attributes.

Table 7.27 *The impact of the travel party on information search for destination choice (n=1434)*

Information item	Family with children (<12)	Family	Friends	Other
Parking facilities	**24%**	**21%**	**16%**	**13%**
Travel time by car	**31%**	**28%**	**23%**	**23%**
Travel time public transport	**16%**	**19%**	**26%**	**22%**
Accessibility by public transport	**17%**	**20%**	**27%**	**23%**
Entrance fee	**59%**	**56%**	**52%**	**43%**
Special offers	**48%**	**42%**	**38%**	**35%**
Attractions in the park	**46%**	**38%**	**32%**	**38%**
Opening hours theme park	**64%**	**61%**	**55%**	**51%**
Facilities theme park	8%	13%	8%	11%
Other information	1%	2%	2%	2%

* Bold figures are significant at α=0.05

However, the degree of search is indeed higher, confirming our assumption that they do search for more information items.

Information search behaviour: destination choice information
The type of travel party affects the information search behaviour related to destination choice. As can be seen in Table 7.27, only the search behaviour for facilities in the park and other information does not differ significantly. Families with young children, followed by families, are most interested in the destination items, such as entrance fee, opening hours and special offers. Theme parks are relatively expensive destinations, and entrance fee and special offers may therefore be particularly relevant to families because they have to pay for both the adults and the children. Furthermore, visiting a theme park with children may require more preparation, which results in searching for more information. The search for mode items is as expected, information on car items are sought more frequently than on public transport. This is expected because most families travel by car to the theme park.

When travelling with friends, the most relevant attributes are opening hours and entrance fee, although this information is sought for less than by families. Furthermore, the travel time and accessibility by public transport (26% and 27%, see Table 7.27) are the most relevant information items. Nevertheless, there are also similarities in information search behaviour regardless of travel party; the opening hours of the theme park is searched for the most followed by entrance fee.

To summarise, the type of travel party affects the decision-making processes for recreational trips. The effect on mode and destination choice is different. The type of travel party affects the mode choice set formation, while the external information search for destination choice is affected. Information search behaviour for destination choice differs significantly per travel party. Clearly the families with children followed by the other families have the highest information need. When the aim is to change travel mode, then segmenting the travellers by travel party is a good way to select those groups that are most likely to change their behaviour.

7.4.2 Access to transport modes and destinations

The second aspect of the environmental factors is the access to transport modes. Access to a transport mode is determined by the car ownership and driving licence for car access. Easier access to public transport is determined by owning a public transport card. Furthermore, considering a mode alternative further determines access. As discussed in section 4.4.2 we expect that access to a transport mode leads to more information search on that specific mode. Moreover, not having access to a certain transport mode will diminish the chance that it is selected for the trip to the theme park. Finally, the respondents who consider a mode alternative are more prone to search for more information since they need to compare more than one alternative (Jeng & Fesenmaier 2002: 22).

Access to transport modes is determined by the alternatives that the traveller considers. There are many theme parks in the Netherlands; table 5.2 showed the 14 theme parks that were visited by at least 2% of the sample. To determine the effect of each alternative on the decision-making process a larger sample is needed. Therefore, to determine the impact of access to destinations on the decision-making process, only the difference between choice travellers and non-choice travellers can be analysed. These analyses were already discussed in section 6.3.2.

Choice set formation & considering external information search

Having access to a transport mode affects the choice set formation. Of the travellers that do not own a car 20% consider an alternative, though only 12% consider an alternative when they own more than one car. Having a public transport card increases the chance that an alternative mode is considered. Again, this can be explained by the limited accessibility of theme parks by public transport. Travellers with a public transport card prefer to travel by public transport but may not be able to.

The access to transport mode influences the decision to search for external information. Travellers who own more than one car decide more often that they do not need external information. This is consistent as car travellers need less external information and owning more than one car means that there usually is a car available. Other measures of access to modes, such as a driving licence and owning a public transport card, also lead to significantly different external information needs. Respondents with a driving licence search less for external information than those without a licence (51% versus 59%). A similar trend is found for owning a public transport card; owning a public transport card means a higher need for external information search (60% versus 40%). These differences can be explained by the fact that car travellers require less pre-trip information (49%) than public transport users (78%), since car-related internal information (e.g. route information) can be transferred more easily between different trips than the public-transport information (e.g. departure time and where to switch trains).

Information search behaviour: mode choice information

Information search behaviour changes when travellers have access to transport modes. Owning a car leads to less information search on public transport items and owning more than one car leads to even less information search on these items. When a household has one car it might not always be available for recreational trips; however, it is usually available when households have more than one car. On the other hand, not owning a car increases information search on

Table 7.28 *The impact of selected transport mode on finding the item decisive in the mode choice (n=239)*

Information item	Public transport	Car
Parking facilities	**6%**	**18%**
Travel time car	14%	25%
Cost car	8%	6%
Cost public transport	**36%**	**21%**
Travel time public transport	**46%**	**17%**
Accessibility by public transport	**36%**	**22%**
Opening hours	17%	18%
Facilities in park	3%	2%
Other information	**6%**	**0%**

* Bold figures are significant at α=0.05

public transport items while decreasing search behaviour on car-related information. There is no difference in search behaviour on car items between travellers that own one or more than one car. Driving licences lead to more information search on car items while public transport cards lead to more information on public transport items. This confirms our assumption that the access to travel modes stimulates the information search behaviour on that mode.

The effect of transport mode is also straightforward; travellers sought information on the items related to their chosen mode. A small percentage (approximately 5%) of the travellers without a mode choice do search for information on another travel mode. For example, nearly 5% of the car travellers search for the information item 'travel time by public transport'. This means that the search process is sometimes extended to other alternatives. Consequently, travel information on other modes does reach more travellers than the choice travellers.

This analysis is even more relevant for choice travellers; to what extent do choice travellers search for information items on the transport mode that is not selected? The results are displayed in Table 7.28.

The results show that travellers who ultimately chose public transport, found public transport items more decisive than car items; 46% of the public transport users found travel time by public transport decisive, while only 14% found travel time by car decisive. This difference is much smaller for travellers who selected the car; 25% found travel time by car decisive, compared with 17% for travel time by public transport. Apparently, choice travellers who ultimately select the car find the public transport items more relevant in the decision-making process than travellers who select public transport. Perhaps public transport did not meet their minimum requirements. That is, the values for the relevant attributes that the choice traveller compared were higher for the car than for public transport. If that is the case, then public transport should be improved to have similar quality. It has been shown that the car and public transport are not easily comparable transport modes for most travellers (Bovy *et al.* 1990: 124); however, this may be different for the small group of choice travellers. Regardless of the reason why car users find public transport

information relevant in their mode choice, we conclude that good provision of public transport information is of vital importance for non-captive travellers.

Information search behaviour: destination choice information
The effect of access to transport modes is similar to the effects found for mode choice. Owning a car and having a driving licence led to more search on car items while not owning a car and having a public transport card led to more search on public transport items. Related to the destination items, we found the search for entrance fee changed when car ownership varied. Travellers who do not own a car are less likely to search for the item entrance fee. As car ownership is closely related to income; those with a lower income usually do not own a car; it is therefore unexpected that these travellers find the attribute entrance fee less interesting. An adequate explanation cannot be offered for this result.

In conclusion, access to transport modes affects the decision-making process to a large extent. All aspects, choice set formation, considering external information search and information search behaviour changed under the influence of access to transport modes. Nevertheless, the effect supported the assumption that access to a certain transport mode increases the use and the search behaviour on that mode.

7.4.3 Summary
The environmental factors that were analysed in this section were travel party and the access to transport mode. More specifically for access to transport modes, the empirical relationship between the car ownership, driving licence, public transport card, selected mode and the decision-making process were discussed. All environmental factors affected the decision-making process to some extent. The travel party was more relevant in the destination process than in the mode process. The access to different travel modes revealed that public transport users have a higher information need than car users. Therefore, we argued that public transport information should receive more attention. This is particularly important since, choice travellers find the public transport information items more relevant in their decision-making process than car items. As for individual factors, we expect that the environmental factors, and in particular the access to transport modes, explain the same differences in behaviour. The analyses in chapter 8 provide an indication which factors are most influential.

7.5 Conclusions

The purpose of this chapter was to empirically analyse the role between each external factor and the decision-making process. The assumptions drawn up in chapter 4 were tested. The first conclusion is that all external factors affected the decision-making process to a certain extent. This means that the relevant external factors that affect the recreational mode and destination choice were selected. Most of the assumptions from chapter 4 were corroborated by the empirical analyses. However, some relations were different from what was expected. To illustrate, in commuter travel the reduction of uncertainty is often mentioned as the most relevant motivation to search for travel information; nonetheless, interest and efficiency purposes are more relevant motivations to search for travel information to the visitor of theme parks.

Although all external factors affect the decision-making process to a certain extent, their impact on mode choice is quite different to their impact on destination choice. This means that segmenting travellers into distinctive groups for travel information services should be done with regard to the specific decision. While this seems straightforward, it also presents the service provider with a dilemma. As information search for mode and destination choice are conducted at roughly the same time, different segmentations for each decision might not be feasible. It is possible that applying segmentation on mode choice means that a traveller does get the appropriate information for his mode choice but not for his destination choice.

The results show that more than half the respondents used information for their last visit to a theme park. Most travellers use information to be better prepared or to increase the 'pre-trip enjoyment'. In chapter 6, it was concluded that there is some possibility of changing "hard" aspects of travel behaviour such as mode and destination choice. However, the motivation to search for information indicates that information is used to change 'soft' behavioural aspects such as decreasing anxiety and aggression in traffic. This corresponds to other studies, which reported that travel information partially determines the overall satisfaction of the traveller (Grotenhuis *et al.* 2005: 4). The soft behavioural factors are becoming more relevant; central government has recently conducted a study to investigate the soft effects of a newly introduced travel information service (Vonk & Van der Horst 2005).

The last conclusion is not unexpected; some of the external factors seem to explain the same differences in displayed behaviour. For example, the high preference of students to use the public transport can be explained by their access to free public transport. This raises the question as to what extent external factors are related to each other and how much of the displayed behaviour is explained by the combination of all external factors. To investigate this issue, the impact of the combined factors on the aspects of the decision-making process is discussed in the following chapter.

Notes

1 The frequency of percentages are based on the respondents that have access to these information sources.
2 Respondents were asked to relive their last theme park visit and some of these visits were more than one year ago. This raises the question in how far the respondents are able to accurately distinguish between pre-trip and post-trip reliability. With the updating of the internal memory, the perceived reliability may have also been updated. Consequently, the outcome of the analyses should be treated carefully.
3 The percentages do not add up to 100%. Not all respondents sought information on both car and public transport, resulting in lower than 100% information search. Furthermore, respondents could indicate that they sought information more than once, leading to more than 100% for destination-related information search.
4 It should be noted that some of the individual factors will be correlated and will therefore explain the same differences in behaviour. The analyses presented in chapter 8 take these correlations into account.

5 A Railrunner ticket: travel anywhere for €2 per child as long as it is accompanied by an adult, with a maximum of three children per adult.
6 See: www.ns.nl/efteling

8 The decision-making process explained

8.1 Introduction

In the previous chapter, the relation between each external factor and the decision-making process was analysed and discussed. Many external factors were considered and each affected the decision-making process to a certain extent. However, some external factors seemed to explain the same differences in displayed behaviour, which raised the issue of the nature of the impact of all the external factors jointly upon the decision-making process. Not all external variables will affect the aspects of the decision-making process to the same degree and some variables will be correlated. Consequently, the most influential external factors for recreational trips need to be determined. Furthermore, the extent to which the external factors explain the displayed behaviour is analysed. In short, the aim of this chapter is to provide more insight into the complex relationship between the external factors and the decision-making process. As in the previous chapter, research question 2: "*What are the key external factors that affect the decision-making process for mode and destination choice, and how do they affect the role of travel information*?" is answered empirically. In addition, these analyses allow us to interpret how and to whom travel information should be provided.

Logistic regression models can be used to determine how much variance in a binary dependent variable is explained by the independent variables. That is, how much variance in the displayed behaviour is explained by the external factors. Logistic regression models are used when the dependent variable is a dichotomy and the independent variables are of any type (such as interval, ratio or categorical). As all three aspects of the decision-making process, choice set formation, considering external information search and information search behaviour, are phrased as questions with a binary outcome (yes/no) a logistic regression model is estimated for all aspects. Before logistic regression models can be estimated, the correlation between independent variables needs to be examined. No correlation higher than |0,4| between the independent variables was found, which lead to the inclusion of all variables.

The table below shows all external factors that are considered in the analyses. The independent variables (second column) are listed per external factor (first column). The third column describes the values the variable can have. For categorical or binary variables the values are indicated, along with the reference category (r). As discussed previously (see section 3.6), the information factors only affect one aspect of the decision-making process: the information search behaviour. The information variables are therefore not used in the logistic regression models for choice set formation and considering external information search. The individual factors and the environmental factors are used in all analyses.

Table 8.1 *Overview of independent variables used in the logistic regression analyses*

External factor	Variable name	Variable level
Individual factors		
Socio demographic characteristics	Age	Ratio scale
	Gender	Male (r); female
	Household composition	Single (r); family with children under 12; family; other
	Education level	Low (r); medium; high
	Employment level	Employed (r); unemployed; student; other
	Income	- 1700 (r); 1700-3100; 3100 +
	Work hours	Ratio scale
Experience	Frequency	< 1x month (r); =>1x p month
	Visited before	No (r); Yes
Habitual mode	Habitual mode	No habitual mode (r); car; public transport; bicycle
Attitudes	Towards transport modes	Ratio scale
	Personality types	Ratio scale
Motivation	General motivation	Interest (r); efficiency; reduce uncertainty
Environmental factors		
Travel party	Travel party	Family (r); family with children under 12; friends; colleagues; other
Access to transport modes	Car ownership	One car (r); two cars; no car
	Driving licence	No (r); Yes
	PT card ownership	No (r); Yes
	Selected mode	Car (r); public transport; bicycle; walking, other
	Alternative mode	No (r); Yes
Access to destination	Selected destination	No (r); Yes
Information factors	Only applies to section 7.5	
Reliability	General reliability	Low (r); medium; high
Sources	General access	Internet (r); brochures; other

The remainder of this chapter discusses the model estimations for the three aspects of decision-making process. In section 8.2 the choice set formation is analysed. In section 8.3 a logistic regression model for the decision to search for external information is estimated and discussed. Finally, in section 8.4 the information search behaviour for mode and destination choice is analysed and discussed. The chapter concludes with a short discussion on the results found and the impact these results have on the policy recommendations in chapter 9.

8.2 Choice set formation

The formation of the choice set is the first aspect of the decision-making process that is analysed. Choice set formation concerns the decision to consider an alternative or not. Only 16% of the respondents considered a mode alternative, while 15% considered a destination alternative. These choice travellers use travel information to make a final decision. Therefore, for policymakers who

want to change travel behaviour identifying this group is relevant, as their travel behaviour is not yet fixed. The logistic regression model reveals which external factors explain the choice set formation for mode and destination. Who are most likely to consider an alternative and whether there is a difference between travellers who consider a mode choice or a destination choice, are questions that will be answered. The logistic regression model determines the chance that an alternative is considered.

8.2.1 The mode choice set

Table 8.2 shows the results of the logistic regression analysis for mode choice set formation using a stepwise procedure and is interpreted as follows: the variable coefficients (B) provide an indication of considering an alternative relative to not considering an alternative. Each categorical independent variable contains a reference subcategory (the first) to which the other subcategories of that variable are compared. The reference category for each independent variable is listed in Table 8.1, to which the other categories of that variable are compared. Positive values indicate an increased chance of considering an alternative relative to the reference category while negative values show a decline in considering an alternative. The last column, Exp(B), gives the odds of a person actually considering an alternative compared to the reference category. Odds ratios greater than 1 indicate an increased chance of an event. For example, in the case of travellers who own more than one car, the odds of considering an alternative is 0.594 as high as for travellers who own one car.

The analyses discussed in the previous chapter showed that sex, household composition, income, education level, habit, PT fan-attitude, travel party and car ownership led to significantly different behaviour concerning the choice set formation. Therefore, we expect that these variables also predict the chance of considering an alternative. As displayed in Table 8.2, PT fan attitude, income and household composition do not predict the chance of considering an alternative; however, employment status is added as a significant variable. The fact that there are less significant independent variables in the estimated model supports the idea that some of the variables explained the same differences in displayed behaviour. The estimated model has a Nagelkerke ρ^2 of 0.078. As the Nagelkerke ρ^2 indicates the share of variation explained by the model, this means that only a small share of the variance in behaviour is explained but that the largest part remains unexplained.

Table 8.2 *The logistic regression model for the mode choice set (n=1434)*

Variable	Variable level	B	S.E.	Sig.	Exp(B)
Education	Secondary	1.008	0.480	0.029	2.741
Education	Tertiary	1.079	0.490	0.023	2.942
Sex	Female	-0.510	0.195	0.009	0.600
Employment status	Student	0.678	0.190	0.001	1.971
Habit	Car	-0.483	0.194	0.014	0.617
Habit	Public transport	-0.946	0.489	0.063	0.388
Car ownership	Two cars	-0.521	0.242	0.036	0.594
Constant		-2.061	0.476	0.000	0.127

For *education level,* the model shows that respondents with a secondary or tertiary education are more likely to consider an alternative transport mode relative to those who received a primary level education. This result is not completely unexpected; the highly educated are more likely to travel by train to their work location (Zandvliet 2006: 84) and are therefore more used to travelling with another transport mode. Females are less likely to consider a mode alternative relative to men.

The *employment status* also affects the likelihood that an alternative mode is considered. Students are nearly twice as likely to consider a mode alternative relative to the employed. Apparently, the available free time combined with the free public transport card increases the likelihood that more than one mode is considered.

Respondents with a *habitual transport mode*, be it car or public transport, are less inclined to consider an alternative mode relative to the respondents that do not have a habitual preference for a transport mode. This result was expected, since Lappin & Bottom (2002) already reported that habitual behaviour would lead to the selection of the default choice. Somewhat unexpected is that the influence of habitual preference for public transport is larger than the influence of habitual car use. However, from a policy perspective this means that the habitual car users are more easily persuaded to consider alternative modes than habitual public transport users.

Finally, *car ownership* decreases the likelihood that an alternative is considered. Travellers who own more than one car are significantly less inclined to search for a mode alternative relative to travellers who own one car. We should interpret this result in light of car availability. Even though a household owns one car, this does not imply that it is always available to the recreational traveller. Since not all trips are undertaken with the family the car may already be reserved for another trip. Owning more than one car increases the chance that the traveller has access to a car, thus making it unnecessary to consider other modes. Travellers who do not own a car are not significantly more likely to consider an alternative. Arguably because these travellers do not have access to a car, which is the most likely transport mode to visit a theme park. Car ownership is the only environmental factor that significantly influences the likelihood that an alternative is considered. All other independent variables are individual factors.

8.2.2 The destination choice set

The formation of the destination choice set did not reveal significantly different behaviour for many of the external factors. Only the variables visited before, the PT fan attitude and the thrill-seeker and impatient personality types led to different behaviour. We expect that the estimated model include the effect of these independent variables on the probability of selecting a destination alternative. The Nagelkerke ρ^2 is only 0.065, which means that, once again, little of the variance is explained. The values of the ρ^2 indicate that the choice set formation for both mode and destination choice varies unsystematically with individual and environmental factors. Presumably, other factors are more relevant for the explanation of the observed differences.

The independent variables that affect the probability of selecting a destination alternative have changed compared with the results presented in the previous chapter. The PT fan attitude and the impatient personality type do not significantly affect the formation of the destination choice set.

Table 8.3 *The logistic regression model for destination choice set (n=1434)*

Variable	Variable level	B	S.E.	Wald	Sig.	Exp(B)
Habit	Public transport	0.710	0.357	3.955	0.047	2.034
Previously visited	Yes	-0.725	0.192	14.303	0.000	0.484
Gender	Female	-0.412	0.201	4.180	0.041	0.662
Employment	Other	-1.090	0.745	2.139	0.144	0.336
Thrill-seeker		0.245	0.094	6.819	0.009	1.278
Routine-based		0.175	0.093	3.543	0.060	1.191
Loner		-0.186	0.091	4.145	0.042	0.830
Constant		-0.956	0.215	19.851	0.000	0.384

As opposed to the mode choice set where public transport *habit* decreases the chance that an alternative was selected, public transport habit increases the chance that a destination alternative is considered. Arguably, habitual public transport users only look at destinations reachable by public transport. The low accessibility of many theme parks by public transport may therefore increase the likelihood that an alternative is considered.

Having *previously visited* the theme park decreases the chance that an alternative is considered relative to respondents that had not visited the theme park. This means that, for destination choice, travellers are disposed to repeat previous behaviour. Van der Heijden & Timmermans (1988: 101) found that variety seeking, rather than repetition, was an important motivation to visit different destinations. Since it was not determined when the theme park was visited before, it is plausible that other theme parks were visited in the mean time. However, the results do suggest that variety seeking may be less important for theme park visits. Perhaps, the certainty that the recreational goal will be fulfilled (Mommaas *et al.* 2000) is stronger than the variety seeking motivation. Considering all independent variables, having previously visited the theme park has the strongest relationship with the decision to consider alternative destinations. It is therefore easier to persuade travellers to visit another theme park when they are not familiar with the alternatives.

As with the formation of the mode choice set, females are less likely to consider an alternative destination relative to men. It supports the results discussed in the previous chapter. Three personality types (thrill seeker, routine-based and loner) explain the formation of the destination choice set. Personality types thrill-seeker and routine-based increase the chance that an alternative destination is considered. This is in line with findings reported by Farley (1986: 2), who argued that thrill-seekers seek various kinds of highly stimulating experiences and environments. That the routine-based personality type is more inclined to consider an alternative is less plausible. Perhaps, these travellers are looking for a certain routine experience but do not know what destinations offer that experience. More alternative destinations are compared to select the most appropriate destination. Finally, having a loner personality decreases the chance that an alternative destination is considered. One attribute of the loner personality type is that they are not spontaneous, which could explain their preference for visiting the same theme park.

A striking outcome of the model estimation is that environmental factors do not affect the formation of the destination choice set. The only significant independent variables are individual factors. Changing destination choice is less relevant from a policy perspective, but all the more relevant for theme park owners, as their goal is to persuade more people to visit their theme park. The fact that having previously visited the park before decreases the chance that another park is considered may therefore be a useful result for theme park owners.

8.2.3 Summary

To summarise, some of the variables remain significant, while other variables are no longer significant. This underlines the assumption that when the variables are investigated separately some variables explain the same differences in behaviour. To illustrate, for the socio-demographic variables, income and education level each explained the same differences in behaviour. The logistical regression model showed that it was actually the education level that explained the differences in behaviour. In addition, different independent variables explain the formation of the mode and destination choice set. Apparently, considering an alternative is a different process for mode than for destination choice. Since the timing shows that mode and destination are chosen at approximately the same time (see section 7.2.3), a more in-depth study into the relations between related choices is recommended. Moreover, the fact that different external factors affect the choice set formation impedes the segmentation of travellers into distinguishable groups. From a policy perspective, affecting mode choice is more relevant than changing destination choice. Therefore, policymakers can use the segmentation provided in section 8.2.1: the choice traveller is a (highly) educated male who owns one car but does not have a habitual transport mode.

8.3 Considering an external information search

Before travel information is sought, the traveller determines whether external information is necessary. In this step, the traveller verifies whether or not there is sufficient internal information to make the decision. Although policymakers are probably more interested in the actual information search behaviour, understanding who decides to search for external information is a relevant step in segmenting distinguishable groups. In chapter 3 we argued that this decision is made after the choice set formation. Consequently, the decision to search for external information is also affected by the number of alternatives considered. The dependent variable is *the decision to search for external information*. The model estimates the probability that external information is sought for the mode and the destination choice.

8.3.1 Considering external information search for mode choice

The displayed behaviour related to the decision to search for external information differed significantly for several external factors. As reported in chapter 7, the household composition, experience, PT fan attitude, habit and car ownership affected the decision to search for external information. The estimated model shows that household composition and PT fan attitude are not incorporated as significant independent variables (see Table 8.4). With a Nagelkerke ρ^2 of 0.217 the estimated model explains an acceptable share of the variation.

Table 8.4 *the logistic regression model for external information search for mode choice (n=1434)*

Variable	Variable level	B	S.E.	Wald	Sig.	Exp(B)
Income	1700-3100	0.273	0.148	3.390	0.066	1.314
Employment	Not employed	0.544	0.259	4.400	0.036	1.723
	Student	0.409	0.225	3.293	0.070	1.506
Working hours		0.023	0.007	12.479	0.000	1.023
Habit	Bicycle	0.803	0.390	4.241	0.039	2.233
Previously visited	Yes	-0.713	0.169	17.836	0.000	0.490
Visit frequency	Frequent	-0.828	0.274	9.112	0.003	0.437
Routine-based		-0.131	0.073	3.215	0.073	0.877
Transport mode	Public transport	1.096	0.194	31.931	0.000	2.992
	Bicycle	-1.031	0.407	6.404	0.011	0.357
	Walking	-1.886	1.083	3.029	0.082	0.152
	Other	-0.872	0.359	5.913	0.015	0.418
Car ownership	Two cars	-0.343	0.167	4.205	0.040	0.710
Destination alternative	Yes	1.049	0.215	23.835	0.000	2.855
Mode alternative	Yes	0.683	0.198	11.930	0.001	1.979
Constant		-0.481	0.275	3.058	0.080	0.618

The *employment* status influences the probability that external information is sought. Those who are not employed or are students are more likely to search for external information relative to the employed. Arguably, students have more have more time available and therefore decide to conduct an external information search. However, this contradicts the assumption that those with time constrains (e.g. the employed) are more likely to ensure that the trip will yield a positive experience, and therefore search for external information.

Respondents who habitually use a bicycle are more inclined to search for external information relative to non-habitual respondents. Since most theme parks are not reachable by this mode (only 10% of the habitual bicycle users report having used this mode), these travellers need to use another mode. This unfamiliarity with these other transport modes probably increases external information needs. The variable *previously visited* also affects the probability that external information is sought. Those who are familiar with the theme park have a lower likelihood that external information is sought. As we argued previously, the familiarity with the attributes of the trip to the theme park decreases the need for external information. Furthermore, frequently visiting theme parks also decreases external information search relative to infrequent visitors. The routine-based personality type decreases the probability that external information is sought.

The selected *transport mode* has the largest impact on the decision to search for external information. Using public transport increases the chance to search for external information substantially relative to using the car. Apparently, public transport users have a higher need for travel information than car users. As argued previously, the information related to public transport is more dynamic and even experienced travellers still need dynamic information (AVV 2003: 13). Therefore, this study confirms that travellers have a higher need for more context specific information. Travellers using other transport modes need significantly less information compared

to car users. For those cycling and walking, the information need is lower because these transport modes can be used whenever it suits the traveller. Furthermore, as the destination is likely to be near, the travellers will be familiar with the area. The 'other' transport mode is frequently a touring car where the respondents are taken to the destination (e.g. day trip with colleagues). Since these travellers are usually not responsible for mode choice it is consistent that they do not need to search for external information.

The model shows that owning more than one car reduces the tendency to search for information. As argued in 8.2.1, owning more than one car probably means that the traveller always has access to a car and does not need to consider alternative modes. This is in line with results presented in chapter 6, namely that car users make less use of information in their decision-making process than public transport users. Finally, considering a *mode alternative* results in a higher inclination to use information. Based on the number of attributes necessary to compare modes, external information search is more likely to reach a satisfactory decision (Jeng & Fesenmaier 2002). Furthermore, the model shows that considering a *destination alternative* also influences the chance to search for external information. Again, we expect that more destinations require a more thorough comparison between the travel options.

8.3.2. Considering external information search for destination choice

Based on chapter 7, we expect that experience, travel party and selected transport mode significantly influence the decision to search for external information in the destination process. As Table 8.5 shows, these variables indeed affect the chance that external information is sought; however, several socio-demographic characteristics as well as habit and attitudes are also significant independent variables. The estimated model explains a fair share of the variance with a Nagelkerke ρ^2 of 0.138.

Table 8.5: *the logistic regression model for external information search for destination choice (n=1434)*

Variable	Variable level	B	S.E.	Wald	Sig.	Exp(B)
Education	Tertiary	-0.651	0.195	11.162	0.001	0.522
Employment	Student	-0.547	0.203	7.283	0.007	0.579
Previously visited	Yes	-0.589	0.183	10.354	0.001	0.555
Visit frequency	Frequent	-0.777	0.251	9.574	0.002	0.460
Habit	Public transport	1.064	0.446	5.680	0.017	2.898
	Bicycle	0.366	0.183	3.986	0.046	1.442
Impatient		-0.188	0.074	6.501	0.011	0.829
Travel party	Family with children	0.357	0.163	4.785	0.029	1.429
Transport mode	Public transport	0.493	0.204	5.872	0.015	1.638
	Walking	-1.745	0.833	4.386	0.036	0.175
Public transport card	Yes	0.386	0.194	3.952	0.047	1.472
Destination alternative	Yes	1.074	0.251	18.306	0.000	2.927
Constant		0.971	0.293	48.676	0.000	2.639

The *employment status* influences the probability that external information search is conducted students are less prone to search for information than employed travellers. This result is opposite the result discussed in section 8.3.1. In the logistic regression model estimated for external information for mode choice we found that students are more inclined to search for information. Apparently, the time pressure prevents the employed travellers to search for mode choice ("will use a familiar transport mode to save the hassle of searching for information") but increases pressure on having high quality free time. External information on destination choice is then not only searched for to facilitate the trip but maybe also extends the pre-trip pleasure (AVV 2003).

The independent variables that demonstrate the *experience* of travellers significantly affect the chance to search for external information. Having previously visited the theme park and being a frequent visitor of theme parks both lower the likelihood that external information is sought for. This is in line with the assumption that travellers with experience are less likely to search for external information since they are already familiar with the attributes of the theme parks. That is, the traveller is aware what the park, or theme parks in general, have to offer.

Having public transport, walking or cycling as a *habitual transport mode* increases the likelihood that travel information is sought relative to respondents without a habitual mode. For public transport and cycling, the same reasoning applies as described above; since most theme parks are not readily accessible by these modes these travellers need to use another mode or need additional information on the accessibility of the theme park. Consequently, external information search is needed to provide this information. The *impatient* personality type decreases the likelihood that information is used. Arguably, travellers with such a personality are not patient enough to conduct an external information search.

For the composition of the *travel party*, a party with young children is more inclined to search for external information relative to a family without children. We expect that for families with young children, the selection of an appropriate destination is crucial. Furthermore, the travel party may want to determine whether the necessary facilities are available in the park.

The selected *transport mode* also explains the probability of searching for external information in the decision process. Using public transport increases the chance to search for external information substantially relative to using the car. Once again, travellers are more inclined to search for information on dynamic items. Travellers using other transport modes need significantly less information compared to car users. For those walking, the information need is lower because these transport modes can be used independently. Furthermore, as the destination is likely to be near, the travellers will be familiar in the area. Having a public transport card increases the probability that external information is sought, further substantiating the idea that more information is needed when travelling by public transport.

Finally, considering a *destination alternative* increases the chance that travel information is sought relative to not considering an alternative. Once more, this supports the fact that considering an alternative enlarges the number of attributes the traveller has to consider before making a choice (Jeng & Fesenmaier 2002: 24). More attributes leads to a more complex process with the result that it is more likely that external information is necessary.

8.3.3 Summary

The first observation is that the estimated models for external information search explain more of the variance than the choice set models. The second observation concerns the sequence of mode and destination choice; based on the results, it is not clear which decision is made first. On the one hand, considering a mode alternative is not an independent variable in the decision to search for external information within the destination process while considering a destination alternative is significant in the model for the mode choice. This implies that the decision to consider an alternative mode is made after the decision to consider external information in the destination choice. Consequently, the decision-making process for mode choice starts later than the process for destination choice. On the other hand, many of the independent variables which affect the probability that external information is sought in the destination choice are 'mode-related factors, such as habitual mode, selected transport mode and public transport card ownership. This implies that the accessibility of the selected destination affects the need for external information, probably because of the poor accessibility of theme parks by transport modes other than the car. A possible consequence is that it prevents most travellers from even considering another transport mode. Although the sequence of decisions is not readily apparent based on this study, it can be concluded that the accessibility of theme parks is a relevant issue for many travellers, both in the destination and the mode choice. Additional attention, from both policymakers and the owners of theme parks, is definitely recommended.

8.4 Information search behaviour

The last step is to search for the information needed in the mode or destination process. This information search behaviour reveals which information items are relevant to which type of traveller. The logistic regression models are estimated for each information item to determine which independent variables explain whether a respondent searched for that item. The models estimated the probability that the information item is sought for in both mode and destination choice. Information search behaviour is not only affected by individual and environmental factors but also by the information factors. Therefore the reliability of information and the access to information sources are included in these analyses (see Table 8.1).

8.4.1. Mode information search behaviour

The analyses in chapter 7 showed that differences in specific search behaviour on the information items could be attributed to several external factors, although the relevant external factors differed strongly per information item. For the logistic regression models we expect a similar result: different independent variables will affect the search behaviour for the different information items Table 8.6 confirms the fact that different independent variables are significant in the estimated models. Not all estimated models are discussed separately; rather the most relevant results are highlighted in this section.

The percentage of the explained variance of the dependent variable differs strongly as the value for Nagelkerke ρ^2 ranges from 0.518 for travel time by public transport to 0.085 for facilities in the theme park (see all ρ^2 values in Table 8.6).

The only common independent variables in all models are the *selected transport mode* and having a mode alternative. For selected transport mode, public transport users have a much higher probability to search for public transport related items relative to car users, while they have a lower likelihood that they search for car-related items. Furthermore, travelling by bicycle or other transport mode affects the likelihood that different information items are sought. Since most travellers are not choice travellers, the goal of information is to help the traveller plan the trip. Knowing what transport mode is selected and concentrating the information on this transport mode it therefore crucial.

Another independent variable that is present in many models is *habit*. Particularly the public transport habit increases the likelihood that items such as parking facilities, travel time and accessibility by public transport and opening hours are sought relative to the non-habitual travellers. Once again, this supports the assumption that habitual mode affects the search behaviour for items relevant to that transport mode. Interestingly, habitual public transport users are also more likely to search for information on parking facilities relative to non-habitual travellers. The reason for this difference is unclear.

The *personality* of travellers is present in nearly all models. Particularly the travellers with a strong loner personality significantly decrease the probability that any information is sought. In section 7.3.4 we found less information was sought on the items parking facilities and travel time by car; however, the models show that the loner personality affects the likelihood of information search on more items. The attitude towards transport modes only plays a small role in the probability of searching for a specific information item. Only in the models where the impact of habitual public transport use is not significant do the attitudes towards transport modes influence the chance that an information item is sought. These are the models for travel time by car and public transport costs. The effect of attitudes and habit on the decision-making process are correlated; Triandis (1977) reported that the interaction between attitude and behaviour is strong when habit is weak and when habit is strong the attitude-behaviour interaction is weak. These results confirm the interaction between attitude and habit and validate the same relationship as found by Triandis (1977).

The effect of information factors on the probability that information item is searched for is small. The reliability of the information item affects the chance that the item is sought in different ways. The information with a high reliability usually increases the chance that information is sought on destination items relative to a low reliability; however, in the model for travel time by car, high reliability decreases the chance that information on that item is sought. Furthermore, an average reliability decreases the likelihood that information is sought on public transport items relative to low reliability. It was expected that high reliability would increase the information.

As mentioned before, having a *mode alternative* increases the likelihood that information is sought on all information items. Once more, this confirms that choice travellers are more likely to search for all information items relative to non-choice travellers. The possible implication is that choice travellers are more interested in multi-modal travel information services that combine door-to-door advice for all transport modes. Initiatives for multi-modal travel information services should therefore be encouraged.

Table 8.6 *insert table for mode information search*

		Parking facilities	Travel time by car	Car costs	Travel time by public transport	Accessibility public transport	Public transport costs	Opening hours	Facilities in the park
		B	B	B	B	B	B	B	B
Age						-0.041			
Household composition	Single (r)								
	Family						0.969		
	Other			-1.262 *					
Education level	Low (r)								
	Medium			1.491 **				0.270 **	
	High			0.831 *					
Employment level	Employed (r)								
	Unemployed	0.646							
	Student	0.635	0.370 **				-0.575		
Income	Up to 1700 (r)								
	1700-3100		0.406 *					0.363	
Work hours		0.024	0.015		0.023	0.016 *		0.009	0.021 *
Frequency of visits	At least once a month (r)								
	Less than once a month							-0.758	
Visited before	No (r)								
	Yes							-0.427	-0.612 *
Habitual mode	No habitual mode (r)								
	Public transport	1.001 **			1.333	1.283		0.812 *	
	Bicycle						-0.472 **		
PT Fan							0.235 **		
Car dislike			-0.225 *						
Organiser							0.321		
Thrillseeker				0.449 *		0.276 *			
Impatient		-0.209 *							
Routine-based							-0.289 *		
Loner		-0.273	-0.158 **	-0.421 *	-0.224 *	-0.219 *	-0.216 **		

		Parking facilities	Travel time by car	Car costs	Travel time by public transport	Accessibility public transport	Public transport costs	Opening hours	Facilities in the park
		B	B	B	B	B	B	B	B
Motivation	Interest (r)								
	Reduce uncertainty			1.077 *					
Travel party	Family (r)								
	Family with children < 12			-0.721 **		-0.448 **	-0.700 *		
	Other			-1.127 **				0.615	
Car ownership	One car (r)								
	No car				0.534 *	0.625	0.744		
PT card	No (r)								
	Yes	-0.655 *			0.458 **				
Selected mode	Car (r)								
	Public transport	-1.193	-1.108		2.98	2.415	2.342	0.946	0.614 **
	Bicycle	-2.321 *	-1.535 *				-1.629 **	-0.914 *	
	Walking							-1.675 **	
	Other	-2.054	-1.272					-1.235	
Alternative mode	No (r)								
	Yes	0.915	0.876	1.525	1.916	1.706	1.882	0.438	0.699 *
Alternative destination	No (r)								
	Yes	-0.943	-0.836		-0.603 *			-0.745	
Reliability	Low (r)								
	Medium				-0.571 *	-0.85			
	High		-0.360 *					0.465	0.489 **
Source	Internet (r)								
	Other					-1.075 **			
Constant		-0.698 **	-0.322 ***	-2.198	-2.817	80.294	-2.609	-0.471 ***	-2.494
Nagelkerke ρ^2		0.185	0.165	0.244	0.518	0.466	0.413	0.167	0.09

* significant at α = 0.05, ** significant at α = 0.10, *** not significant, all other figures significant at α=0.01

Table 8.7 *The logistic regression model for information search behaviour for destination choice (n=1434)*

		Parking facilities	Travel time by car	Travel time by public transport	Acces-sibility by public transport	Entrance fee	Special offers	Attrac-tions in the park	Opening hours	Facilities in the park
		B	B	B	B	B	B	B	B	B
Age										0.031 **
Household composition	Single (r)									
	Family with children < 12						-0.340 *	-0.401 *		0.811 *
	Family			0.469 *	0.937				0.372 *	0.864 **
	Other				0.672 *				0.601	0.938 **
Education level	Low (r)									
	Medium			1.127 *	1.319	0.676 **				
	High							-0.289 **		
Employment level	Employed (r)									
	Student					-0.461	-0.436 *		-0.605	-0.913 *
	Other									1.275 *
Income	up to 1700 (r)									
	1700-3100	0.385 *							0.260 **	-0.738
Work hours				0.016 *	0.020			0.008 **		0.020 **
Frequency of visits	At least once a month (r)									
	Less than once a month					-0.992	-0.719 *		-0.855	-0.946 **
Visited before	No (r)									
	Yes	-0.492	-0.605			-0.470		-0.710	-0.568	-0.591 *
Habitual mode	No habitual mode (r)									
	Public transport			1.136	0.934			0.758 *	0.943 *	1.213 *
Thrillseeker						0.121 **	0.181		0.150 *	
Routine-based		0.219 *								
Loner				-0.189 **				-0.191		
Travel party	Family (r)									
	Family with children < 12					0.306 *				-0.628 **
	Friends							-0.381		

		Parking facilities	Travel time by car	Travel time by public transport	Acces-sibility by public transport	Entrance fee	Special offers	Attrac-tions in the park	Opening hours	Facilities in the park
		B	B	B	B	B	B	B	B	B
	Colleagues		0.966 **			-1.07 *				
Car ownership	one car (r)									
	two cars or more	0.564		-0.571 **	-0.545 **					
	No car		-0.565 *			-0.503	-0.595	-0.527		-0.665 **
Driving license	No (r)									
	Yes			-0.604						
PT card	No (r)									
	Yes			0.493 *	0.427 *					
Selected mode	Car (r)									
	Public transport	-1.031	-1.457	2.541	2.274	0.448 *			0.339 **	
	Bicycle	-2.388							-2.607 *	
	Walking	-1.879				-2.019 **			-0.740 *	
	Other		-1.09			-0.692 **				
Alternative mode	No (r)									
	Yes	0.792	0.673	1.291	1.629		0.493			0.757
Alternative destination	No (r)									
	Yes		-0.587	-0.781		-0.707	-0.451	-0.678	-0.407 *	
Reliability	Low (r)									
	Medium						1.703	1.186 **		
	High						2.009	1.383 *	0.639	
Source	Internet (r)									
	Other				-2.054				-0.720 **	
Constant		-0.734	-0.605 *	-1.877	-3.083	1.33	-1.452 *	-0.336 ***	0.496 **	-63.551 *
Nagelkerke ρ^2		0.157	0.165	0.434	0.406	0.124	0.132	0.145	0.147	0.154

* significant at α = 0.05, ** significant at α = 0.10, *** not significant, all other figures significant at α=0.01

8.4.2 Destination information search behaviour

Just as for mode choice, the specific information sought for destination choice can be explained by many different independent variables. The logistic regression analysis was applied to all ten information items. The model for 'other' information was not significant but the other models are depicted in Table 8.7. The percentage of the explained variance of the dependent variable differs strongly as the value for Nagelkerke ρ^2 ranges from 0.434 for travel time by public transport to 0.124 for entrance fee (see all ρ^2 values in Table 8.7).

The *experience* with theme park visits affects the chance that information items are sought. Having previously visited the theme park reduces the likelihood that information on car and destination related items are sought relative to the non-familiar traveller. The frequent visitor is less likely to search for destination related items relative to the infrequent visitor; this variable is not significant in the model for attractions in the park. These results further underline that experience diminishes the information search behaviour for destination choice.

As with mode choice, the *transport mode* significantly affects the chance that information items are sought. The impact on the probability is also similar: public transport users are more likely to search for public transport information and less likely to search for car information. However, using public transport also increases the probability that destination information is sought relative to car users. Apparently, the higher information need of public transport travellers extends to other types of information such as destination information. Relative to other transport modes, car users are more likely to search for information on destination-related information items (see Table 8.7).

The impact of the *personality types* is even smaller than in the mode choice models discussed in the previous section. The loner personality type is less likely to search for information while the thrill-seeker personality type is more likely to search for information on public transport items. The low impact of the personality types, in all aspects of the decision-making process, suggests that personality may not be the most appropriate for describing the recreational traveller. More research on the role of attitudes in the information acquisition of travellers is therefore necessary. The attitude toward transport modes is not significant in the estimated models. This time, *habit* does not influence the interaction of attitudes with displayed behaviour, as habitual use of public transport is not significant in many of the estimated models. Hence, the attitude towards transport modes and the habitual mode are less relevant variables in the destination information search behaviour.

The effect that the various access to modes variables have on information search behaviour are as expected. Not owning a car increases the probability that information on public transport is sought relative to owning one car, as does the variable of having a public transport card. Having a driving licence on the other hand decreases the chance that public transport information is sought. More interesting is the effect of car ownership on the likelihood that destination items are sought. Travellers who do not own a car are less prone to search for destination items relative to those who own a car. Why these travellers are less interested in these information items is not apparent.

Again the *information factors* significantly affect the search behaviour for a limited number of information items. Using another source than the internet leads to significantly less chance that the items accessibility by public transport, opening hours and facilities in the park are sought. The pre-trip reliability, either high or average, increases the search on special offers, attractions in the park, and opening hours relative to low reliability. Although the impact of information factors is limited, the effect on search behaviour seems to concentrate on the destination items. Several conclusions can be drawn based on these analyses; either the selected independent variables do not adequately represent the information factors or the role of these factors is smaller than anticipated. However, the overall high reliability of the information and the nearly exclusive use of the internet as an information source may have resulted in insufficient differences in displayed behaviour.

Finally, having a *destination alternative* significantly decreases the likelihood that information items are sought. As having an alternative destination increased the probability that external information was sought, this effect on information search behaviour is unforeseen. A satisfactory explanation cannot be offered for this effect.

8.4.3 Summary

Particularly the estimated models for public transport information items had a high Nagelkerke ρ^2 values. Much less of the variance was explained in the models for destination information items. As for the choice set formation and the decision to search for external information, the models explaining information search behaviour are different for mode and for destination choice. Although there are many variables that affect the chance that an information item is sought, having an alternative and travel mode are the most consistent independent variables of nearly all estimated models. Furthermore, the effect of these variables is consistent in all models. The diversity of significant external variables makes a segmentation of respondents in distinguishable groups complicated. However, these two variables may be the best starting point for targeting new information services.

8.5 Conclusions

The aim of this chapter was to provide more insight into the complex relationship between the external factors and the decision-making process. In the previous chapter each external factor was analysed separately, but some variables seemed to explain the same differences in behaviour. Therefore, logistic regression analysis was applied to determine the impact of the combined external factors on the central aspects of the decision-making process. Compared with chapter 7, some of the variables remained significant while others became insignificant. Therefore, we conclude that some variables explained the same differences in behaviour.

Each aspects of the decision-making process is explained by a different combination of external factors. Furthermore, the combination of external factors differs between mode and destination choice. This further corroborates the conclusion drawn in chapter 7 that each decision is different. However, the conclusion that different external factors affect the mode and destination choice impedes the segmentation of travellers into distinguishable groups. Having an alternative

(mode or destination) and travel mode are the most consistent independent variables in nearly all estimated models. Furthermore, the effect of these variables is consistent in all models. Consequently, if segmentation should be made, these two variables are the best starting point for targeting new information services.

Based on the fact that considering a mode alternative is not an independent variable in the decision to search for external information within the destination process while considering a destination alternative is significant in the model for the mode choice, we conclude that destination choice is a more relevant decision than mode choice for recreational trips. However, the accessibility of the selected destination affects the need for external information, probably because of the poor accessibility of theme parks by transport modes other than the car. A possible consequence is that it prevents most travellers from even considering another transport mode. Although the sequence of decisions is not readily apparent based on this study, it can be concluded that the accessibility of theme parks is a relevant issue for many travellers, both in the destination and the mode choice. Additional attention, from both policymakers and the owners of theme parks, is definitely recommended.

This issue and other issues related to the implementation of travel information as a policy instrument are further discussed in the following chapter.

9 Conclusions

9.1 Introduction

Understanding how travellers respond to changes in their travel environment is necessary for transport policy analysis, as changes in travel environment may often lead to changes in travel behaviour. Travel behaviour is the resultant of many individual choices that the traveller makes before and during the trip. The activity that the traveller wants to participate in is often seen as the starting point for trips (Moktharian & Salomon 2001). Although the travel motive is essential in understanding the displayed travel behaviour, there are many more decisions that the traveller has to make. Mode choice, departure time choice, route choice and destination choice are some of these decisions. Underlying each of the choices is a decision-making process. It is thought that a change in the external environment, such as provision of travel information, affects the execution of that decision-making process.

The main objective of transport policy is to modulate the impact of mobility, whereby positive effects, such as economic growth and personal development, are stimulated, while the negative effects, such as congestion, are minimised. These effects caused by mobility are fragmented over time, place and population, making it difficult to reach the objective of transport policy. To deal with this fragmentation, policy instruments that affect travel behaviour or travel choices are needed. Changes in travel behaviour result in a different composition of mobility, and consequently the impact of this mobility may change.

Travel information is such an instrument as it intends to help individuals make more informed travel decisions. Ideally the informed travel decisions moderate the level of congestion (Schofer *et al.* 1993: 107). Travel information can help a traveller to choose between different alternatives. Someone who wants to visit a recreational activity may not know which transport mode to use. Information on the available options may help that traveller to decide which transport mode best meets his wishes. Another reason to use travel information is to better plan a trip or be aware of unwanted delays (such as non-recurrent congestion). Thus, travel information affects the knowledge a traveller has and this may result in different travel behaviour. In theory, accurate, timely, understandable information can contribute to choices that are somehow better for the individual traveller, for society or both.

The idea that travel information is suited to inform travellers undertaking a recreational trip has led to the formulation of the research aim: *To gain insight into the role of individual travel information in recreational trips, particularly related to mode and destination choice, and to investigate the implications for transport policy.*

In reaching this aim, four central concepts were investigated and combined. These central concepts were the decision-making process, the external factors, the use and effect of travel information and transport policy. This chapter discusses the research findings in relation to the central concepts in this thesis. First the decision-making process for recreational trips is discussed. Second the external factors and their impact on the decision-making process is examined. Third, the actual use of travel information and the potential impact on travel behaviour is scrutinised. Finally, the results are discussed in light of Dutch transport policy and recommendations for the future use of travel information as a policy instrument are provided.

9.2 The decision-making process

The first central concept is the decision-making process; the related research questions read: "*Which combination of current decision-making theories most adequately describes the decision-making process underlying recreational mode and destination choice? Which aspects can be identified that describe the role of travel information in this process?*".

The theoretical model that was developed to describe the decision-making process for recreational mode and destination choice is a combination of the stages the individual executes in a decision-making process (based on information processing theory) and the formation of the choice set. The main added value of this theoretical model is that is combines several approaches to describe the role of information in decision-processes. Furthermore, the theoretical model is made more realistic by incorporating external factors that colour the perception of the decision maker (see section 9.3). Four aspects of the model are particularly relevant in this study: choice set formation, using external information, and information search behaviour (to understand which information is used and searched for by decision makers) and ex post evaluation. These aspects are relevant because they describe the role of travel information in the stages of the decision-making process. Based on these aspects, we were able to determine to what extend information was used in the recreational mode and destination choice. In addition, the level of involvement of recreational mode and destination choice is verified by these four factors.

The results found for each of the four aspects have provided adequate insight into the role of travel information in the decision-making process. However, based on the results found for these aspects (see chapter 6), two issues related to the decision-making process warrant further discussion: the level of involvement and the impact of the choice set on the decision-making process.

Level of involvement
Not all travellers have the same level of involvement when making recreational mode or destination choices. When decisions have a high level of involvement, each stage in the decision-making process is executed. Therefore, in high-involvement decisions it is likely that several alternatives are evaluated and a variety of information is sought (Engel *et al.* 1995: 156). This study showed that only 15% considered a destination alternative while 16% considered a mode alternative. Furthermore, approximately 30% never searched for external information. Consequently, we concluded that a number of travellers find destination and mode choice

complex decisions that require an extensive processing, while others find the choices less complex. This means that the level of involvement is not solely based on the trip decision, as we assumed for the theoretical model.

Next to the trip motive, it may be realistic to include some of the external factors to determine the level of involvement. A combination of trip motive and some external factors may then reveal the level of involvement for travellers. Understanding of which factors determine the level of involvement is relevant for approaching the travellers that are most likely to change their travel behaviour. This is particularly from a policy and a service provider perspective, as it allows for the tailoring of travel information. Travellers with a high level of involvement need more information on a variety of attributes, while travellers with a low level of involvement have a little, or no, need for information. In other words, the level of involvement affects the elaborateness of the decision-making process, thus, it affects the potential influence of travel information on travel behaviour. Therefore, segmenting travellers based on their level of involvement is recommended. Based on other research (Bargeman 2001; Sirakaya &Woodside 2005), we expect that experience with the trip is a major factor in determining the level of involvement. However, additional research that determines which external factors explain the level of involvement is needed.

The impact of considering several alternatives

The second issue that is discussed is the impact of the choice set on the decision-making process. Travellers who consider an alternative mode or destination are more prone to search for information and their subsequent degree of information search is also larger. Although this is in line with other studies (Jeng & Fesenmaier 2002), it raises the question as to why considering more alternatives creates a higher information need. Two complementary explanations are possible, with the starting assumption that travellers choose between alternatives by comparing relevant attributes for each of the outcomes. The first explanation would be that not all values of all relevant attributes are known. Whenever a value of an attribute is unknown, it may trigger an information search. Considering more alternatives increases the chance that not all values of attributes are known, thus more alternatives lead to more information search. The second explanation is that travellers may not be aware of all relevant attributes (e.g. in a new choice situation) or the evaluation of relevant attributes did not result in a 'better' alternative. In these cases, the traveller may be prompted to search for additional attributes to reach a final decision. To illustrate, a traveller finds entrance fee the most essential attribute and compares to theme parks on this attribute. When both theme parks are equally expensive, the traveller will have to consider another attribute. This could prompt additional information search. Although these explanations are complementary, we expect that the first explanation is more likely in recreational trips. With a limited number of alternatives and relatively high levels of experience, travellers choosing between modes are more likely to find the right values for some attributes than for searching for additional attributes. For destination choice, and in particular theme park visits, it is more feasible that additional attributes are sought as these decisions are made infrequently and have more alternatives to choose from.

The theoretical model was established for recreational travel decisions as being high-involvement decisions. We concluded that recreational mode and destination decisions are not always high-involvement decisions; therefore, we conclude that the model also applies to decisions that are

not high-involvement choices. Consequently, the theoretical model can be applied to investigate the role of information in other travel decisions. Both the level of involvement and the choice set formation have a large impact on the subsequent information use. Therefore, we conclude that for successful provision of travel information sufficient insight into these aspects should be acquired. Not only for future scientific research but also in the provision of travel information. The level of involvement and if an alternative is considered should complement the current focus of transport policy on trip motive. For future research, the proposed theoretical model developed in this study can be used as a starting point.

9.3 The external factors

The second central concept is the external factors, and the following research question was posed: "*What are the key external factors that affect the decision-making process for mode and destination choice, and how do they affect the role of travel information?*".

Three categories of external factors were identified: information factors, individual factors and environmental factors. Each of these factors affects the decision-making process to a certain extent. As the information factors are related to the specific information items that the traveller searches for, these factors only affect the aspect *information search behaviour* within the decision-making process. The individual and the environmental factors affect all aspects of the decision-making process. In chapter 7, the relations between each factor and the decision-making process were analysed, while chapter 8 discussed the effect of the combined external factors on this process. We concluded that all factors are to a certain extent relevant in the recreational mode and destination choice. Nonetheless, the analyses revealed a large difference between the effect of the external factors on the mode and the destination choice. Therefore, a discussion on why the impact on these choices is so different is warranted. External factors are usually used to segment travellers into groups that have distinctive information needs. However, the differences in the external factors for mode and destination choice impede this segmentation. The effects for travel information provision are discussed below.

Differences in mode and destination choice
To allow for the interdependency between external factors, logistical regression models were estimated to predict to what extent the combined external factors explain displayed behaviour. The models explained a reasonable share of displayed behaviour. Interestingly, the results showed that different external factors explained decision-making aspects for mode than for destination choice. For example, while education level explained a fair portion of mode choice set formation, it did not contribute to the destination choice set formation. Furthermore, the explained variance for using particular mode information items was much higher than the explained variance for destination information items. Particularly, the explained variance for the use of mode information is high, while the use of destination information is low. This implies that not only the relations between external factors and the decision-making process differ per trip motive, but that there are also key differences between mode and destination choice.

This raises the question as to how these differences can be explained. Several explanations can be offered to explain why different external factors explain the decision-making process for mode and destination choice. The most obvious explanation is that more specific relationships exist between the external factors and the relevant attributes for each decision. To illustrate such a specific relationship between external factor and relevant attribute for destination choice we use an example. A traveller finds entrance fee the most relevant attribute because he has a low income. This means that there is a direct link between the relevant attribute and the external factor, but not a direct link between the external factor and the destination choice. As a traveller finds different attributes relevant for each decision, different external factors affect each decision. The second explanation concerns the frequency of making the decision. Since recreational trips, particularly to theme parks are made infrequently, we assumed that recreational mode and destination choice are infrequent choices. However, the transferability between choices could be more relevant than we assumed. Mode choice is a frequent choice for other trip purposes, and the familiarity with the attributes that are considered may alter the execution of the decision-making process. As the decision-making process for mode choice differs from the process for destination choice, the impact of the external factors may also differ. The third explanation concerns the role of internal information search behaviour. This study focuses solely on the use of external information. However, the results showed (see chapter 6) that internal information is relevant to the traveller. It is plausible that internal information search affects the execution of the decision-making process for each choice. As a consequence, the external factors may affect the aspects of this process in a different manner. Particularly the role of internal information search within the decision-making process merits additional research.

Segmenting travellers for travel information provision

In the previous section we concluded that the impact of external factors is different for mode and destination choice. External factors are often used to segment the population into groups that have distinctive information preferences. Marketers and policy makers prefer clearly distinguishable groups, as it facilitates tailoring the travel information to these groups. The socio-demographic characteristics are deployed most frequently to segment travellers into distinctive groups. These are used because they have an unambiguous meaning and thus permit comparison between groups and over time (Engel *et al.* 1995: 295). Other segmentations have also been proposed and used, such as attitudes or personality. These factors also provide relatively stable segmentations of travellers, albeit the interpretation not always being as obvious as for the socio-demographic characteristics. This raises the issue as to what extent segmentation of groups, based on external factors is constructive. On the one hand, for each decision new segmentations should be made. However, on the other hand mode and destination choice are not made completely independently. Consequently, it is necessary to ask at what level should the travellers be segmented: per decision, per trip motive or per activity schedule? When a higher level is selected, how should the different segmentations be combined in a practical manner? Additional research is needed that specifically examine the segmentation of travellers. For now, the level of involvement could be used to select the travellers who are more prone to use travel information and to change travel behaviour.

9.4 Use of information and impact on travel behaviour

The third central concept is the use and the effect of travel information. The related research question was: "*What is the actual information search behaviour, which information is used in the mode and destination choice and what is the impact on travel behaviour?*".

The four aspects of the decision-making process were selected in order to determine the specific role of travel information in recreational mode and destination choice. These four aspects were: choice set formation, considering external information search, information search behaviour and ex post evaluation. In chapter 6, the results were discussed and some implications for transport policy were made. In this section, we discuss two additional implications for transport policy and future research. The issues that warrant additional attention are the relevant attributes in each decision, as these are the basis of all travel information provision. From a policy perspective, changing travel behaviour is the main purpose of travel information. However, as the effects of changing travel behaviour are not always as was anticipated, this requires further discussion.

Relevant attributes
The study found that travellers are most interested in mode-related information for their mode choice. In other words, car travellers search for car information and public transport users for public transport information. Furthermore, public transport users require more information compared with car travellers. Interestingly, quite some car travellers, even those who do not consider another travel mode, do search for public transport information. Apparently, decision makers often have the inclination to search for additional information that confirms that their decision was correct. Although the impact of the information on travel behaviour may be limited for this group, they are reached by public transport information. If the information provided shows that public transport is a better option, this may cause an interruption in their decision-making process ultimately leading to a different outcome. However, the chance that this happens, solely based on the provided information, is low. It is more likely that a major change in current infrastructure, such as major construction work on motorways, stimulates the traveller to reconsider their current (car-oriented) behaviour. Then the information on public transport has an increased effect on their travel behaviour. Entrance fee and attractions in the park are the relevant attributes for many travellers when choosing a destination. In addition, a fifth of all travellers use mode-related information, such as travel time or accessibility, in their decision-making process. Consequently, the accessibility of the theme park is relevant for travellers. When the objective is to change travel mode, then the information should emphasise the overall 'experience' of the theme park and thus integrate mode choice within the destination choice. When the objective is to get more visitors to a specific theme park, the accessibility of the theme park should be stressed.

Changing travel behaviour
Although the use of pre-trip information is high, the potential change in travel behaviour, more specifically changes in mode or destination, is limited. Approximately 15% of the travellers are choice travellers and they are most likely to change their behaviour based on the provided travel information. This raises the issue of wanted and unwanted changes in travel behaviour. Although no longer the official objective of transport policy, getting people to change transport mode (i.e.

use any transport mode except for the car), is still a central issue. Travel information can indeed change travel behaviour, but whether the traveller decides to use the 'correct' transport mode from a policy perspective remains to be seen. It is possible that a traveller decides to use the car as it is, based on the comparison of relevant attributes, the best transport mode. Even if the travellers all change their travel behaviour in the 'pursued' direction, the effects on traffic flow are uncertain; as the relation between changes in travel behaviour and changes in congestion is not linear. It is thought that only a small percentage (2-3%) of changes in travel behaviour is needed to achieve a (approx. 10%) reduction of congestion. However, Arnott *et al.* (1989) showed that when everybody uses the information at the same time and follows the advice given by the system, the traffic flow decreases. This means that all studies that investigate the impact of travel information on travel behaviour, should, at some point, also conduct a study on the network effects.

Changes in travel behaviour that are often investigated are route, departure time, mode and destination (Lappin & Bottom 2000). These are choices that are relevant to the policymaker. According to this study, the traveller usually does not consider an alternative and uses the information to plan a trip, to diminish anxiety or reduce uncertainty. These could be the 'soft' aspects of travel behaviour. More research into the effect of travel information on these soft aspects is required, particularly because it could have implication for transport policy (see section 9.5).

9.5 Policy implications for travel information and recreational travel behaviour

The last central concept in this study was transport policy. The research question that was formulated read: *"What are the implications of the role of travel information on the individual level for the actual deployment of travel information as a policy instrument?"*. This question has partially been answered in chapters 7 and 8, but a closing reflection on the use of travel information as a policy instrument on recreational transport policy is given below.

The mobility in the EU countries continues to grow. On the one hand this growth fuels economic growth and individual development, but on the other hand it also decreases accessibility, safety and liveability. In addition, the increasing time pressure upon households, in particular the two-earner households and single parent families, and the pressure to participate in a large number of activities have increased the complexity of travel patterns. Transport policy tries to stimulate the positive impact of mobility while minimising the negative impact as much as possible. In other words, its main aim is to modulate the impact of mobility growth to achieve socially desirable outcomes, which also include respecting the environment and improving safety (Metz 2005: 355). However, the increasing complexity of the impact of mobility and the complexity of travel patterns create a nearly impossible problem for the policymakers. Looking at the history of transport policy, it becomes clear that policymakers have become more aware of the complexity that mobility causes and have tried to adapt the deployed instruments to accommodate this complexity. The two main issues that transport policymakers have to deal with are the fragmentation of the mobility effects and the time lag. First, the fragmentation of the negative and positive effects over time, place and population causes an optimisation problem, where a solution for one of the issues may result in a deterioration of another issue (see also section 2.2.1). Second,

there is an inherent time lag between current mobility patterns and growth and the effect of transport policy. As it usually takes several years to authorise new transport policy, the challenges of mobility growth may have already changed. The modification of deployed policy instruments can, for example, be found in the Mobility Paper (2005).

Travel information, often used in conjunction with other instruments, is a flexible policy instrument that is able to deal with the fragmentation and the time lag. Travel information is currently deployed to increase travel time reliability (more efficient utilisation of existing infrastructure) and seduce travellers into changing their travel behaviour (mobility management) (V&W 2006). This study investigated the use of travel information within recreational trips, particularly focusing on mode and destination choice. As such, it contributes to the understanding of travel behaviour and the possible contribution of travel information as a policy instrument. In particular it provides insight into recreational trips. Although transport policy is aimed at all trip motives, the emphasis is usually placed on commuter trips as these are seen as most relevant for economic growth. This section discusses the implications of deploying travel information as a transport policy instrument. We elaborate on two issues; the extent to which travel information can be deployed specifically for recreational trips and the discrepancy in the purpose of travel information between governments and (potential) travellers.

Travel information and recreational trips.
Next to the economic growth associated with commuter trips, the contribution to congestion on motorways has also increased the policymakers' attention in this trip motive. On motorways, the recreational trip motive is less relevant; in evening congestion, approximately 8% has a recreational motive. As the main purpose of travel information is to decrease congestion, then specific attention from central government for recreational trips, solely based on contribution to congestion, is not warranted. However, due to the non-linear relation an 8% reduction in cars will result in a larger reduction of congestion. Thus, reducing the number of recreational trips of recreational travellers on motorways would result in less congestion. To single out on trip motive is to some degree a political issue, for this means that one trip motive is seen as more relevant than another trip motive.

In general there are three objectives in transport policy: accessibility, emissions and safety. Although trips with a recreational motive only marginally contribute to accessibility issues on motorways, they do account for 22% of all kilometres travelled in the Netherlands (Van Veggel & Peeters 2005: 625). As a result, this trip motive contributes significantly to the accessibility issues on other road types, to the increasing emissions and to the safety level in the Netherlands. From this perspective, any instrument that manages recreational trips is warranted. This raises the question as to what extent travel information can contribute to lowering emissions and increasing the level of safety. As far as we know, travel information cannot decrease emissions through changing travel behaviour. However, travel information can contribute to the overall safety level. Travellers reported that travel information decreased anxiety and better prepared them for the trip. A consequence of this reduced anxiety is that travellers are more relaxed during the trip, which ultimately leads to less aggression and fewer accidents (Toorenburg 2006). In addition, travellers are more irritated by aggression than by congestion (Harms *et al.* 2005: 2078). The effect of travel information may therefore be twofold. In the first place, it lowers anxiety related

to the trip and second, it decreases aggression towards other travellers, both increasing the level of safety. Therefore, the deployment of travel information for recreational trips on a national level seems justified.

Nowadays, transport policy is executed on several levels and travel information can also be deployed on another level than central government. It seems appropriate to tackle recreational trips on a local or regional level as the majority of these trips take place on regional and local roads; for, as opposed to congestion on motorways, recreational trips are often the cause of congestion on local and regional roads. In particular visits to theme parks or events often result in visitor population peaks (Van Veggel & Peeters 2005: 636). That is, many travellers arrive and leave at around the same time leading to local congestion. Furthermore, the safety issue raised above is even more relevant given the fact that most accidents occur on regional and local roads (SVOW). Therefore, on a local or regional level there is sufficient reason for specific recreational transport policy.

Central government is responsible for managing congestion on motorways; however, local and regional governments are responsible for managing congestion on 'their' roads. The Mobility Paper (V&W 2006) has specifically shifted more responsibilities to regional and local government, as central government expects that they are more aware of the situation and are therefore able to deploy the relevant policy instruments to deal adequately with the fragmentation and reduce the time lag. Consequently, it is relatively easy to deploy travel information as an instrument to solve congestion on a local level. However, the fact that no-one feels responsible for the issues caused by this trip motive often prevents a (successful) collaboration between local government and the owners of the destination. In the extreme case a chain reaction occurs; inhabitants complains to the municipality, the municipality speaks to the owner of the theme park and the owner points towards those visiting his destination. Therefore, the first step of implementing successful transport policy, and thus travel information services, is to agree upon problem ownership and general objectives. Travel information can be part of a larger package of instruments to manage the congestion on local and regional roads. Travel information can be deployed in several ways to influence travel behaviour and consequently the congestion issue.

This study shows that changing transport mode is not likely for the majority of the travellers. However, local congestion is also caused by visitors all arriving at the same time. Using travel information to achieve a better distribution of arrival and departure times would be helpful. As changing departure time (from home) is a much smaller alteration of travel plans, it is more likely that travellers change their behaviour. When changing travel mode is an objective than it is possible to inform travellers on the decreasing accessibility by car and the possibilities to travel by public transport. The introduction of combination tickets that combine the fee for public transport and entrance to the park would increase interest in travelling by public transport. Just recently, the Efteling and the Dutch railways (NS) have reintroduced a combination ticket to visit the Efteling.

Although travel information for recreational trips seems most effective on the local and regional level, there are certain objectives that central government has to fulfil to guarantee a successful deployment of the instrument. First of all, we argue that central government needs to propagate

a clear vision on the importance of managing recreational trips. Furthermore, travel information as a potentially successful instrument should be promoted by central government. A problem with successful transport solutions executed by lower level government is that the acquired knowledge on best and worst practices related to travel information is not distributed to other lower level governments. To prevent local and regional government reinventing the wheel time and time again, central government should establish a method by which best and worst practices can be shared[1]. The second requirement is that all necessary data to develop travel information on all road types is available. Therefore we argue that central government remains responsible for acquiring transport data on all types of roads. Uniformity of data is the main advantage when central government is responsible for acquiring transport data on all types of roads. This fits within the current information chain, whereby government is responsible for acquiring transport data and for partially adapting data to travel information while other parties further adapt the data and disseminate the travel information. Adapting the information further and disseminating travel information could be left to lower level government or to private parties. When both central and lower level government take an active interest in travel information, it can definitively affect travel behaviour and ultimately lead to a reduction of congestion.

Purpose of travel information

The second issue that we want to address concerns the discrepancy in the purpose of travel information as perceived by central government and by travellers. Policymakers, on all levels, see travel information as a method to seduce travellers into changing certain aspects of travel behaviour. Most relevant are the aspects that ultimately lead to less congestion, such as changes in departure time, transport mode and route. Policymakers thus focus on the tangible aspects of travel behaviour. However, travellers often see travel information as a means to better prepare for a trip or to lower anxiety. This is not only valid for recreational trips but also for other trip motives (Khattak *et al.* 2003: 12). This discrepancy could result in travel information being less effective, as the instrument is not tailored to the wishes of the traveller but to the wishes of the government. Consequently, we expect that travel information can be more effective when the purpose of policymakers is more in line with the traveller's purpose. Besides affecting tangible aspects of travel behaviour, the purpose of travel information could be to increase the traveller's trip quality. The trip quality incorporates the 'soft' aspects of travel behaviour such as comfort, reliability, safety and security. A tentative shift towards this reasoning can already be found in the Mobility Paper (V&W 2006); no longer wanting to decrease congestion, the main objective is to provide the traveller with reliable travel time. Instead of a general objective, the current objective is closely related to the wishes of the traveller. We argue that more research into the impact of travel information on the "soft" aspects of travel behaviour is crucial.

Although there are several preconditions that have to be met before travel information services can be deployed on local and regional roads, we conclude that it is an effective instrument in changing travel behaviour. Not only can it decrease congestion, it also increases the level of safety. But most importantly, travel information increases the traveller's trip quality, which is progressively a more important aspect of society. As a consequence, travel information does not only facilitate and the getting to and away from recreational activities, it also increases the overall value of the activity.

Note

1 The Dutch knowledge platform for traffic and transport (KpVV) already supports this knowledge transfer and they could extend it to specifically include travel information.

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Appendix A The survey

Onderzoek Reisinformatie en Attractieparken

Win een boekenbon ter waarde van 20 euro!

Ter verbetering van reisinformatie voor de bestemming 'attractiepark', houdt de Universiteit Utrecht een onderzoek.

U kunt een belangrijke bijdrage aan dit onderzoek leveren. Vul hiervoor onze enquête in. Uitkomsten van het onderzoek worden alleen voor wetenschappelijke doeleinden gebruikt en zullen anoniem blijven.

Instructie
De enquête bestaat uit blokken met vragen. Lees de instructies en vragen alstublieft zorgvuldig door. Vragen en/of opmerkingen over de enquête kunt u aan het eind invullen. Om op de volgende pagina te komen of een pagina terug te gaan kunt u op de knoppen "vorige" en "volgende" onder aan de pagina klikken. Invullen van de enquête kost ongeveer 25 minuten.

Vragen/problemen?
Stuur een email naar: **r.vanderhorst@geog.uu.nl**

Succes en alvast bedankt voor uw bijdrage!

Dit onderzoek wordt uitgevoerd in samenwerking met TNO Inro en de Reisinformatiegroep .

< Vorige [Pagina 1 van 30] Volgende >

Uw laatste attractiepark bezoek

Als eerste een aantal vragen over uw laatste bezoek aan een attractiepark. Attractieparken zijn parken met een specifiek thema waar men meestal voor een dag heen gaat. U kunt denken aan dierentuinen, pretparken en andere grote parken (zoals de keukenhof).

Wanneer heeft u voor het laatst een attractiepark bezocht?	Maak een keuze	jaar:
Welk attractiepark heeft u bezocht?		
Met wie heeft u dit attractiepark bezocht?	Maak een keuze	
Welk hoofdvervoermiddel heeft u hiervoor gebruikt?	Maak een keuze	
Heeft u dit attractiepark eerder bezocht?	Maak een keuze	

< Vorige [Pagina 2 van 30] Volgende >

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Algemeen - Attitudes (1)

Voordat wij verder ingaan op uw attractiepark bezoek, volgen er eerst wat achtergrond vragen.

Gaaf aan in hoeverre de volgende stellingen op u van toepassing zijn:

	Helemaal mee oneens	Mee oneens	Mee oneens, noch mee eens	Mee eens	Helemaal mee eens
Ik zoek risico's op	○	○	○	○	○
Ik ben graag buiten	○	○	○	○	○
Ik ben geduldig	○	○	○	○	○
Ik blijf graag dicht bij huis	○	○	○	○	○
Ik zoek variatie op	○	○	○	○	○
Ik ben ambitieus	○	○	○	○	○
Ik hou van hoge snelheden	○	○	○	○	○
Ik ben efficiënt	○	○	○	○	○
Ik ben graag onafhankelijk	○	○	○	○	○
Ik ben agressief	○	○	○	○	○
Ik hou van routine	○	○	○	○	○
Ik ben graag alleen	○	○	○	○	○
Ik ben rusteloos	○	○	○	○	○
Ik ben graag op tijd	○	○	○	○	○
Ik ben avontuurlijk	○	○	○	○	○
Ik ben graag de baas	○	○	○	○	○
Ik ben spontaan	○	○	○	○	○

< Vorige [Pagina 3 van 30] Volgende >

Algemeen - Attitudes (2)

Geef aan in hoeverre u het met de volgende stellingen eens bent:

	Helemaal mee oneens	Mee oneens	Mee oneens, noch mee eens	Mee eens	Helemaal mee eens	Niet van toepassing
Ik geniet van reizen met de auto	○	○	○	○	○	○
Ik geniet van reizen met het openbaar vervoer	○	○	○	○	○	○
Reizen met de auto is deprimerend	○	○	○	○	○	○
Reizen met het openbaar vervoer is deprimerend	○	○	○	○	○	○

< Vorige [Pagina 4 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

Algemeen - Informatiemedium

In hoeverre vindt u het prettig de volgende informatiemediums te raadplegen? Gebruikt u een ander medium, dan kunt u dat bij *overige mediums* aangeven.

Informatiemedium	Erg onprettig	Onprettig	Prettig noch onprettig	Prettig	Erg prettig	Niet van toepassing
Internet	○	○	○	○	○	○
Telefoon	○	○	○	○	○	○
SMS diensten	○	○	○	○	○	○
Teletekst	○	○	○	○	○	○
Brochures	○	○	○	○	○	○
Boeken	○	○	○	○	○	○
Kranten	○	○	○	○	○	○
Vrienden/familie/collega's	○	○	○	○	○	○
Overige mediums						
	○	○	○	○	○	○

< Vorige [Pagina 5 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

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Algemeen - Betrouwbaarheid

Hoe betrouwbaar vindt u de volgende informatiemediums?

Informatiebron	Erg onbetrouwbaar	On-betrouwbaar	Betrouwbaar noch on-betrouwbaar	Betrouwbaar	Erg Betrouwbaar
Internet	○	○	○	○	○
Telefoon	○	○	○	○	○
SMS diensten	○	○	○	○	○
Teletekst	○	○	○	○	○
Brochures	○	○	○	○	○
Boeken	○	○	○	○	○
Kranten	○	○	○	○	○
Vrienden/familie/collega's	○	○	○	○	○

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Uw gebruik van informatiebronnen(1)

Geef aan welke informatiemediums tot uw beschikking staan en hoe vaak u deze gebruikt. (Kiest u hierbij de categorie die het meest van toepassing is.)

Bron	Beschikbaar		Hoe vaak gebruikt u deze bron?
Internet thuis	○ ja	○ nee	Maak een keuze
Internet werk	○ ja	○ nee	Maak een keuze
Mobiele telefoon - bellen	○ ja	○ nee	Maak een keuze
Mobiele telefoon - SMS	○ ja	○ nee	Maak een keuze
Televisie met teletekst	○ ja	○ nee	Maak een keuze
Vrienden/familie/collega's	○ ja	○ nee	Maak een keuze
Overige mediums			
	○ ja	○ nee	Maak een keuze

< Vorige [Pagina 7 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

Uw gebruik van informatiebronnen(2)

Geef aan hoe vaak u de volgende typen informatie zoekt.

Type informatie	Hoe vaak zoekt u dit type informatie?
Over een specifiek **product** (bijvoorbeeld bij het kopen van een nieuwe computer).	Maak een keuze
Over een specifieke **locatie** (bijvoorbeeld over de parkeermogelijkheden bij de Efteling).	Maak een keuze
Over een specifieke **dienst** (bijvoorbeeld een loodgietersbedrijf).	Maak een keuze

< Vorige [Pagina 8 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

Uw gebruik van informatiebronnen(3)

Geef aan met welke motivatie u dit type informatie zoekt en hoe belangrijk u deze motivatie vindt?

Type informatie	Motivatie (meerdere antwoorden mogelijk)	Het zoeken van informatie met deze motivatie vind ik belangrijk oneens <--> eens				
Specifiek **product** (bijvoorbeeld bij het kopen van een nieuwe computer).	Interesse					
	Efficiency					
	Verminderen onzekerheid					
Specifieke **locatie** (bijvoorbeeld over de parkeermogelijkheden bij de Efteling).	Interesse					
	Efficiency					
	Verminderen onzekerheid					
Specifieke **dienst** (bijvoorbeeld een loodgietersbedrijf).	Interesse					
	Efficiency					
	Verminderen onzekerheid					

< Vorige [Pagina 9 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

Uw Reispatroon

Op deze pagina wordt algemene vragen over uw reispatroon gesteld.

Geef het vervoermiddel (hieronder valt ook wandelen) aan dat *als eerste* in u opkomt als u het volgende gaat doen

Werken	
Dagelijkse boodschappen doen	
Op bezoek bij familie	
Winkelen	
Pretpark bezoeken	
Gaan sporten	
Uit eten gaan	
's avonds uitgaan naar een café	

Wat is uw hoofdactiviteit?	Betaald werk
Waar vindt deze hoofdactiviteit voornamelijk plaats? (postcode of plaats invullen)	
Moet u hiervoor wel eens naar een andere bestemming dan gebruikelijk toe?	Maak een keuze
Hoe vaak moet u op deze andere bestemmingen zijn?	Maak een keuze

< Vorige [Pagina 10 van 30] Volgende >

Attractiepark bezoek(1)

De volgende 4 pagina's gaan over attractieparken in het algemeen.

Voor de duidelijkheid: attractieparken zijn parken met een specifiek thema waar men meestal voor een dag heen gaat. U kunt denken aan dierentuinen, pretparken en andere grote parken (zoals de keukenhof).

Hoe vaak gaat u een dagje naar een attractiepark?	Maak een keuze

< Vorige [Pagina 11 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

In de onderstaande tabel ziet u de meest bezochte attractieparken in Nederland in 2002.

Geef aan welke attractieparken u vanaf 1 januari 2002 tot aan nu heeft bezocht. Geef vervolgens aan welke drie attractieparken uw voorkeur genieten (kolom 3) en de reden waarom (kolom 4). (Mogelijke redenen om een attractie park te bezoeken kunnen zijn bijvoorbeeld; omdat ze dichtbij zijn, omdat u een abonnement heeft of omdat u graag nieuwe parken bezoekt. Ook andere redenen zijn echter mogelijk)

Attractie park	Hoe vaak bezocht vanaf 1-1- 2002	Geniet dit park uw voorkeur (max. 3 kiezen)	Reden voor bezoek
Artis, Aquarium, Planetarium	Maak een keuze	☐	
Attractiepark Slagharen	Maak een keuze	☐	
Avonturenpark Hellendoorn	Maak een keuze	☐	
Bataviastad	Maak een keuze	☐	
Burger's Zoo	Maak een keuze	☐	
De diamantslijperijen	Maak een keuze	☐	
De Efteling	Maak een keuze	☐	
Dierentuin Amersfoort	Maak een keuze	☐	
Diergaarde Blijdorp	Maak een keuze	☐	
Dolfinarium Harderwijk	Maak een keuze	☐	
Duinrell	Maak een keuze	☐	
Het safaripark Beekse Bergen	Maak een keuze	☐	
Keukenhof	Maak een keuze	☐	
Madurodam	Maak een keuze	☐	
Noorder Dierenpark	Maak een keuze	☐	
Openluchtmuseum de Zaanse Schans	Maak een keuze	☐	
Ouwehands Dierenpark	Maak een keuze	☐	
Six flags Holland	Maak een keuze	☐	
Anders namelijk:			

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Attractiepark bezoek(3)

Ter voorbereiding aan een attractiepark bezoek wordt vaak informatie over het park en over de reis opgezocht. Geef aan welke informatie u opzoekt voordat u kiest voor een attractiepark.

Informatie	Nooit	Soms	Meestal	Altijd
Parkeergelegenheid	○	○	○	○
Reisduur auto	○	○	○	○
Kosten auto	○	○	○	○
Kosten openbaar vervoer	○	○	○	○
Reisduur openbaar vervoer	○	○	○	○
Bereikbaarheid openbaar vervoer	○	○	○	○
Toegangsprijs van het attractiepark	○	○	○	○
Speciale aanbiedingen toegangsprijs	○	○	○	○
Attracties in het park	○	○	○	○
Openingstijden van het attractiepark	○	○	○	○
Faciliteiten in de buurt	○	○	○	○
Anders namelijk:				
	○	○	○	○

< Vorige [Pagina 13 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
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In de vorige vraag heeft u aangegeven dat u informatie opzoekt voordat u een keuze maakt voor een attractiepark.
Geef in onderstaande tabel aan met welke motivatie de informatie gezocht wordt, welk medium u hiervoor raadpleegt en de betrouwbaarheid ervan?

Informatie	Welke motivatie geldt voor u het meest?	Welk medium heeft u voornamelijk gebruikt?	Hoe vindt u de betrouwbaarheid?
Parkeergelegenheid	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur auto	Maak een keuze	Maak een keuze	Maak een keuze
Kosten auto	Maak een keuze	Maak een keuze	Maak een keuze
Kosten openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze
Bereikbaarheid openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze
Toegangsprijs van het attractiepark	Maak een keuze	Maak een keuze	Maak een keuze
Speciale aanbiedingen toegangsprijs	Maak een keuze	Maak een keuze	Maak een keuze
Attracties in het park	Maak een keuze	Maak een keuze	Maak een keuze
Openingstijden van het attractiepark	Maak een keuze	Maak een keuze	Maak een keuze
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	Maak een keuze

Uw attractiepark keuze(1)

De volgende pagina's gaan specifiek over uw laatste attractiepark bezoek. Er wordt eerst gevraagd naar uw ervaringen VOOR de reis en daarna naar uw ervaringen NA de reis.

Geef alstublieft aan wat in u opkomt, het is niet nodig zoveel mogelijk antwoorden te geven.

Locatiekeuze vóór de reis

Heeft u bewust andere attractiepark alternatieven overwogen voordat u koos om naar de gekozen locatie te gaan?	Maak een keuze
Was het reisgezelschap doorslaggevend in de keuze voor de gekozen locatie? Zo ja, kunt u dan aangeven waarom?	Maak een keuze
Heeft u informatie opgezocht over de bestemmingen?	Maak een keuze

< Vorige [Pagina 15 van 30] Volgende >

Uw attractiepark keuze - Voor de reis (1)

U heeft een keuze heeft gemaakt tussen meerdere alternatieven. In onderstaande tabel staan verschillende soorten informatie. Geef aan in hoeverre u deze informatie gebruikt heeft om een keuze te maken voor een specifiek attractiepark.

Informatie	Heeft u deze informatie gezocht?	Heeft u deze informatie gevonden?	Heeft u deze informatie gebruikt in de beslissing om naar het specifieke attractiepark te gaan?	Wat vond u de belangrijkste informatie bij de keuze voor attractiepark? (Maximaal 3 kiezen)
Parkeergelegenheid	Maak een keuze	Maak een keuze	Maak een keuze	☐
Reisduur auto	Maak een keuze	Maak een keuze	Maak een keuze	☐
Reisduur openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze	☐
Bereikbaarheid openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze	☐
Toegangsprijs	Maak een keuze	Maak een keuze	Maak een keuze	☐
Speciale aanbiedingen toegangsprijs	Maak een keuze	Maak een keuze	Maak een keuze	☐
Attracties in het park	Maak een keuze	Maak een keuze	Maak een keuze	☐
Openingstijden	Maak een keuze	Maak een keuze	Maak een keuze	☐
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	Maak een keuze	☐
Anders namelijk:				
	Maak een keuze	Maak een keuze	Maak een keuze	☐

< Vorige [Pagina 16 van 30] Volgende >

Uw attractiepark keuze - Voor de reis (2)

Geef aan uit welke informatiemedium de informatie afkomstig was en hoe betrouwbaar die was op het moment van raadplegen? Geef ook uw motivatie aan voor het zoeken van deze informatie?

Informatie	Uit welk medium kwam de informatie?	Hoe vond u de betrouwbaarheid?	Welke motivatie gold voor u het meest?
Parkeergelegenheid	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur auto	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze
Bereikbaarheid openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze
Toegangsprijs	Maak een keuze	Maak een keuze	Maak een keuze
Speciale aanbiedingen toegangsprijs	Maak een keuze	Maak een keuze	Maak een keuze

Uw attractiepark keuze - Voor de reis

U heeft geen alternatief overwogen. In onderstaande tabel staan verschillende soorten informatie. Geef aan in hoeverre u deze informatie heeft gebruikt nadat u besloten had om naar de gekozen locatie te gaan.

Informatie	Informatie opgezocht?	Informatie gevonden?	Welk medium heeft u gebruikt?	Hoe betrouwbaar vond u de informatie?
Toegangsprijs	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Parkeergelegenheid	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur auto	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
reisduur openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Speciale aanbiedingen toegangsprijs	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Bereikbaarheid openbaar vervoer	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Attracties in het park	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Openingstijden	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Anders namelijk:				
	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze

Uw attractiepark keuze – Na de reis

Op deze pagina wordt gevraagd naar uw mening NADAT u in het attractiepark bent geweest.

Tijdens het bezoek aan het attractiepark blijkt soms dat de opgezochte informatie niet overeenkomt met de werkelijkheid. Geef aan wat u van de betrouwbaarheid vond nadat u in de gekozen locatie was geweest.

Informatie	Ik vond de betrouwbaarheid	Ik zou dit medium nogmaals gebruiken	De reden hiervoor is:
Parkeergelegenheid	Maak een keuze	Maak een keuze	
Reisduur auto	Maak een keuze	Maak een keuze	
Reisduur OV	Maak een keuze	Maak een keuze	
Bereikbaarheid OV	Maak een keuze	Maak een keuze	
Toegangsprijs	Maak een keuze	Maak een keuze	
Speciale aanbiedingen toegangsprijs	Maak een keuze	Maak een keuze	
Attracties in het park	Maak een keuze	Maak een keuze	
Openingstijden	Maak een keuze	Maak een keuze	
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	

Had u achteraf andere of aanvullende informatie gehad willen hebben?	Ja
Geef aan welke informatie u had willen hebben.	
U heeft aangegeven dat u andere informatie had willen hebben. Als u deze informatie had gehad, was uw keuze voor een attractiepark dan anders geweest?	Maak een keuze

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Uw vervoermiddel keuze

Op de volgende pagina's worden vragen gesteld over uw keuze om met een bepaald vervoermiddel naar de gekozen locatie te gaan. Ook nu zijn de vragen onderverdeeld in een deel VOOR en een deel NA de reis.

Geef alstublieft aan wat in u opkomt, het is niet nodig zoveel mogelijk antwoorden te geven.

Heeft u bewust een ander vervoermiddel overwogen om naar de gekozen locatie te gaan?	Maak een keuze
Was het reisgezelschap doorslaggevend in de keuze voor de gekozen vervoerswij? Zo ja, kunt u dan aangeven waarom?	Maak een keuze
Heeft u informatie opgezocht over de reis naar het attractie park?	Maak een keuze

< Vorige [Pagina 21 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
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Uw vervoermiddel keuze - Voor de reis (1)

U heeft een keuze heeft gemaakt tussen meerdere alternatieven. In onderstaande tabel staan verschillende soorten informatie. Geef aan in hoeverre u deze informatie gebruikt heeft in de keuze voor het vervoermiddel.

Informatie	Heeft u deze informatie gezocht?	Heeft u deze informatie gevonden?	Heeft u deze informatie gebruikt in de beslissing voor het vervoermiddel?	Wat vond u de belangrijkste informatie? (Maximaal 3 kiezen)
Parkeergelegenheid	Maak een keuze	Maak een keuze	Maak een keuze	☐
Reisduur auto	Maak een keuze	Maak een keuze	Maak een keuze	☐
Kosten auto	Maak een keuze	Maak een keuze	Maak een keuze	☐
Reisduur OV	Maak een keuze	Maak een keuze	Maak een keuze	☐
Bereikbaarheid OV	Maak een keuze	Maak een keuze	Maak een keuze	☐
Kosten OV	Maak een keuze	Maak een keuze	Maak een keuze	☐
Openingstijden	Maak een keuze	Maak een keuze	Maak een keuze	☐
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	Maak een keuze	☐
Anders, namelijk:				
	Maak een keuze	Maak een keuze	Maak een keuze	☐

< Vorige [Pagina 22 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

Uw vervoermiddel keuze - Voor de reis (2)

Geef aan uit welk medium de informatie afkomstig was en hoe betrouwbaar die was op het moment van raadplegen? Geef ook uw motivatie aan voor het zoeken van deze informatie?

Informatie	Uit welk medium kwam de informatie?	Hoe vond u de betrouwbaarheid?	Welke motivatie gold voor u het meest?
Parkeergelegenheid	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur auto	Maak een keuze	Maak een keuze	Maak een keuze
Kosten auto	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur OV	Maak een keuze	Maak een keuze	Maak een keuze
Bereikbaarheid OV	Maak een keuze	Maak een keuze	Maak een keuze
Kosten OV	Maak een keuze	Maak een keuze	Maak een keuze
Openingstijden	Maak een keuze	Maak een keuze	Maak een keuze
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	Maak een keuze

Uw vervoermiddel keuze - Voor de reis

U heeft geen alternatief overwogen. In onderstaande tabel staan verschillende soorten informatie. Geef aan in hoeverre u deze informatie heeft gebruikt nadat u besloten had om met de gekozen vervoerswijze te gaan

Informatie	Informatie opgezocht?	Informatie gevonden?	Welk medium heeft u gebruikt?	Hoe betrouwbaar vond u de informatie?
Parkeergelegenheid	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur auto	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Kosten auto	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Reisduur OV	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Bereikbaarheid OV	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Kosten OV	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Openingstijden	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze
Anders namelijk:				
	Maak een keuze	Maak een keuze	Maak een keuze	Maak een keuze

< Vorige [Pagina 24 van 30] Volgende >

Uw vervoermiddel keuze - Na de reis

Op deze pagina wordt gevraagd naar uw mening NADAT u in het attractiepark bent geweest.

Tijdens de reis naar een attractiepark blijkt soms dat de opgezochte informatie niet overeenkomt met de werkelijkheid. Geef aan wat u van de betrouwbaarheid vond nadat u met de gekozen vervoerswijze naar de gekozen locatie was geweest.

Informatie	Ik vond de betrouwbaarheid	Ik zou dit medium nogmaals gebruiken	De reden hiervoor is:
Parkeergelegenheid	Maak een keuze	Maak een keuze	
Reisduur auto	Maak een keuze	Maak een keuze	
Reisduur OV	Maak een keuze	Maak een keuze	
Bereikbaarheid OV	Maak een keuze	Maak een keuze	
kosten OV	Maak een keuze	Maak een keuze	
Speciale aanbiedingen toegangsprijs	Maak een keuze	Maak een keuze	
Attracties in het park	Maak een keuze	Maak een keuze	
Openingstijden	Maak een keuze	Maak een keuze	
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	

Had u achteraf andere of aanvullende informatie gehad willen hebben?	Maak een keuze
Geef aan welke informatie u had willen hebben.	
U heeft aangegeven dat u andere informatie had willen hebben. Als u deze informatie had gehad, was uw keuze voor vervoermiddel dan anders geweest?	Maak een keuze

Uw vervoermiddel keuze - Na de reis

Op deze pagina wordt gevraagd naar uw mening NADAT u in het attractiepark bent geweest.

Tijdens de reis naar een attractiepark blijkt soms dat de opgezochte informatie niet overeenkomt met de werkelijkheid. Geef aan wat u van de betrouwbaarheid vond nadat u met de gekozen vervoerswijze naar de gekozen locatie was geweest.

Informatie	Ik vond de betrouwbaarheid	Ik zou dit medium nogmaals gebruiken	De reden hiervoor is:
Parkeergelegenheid	Maak een keuze	Maak een keuze	
Reisduur auto	Maak een keuze	Maak een keuze	
Reisduur OV	Maak een keuze	Maak een keuze	
Bereikbaarheid OV	Maak een keuze	Maak een keuze	
kosten OV	Maak een keuze	Maak een keuze	
Speciale aanbiedingen toegangsprijs	Maak een keuze	Maak een keuze	
Attracties in het park	Maak een keuze	Maak een keuze	
Openingstijden	Maak een keuze	Maak een keuze	
Faciliteiten in de buurt	Maak een keuze	Maak een keuze	

Had u achteraf andere of aanvullende informatie gehad willen hebben?	Maak een keuze
Geef aan welke informatie u had willen hebben.	
U heeft aangegeven dat u andere informatie had willen hebben. Als u deze informatie had gehad, was uw keuze voor vervoermiddel dan anders geweest?	Maak een keuze

Uw algemene persoonskenmerken

Tot slot nog enkele vragen over uw persoonskenmerken.

Wat is uw geslacht?	Maak een keuze
Wat is uw geboortejaar?	
Hoe ziet uw huishouden eruit?	Maak een keuze
Hoeveel thuiswonende kinderen heeft u?	Maak een keuze
Hoe oud zijn uw thuiswonende kinderen?	
Wat is uw hoogst afgeronde opleiding?	Maak een keuze
Hoeveel uur per week werkt u volgens uw contract?	
Hoeveel uur per week werkt u partner volgens zijn/ haar contract?	
Wat is het netto maandinkomen van uw huishouden in euro's?	Maak een keuze

Hoeveel auto's zijn er in uw huishouden? (Zowel lease auto's als eigen auto's)	Maak een keuze
Heeft u een rijbewijs?	Maak een keuze
Heeft uw partner een rijbewijs?	Maak een keuze
Heeft u een abonnement op het openbaar vervoer?	Maak een keuze
	Maak een keuze
Heeft uw parter een abonnement op het openbaar vervoer?	Maak een keuze
	Maak een keuze
Wat zijn de vier cijfers van uw postcode	

< Vorige [Pagina 28 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
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Einde enquete

Hiermee zijn we aan het einde van de enquete gekomen. Hieronder kunt u algemene opmerkingen plaatsen en aangeven of geinteresseerd bent in het vervolg van dit onderzoek. Tevens kunt u aangeven of u meedoet met de verloting van de boekenbonnen.

Heeft u nog op of aanmerkingen die u graag kwijt wilt en die in de vragen niet naar voren kwamen?	
Hoe bent u bij deze enquête gekomen	Maak een keuze
Wilt u een samenvatting van de onderzoeksresultaten ontvangen?	Maak een keuze
Zou u mee willen doen aan een vervolg onderzoek?	Maak een keuze
Wilt u meedoen aan de verloting van de boekenbonnen ter waarde van € 20,=?	Maak een keuze

< Vorige [Pagina 29 van 30] Volgende >

Voor meer informatie over dit online onderzoek kunt u emailen met R. van der Horst
In samenwerking met TNO Inro en Reisinformatiegroep

Appendix B List of interviews

Who	Institute	Expertise
Boumans, A.	AVV transport research centre	Recreational travel and trends
Emmen, M.E.C	AVV transport research centre	Travel information (public transport)
Erdelman, A.M.G.	Ministry of transport, The Directorate-General for Passenger Transport (DGP)	Recreational travel and trends
Pilgram, P.N.M.	Ministry of transport, The Directorate-General for Passenger Transport (DGP)	Recreational travel and trends
Toorenburg, G., van	Ministry of transport, The Directorate-General for Passenger Transport (DGP)	Travel information
Wouters, J.J.	AVV transport research centre	Travel information (car)

English summary

Rationale

Mobility leads to congestion, emission of harmful gasses, and decreases the level of (traffic) safety but also leads to economic growth and personal development. As central government would like to mitigate the negative impacts but likes to stimulate the positive impacts, it is important to be able to affect travel behaviour. Travel information is used to support the traveller with his mode, route, destination or departure time choice. It can therefore be assumed that travel information can affect the travel behaviour of individuals. Central government has paid attention to the acquisition of transport data and to adapting this data to travel information since the appearance of the policy document 'Travel information' in 1996. Furthermore, this document stimulates the dissemination of travel information by private parties. Commute travel has received most attention (in research and transport policy), as it is – to a large extent – responsible for congestion.

An often-ignored motive, recreational travel is nevertheless responsible for 22% of all the kilometres travelled in the Netherlands; therefore, this motive contributes strongly to the negative and positive impacts of mobility. Still, the attention in scientific research for the role of travel information within recreational travel is scarce. A few studies investigated the role of information without specifically focussing on a trip motive. These studies mostly focussed on the use of travel information during a trip. From scientific literature it becomes apparent that little research has been undertaken on the subject of pre-trip travel information for recreational trips. This study focuses on recreational travel with the assumption that a) the recreational traveller has a higher need for pre-trip information and b) has more flexibility in his schedule to change his travel behaviour.

The purpose of this study is to fill the above described knowledge gap. The research goal is therefore: *to gain insight into the role of individual travel information in recreational trips, particularly related to mode and destination choice, and to investigate the implications for transport policy.* To reach this goal a theoretical model has been developed and tested empirically.

Theoretical model

Travel behaviour is a consequence of the decisions that travellers make. These choices are made based on a decision-making process whereby travel information can be used to reach a final decision. Describing this decision-making process is necessary to understand the use of travel information by individuals. The theoretical model discusses the different stages the traveller goes through before making a decision. Four specific aspects that describe the information use have been selected: choice set formation, considering external information, information search behaviour and post-evaluation.

The decision-making process is affected by external factors, such as the preference for and the availability of travel modes or the traveller's experience with recreational trips. Scientific research often takes a few of these factors into account. This study tries to incorporate all relevant external

factors and then determine which factors have the largest effect on the use of travel information. Consequently, the theoretical model incorporates the influence of the external factors on the decision-making process.

Results

To determine which information travellers' use before going on a recreational trip, a survey was administered to 1794 respondents. Specifically the information used for the mode and destination choice to theme parks was studied. The survey showed that 69% of the respondents used the car to travel to theme parks versus 22% that used public transport. Theme parks are most popular in summer time, whereby de Efteling, Six Flags, Artis and Blijdorp are the most visited destinations.
The use of travel information is high: 68% of the respondents used information related to the destination and 53% used information related to transport mode. Related to the destination, travellers most often use information attributes such as 'entrance fee' and 'attractions in the park'. For mode choice, travellers predominantly search for information on their preferred or selected transport mode.
Furthermore, 16% of the respondents considered a mode alternative and 15% a destination alternative for their last theme park visit. These 'choice travellers' have a higher need for travel information compared with those without an alternative. This higher need translates to 1) choice travellers searching for more attributes and 2) more choice travellers searching for information. For example, choice travellers search for information on all transport modes considered. The accessibility of a destination is a decisive information attribute for 20% of the choice travellers in their destination choice.
Several external factors affect the information use: travellers who have previously visited a theme park or who visit theme parks frequently use less destination-related information. However, these experienced travellers have similar information needs for mode choice compared with inexperienced travellers. Furthermore, public transport users use more travel information than car travellers.
Many travellers display a strong habitual mode choice for their commute trip. This study investigated to what extent this habit affects the recreational mode choice. Habitual mode choice does limit the chance that an alternative transport mode is considered; however, the use of travel information is not affected by habitual mode choice. In addition, habitual public transport users use more travel information than travellers without a habitual transport mode.
Strikingly, different external factors affect the information use in mode and in destination choice. The previously mentioned experience with theme parks hardly affects the information attributes used in mode choice. Segmenting travellers into distinguishable groups is a tool often deployed when new travel information services are developed. These segmentations are used to tailor the information offered by the service to the needs of the traveller. From this study it becomes clear that the segmentation for mode choice is different than for destination choice. We therefore conclude that trip motive alone is not sufficient to determine meaningful segmentations Additional research into meaningful segmentation of travellers is therefore recommended.

Conclusion

More than half the travellers use travel information and can therefore be used as a policy instrument to affect travel behaviour of individuals. Developing a successful travel information services requires several prerequisites. For recreational travel, transport data on the regional and

local roads is of utmost importance. This information is currently not available in the Netherlands. Consequently, additional effort should be directed to acquire the necessary transport data and to stimulate travel information services that support door-to-door trips. Furthermore, the effect of external factors on the use of travel information should be taken into account when developing new information services. As the experience with public transport can be transferred less easily to other trips relative to experience with car travel, public transport users use more travel information than car users. As a consequence additional attention should be given to increase the public transport information; not only on travel websites but also on the destination websites.

Besides changing travel behaviour, travel information enhances the quality of the trip. Travellers may find this aspect more important than changing their travel behaviour. To increase the perception of trip quality, the government should increase its effort to stimulate the distribution of individual travel information, for all trip motives.

Nederlandse samenvatting

Aanleiding

De groeiende mobiliteit zorgt voor congestie, uitstoot van schadelijke gassen en het verminderen van de (verkeers)veiligheid. Aangezien de mobiliteit de som van individueel reisgedrag is, is het beïnvloeden van reisgedrag van aanzienlijk belang. Reizigers gebruiken reisinformatie voor het ondersteunen van de keuze voor vervoermiddel, route, bestemming en vertrektijdstip. Men kan er dus van uitgaan dat reisinformatie het reisgedrag van individuen kan beïnvloeden. Sinds het verschijnen van de Nota Reisinformatie in 1996, besteedt de rijksoverheid ook aandacht aan het inwinnen en bewerken van de juiste verkeersdata en wordt de distributie van deze gegevens (veelal door private partijen) gestimuleerd. De nadruk bij het verstrekken van en het onderzoek naar reisinformatie ligt voornamelijk bij het woon-werk verkeer; voornamelijk omdat woon-werk verkeer het meeste last ondervindt van congestie en tegelijkertijd voor een groot deel verantwoordelijk is voor deze congestie.

Het veelal vergeten recreatief verkeer is voor 22% verantwoordelijk voor alle afgelegde kilometers in Nederland; dit ritmotief draagt derhalve zeker bij aan de negatieve effecten van mobiliteit. In de wetenschappelijke literatuur is er tot nu toe weinig aandacht geweest voor de rol van reisinformatie binnen recreatief verkeer. Een aantal onderzoeken keek niet specifiek naar het rit motief maar keek naar het informatiegebruik van reizigers in een bepaald gebied of op een bepaalde snelweg. Hierbij werd de informatiebehoefte van de reiziger die al onderweg was in kaart gebracht. Uit de wetenschappelijke literatuur blijkt dat er nauwelijks onderzoek is gedaan naar het pre-trip reisinformatiegebruik voor een recreatieve reis. In dit onderzoek wordt specifiek gekeken naar recreatief verkeer waarbij verondersteld is dat a) de recreatieve reiziger een grotere pre-trip informatiebehoefte heeft en b) meer flexibiliteit in zijn reisschema heeft om zijn reisgedrag aan te passen.

Het doel van dit onderzoek was om de hierboven geschetste kennislacune aan te vullen. Het onderzoeksdoel is dan ook: *het verkrijgen van inzicht in de rol van individuele reisinformatie voor recreatieve verplaatsingen met nadruk op vervoermiddelkeuze en bestemmingskeuze, en het schetsen van de implicaties voor transportbeleid.* Om dit inzicht te verkrijgen is er een theoretisch model opgesteld dat vervolgens empirisch getoetst is.

Theoretische model

Bepalend voor het vertoonde reisgedrag zijn de onderliggende keuzes die reizigers maken. Reizigers maken deze keuzes op basis van een beslisproces waarin, wanneer nodig, reisinformatie gebruikt wordt om tot een juiste afweging te komen. Om de rol van reisinformatie in kaart te kunnen brengen, is het daarom nodig om dit beslisproces te beschrijven. Het theoretisch model beschrijft de verschillende stappen die de reiziger doorloopt voordat hij tot een beslissing komt. Hieruit zijn vier momenten geselecteerd die het informatiegebruik van de reiziger vatten: de keuze voor één of meer alternatieven, de keuze om reisinformatie te gebruiken, het specifieke informatie gebruik en de evaluatie van de gebruikte informatie.

Het beslisproces wordt beïnvloed door externe factoren, zoals de voorkeur voor en beschikbaarheid van bepaalde vervoermiddelen en de ervaring die de reiziger heeft met het maken van de verplaatsing. In wetenschappelijk onderzoek wordt vaak rekening gehouden met enkele van deze factoren. Deze studie probeert echter alle relevante externe factoren in kaart te brengen en te bepalen welke van deze factoren de grootste invloed hebben op het gebruik van reisinformatie. Het theoretische model bestaat daarom uit zowel de stappen van het beslisproces als uit de externe factoren die dit proces beïnvloeden.

Onderzoek

Om te bepalen welke reisinformatie reizigers gebruiken voordat een recreatieve verplaatsing wordt gemaakt, is er een enquête uitgevoerd (met 1794 respondenten) waarbij het gebruik van reisinformatie voor de bestemmingskeuze en vervoerwijze keuze naar attractieparken in kaart is gebracht. Uit de enquête blijkt dat 69% van de respondenten met de auto naar attractieparken gaat en dat het openbaar vervoer door 22% wordt gebruikt. De attractieparken worden vooral in de zomer bezocht waarbij de Efteling, Six Flags, Artis en Blijdorp de meest populaire bestemmingen zijn.

Het gebruik van reisinformatie is hoog: 68% van de reizigers zoekt informatie over de bestemming en 53% over het vervoermiddel. Voor de bestemming zijn de informatiefactoren 'attracties in het park' en 'entreeprijs' het meest belangrijk voor de reiziger. Voor het vervoermiddel geldt dat de reizigers voornamelijk informatie zoeken over het geselecteerde vervoermiddel.

Uit de enquête blijkt eveneens dat in hun laatste attractiepark bezoek 15% van de reizigers een alternatieve bestemming en 16% een alternatief vervoermiddel overwoog. Reizigers die een alternatief overwegen hebben een grotere behoefte aan reisinformatie dan de reizigers die al weten waar ze heen gaan en met welk vervoermiddel. Niet alleen hebben deze 'keuzereizigers' meer behoefte aan informatie, ze zoeken ook naar meer informatiefactoren. Keuzereizigers zoeken bijvoorbeeld niet alleen informatie over hun uiteindelijk geselecteerde vervoermiddel, maar ook over het alternatieve vervoermiddel. De bereikbaarheid van de bestemming is voor zo'n 20% van de keuzereizigers van essentieel belang in de bestemmingskeuze.

Meerdere externe factoren beïnvloeden het reisinformatiegebruik: zo hebben reizigers die eerder naar het attractiepark zijn geweest of die regelmatig een attractiepark bezoeken minder informatie nodig over de bestemming. Deze ervaren reizigers hebben echter bijna net zoveel informatie nodig over het vervoermiddel als onervaren reizigers. Vooral reizigers die met het openbaar vervoer reizen hebben veel meer informatie nodig dan reizigers die met de auto reizen.

Reizigers hebben vaak een sterke voorkeur voor een bepaald vervoermiddel om naar hun werk te gaan (gewoontegedrag). In deze studie is gekeken in hoeverre dit gewoontegedrag effect heeft op het informatiegebruik van de reizigers. De resultaten tonen aan dat gewoontegedrag de kans vermindert dat er een alternatief vervoermiddel wordt overwogen. Echter, het gebruik van reisinformatie wordt niet verminderd door gewoontegedrag. Degenen die gewoonlijk met het openbaar vervoer reizen zoeken juist naar meer informatie dan reizigers zonder een voorkeursvervoermiddel.

Opvallend is dat de externe factoren een verschillende invloed hebben op de informatie die gezocht wordt voor het vervoermiddel en voor de bestemming. De eerder genoemde ervaring met attractieparken heeft bijvoorbeeld nauwelijks invloed op de informatiefactoren die gezocht worden met betrekking tot het vervoermiddel. Voor het opzetten van nieuwe reisinformatiediensten wordt vaak gezocht naar segmentaties (oftewel groepen van reizigers) die

dezelfde informatiebehoefte hebben. De geboden informatie kan dan aangepast worden aan hun (informatie)wensen. Deze segmentaties worden vaak gemaakt op basis van de externe factoren (meestal sociaaldemografische karakteristieken). Uit dit onderzoek blijkt dat de segmentatie voor informatiebehoefte over het vervoermiddel anders is dan de segmentatie voor de bestemming. Hieruit kan geconcludeerd worden dat het opstellen van reizigersgroepen op een gedetailleerder niveau moet gebeuren dan per motief. Meer onderzoek naar het juiste niveau van segmenteren is daarom van belang.

Conclusie

Reisinformatie wordt door meer dan de helft van de reizigers gebruikt en is daarom een belangrijk beleidsinstrument om reisgedrag te beïnvloeden. Voor het opzetten van succesvolle reisinformatiediensten moet een aantal aspecten niet worden vergeten. Voor recreatief verkeer is vooral informatie over het onderliggende wegennet van belang. Meer nadruk op de inwinning van data op het onderliggend wegennet en informatiesystemen die reizen van deur tot deur ondersteunen zijn daarom van belang. Verder dient de invloed van externe factoren te worden meegenomen in het opzetten van de informatie service. Aangezien de ervaring met het openbaar vervoer minder overdraagbaar is naar andere reizen dan het geval is bij ervaring met het wegennet, hebben de openbaar vervoer gebruikers meer informatie nodig dan de auto gebruikers. Meer informatie, specifiek gericht op de gebruikers van het openbaar vervoer, is daarom aan te bevelen, niet alleen op websites gericht op het openbaar vervoer maar ook op de websites van de bestemmingen.

Minstens net zo belangrijk is dat reisinformatie de kwaliteit van de reis kan verhogen. Voor reizigers is dit misschien nog wel belangrijker dan het aanpassen van hun reisgedrag. De kwaliteit van de reis wordt, vanuit een beleidsperspectief, steeds belangrijker, daarom is het van belang dat de overheid de verstrekking van geïndividualiseerde reisinformatie voor alle ritmotieven blijft stimuleren.

Curriculum vitae

Rebecca van der Horst was born in Killarney (Ireland) on February 18, 1977. She received her VWO diploma from het Baarnsch Lyceum in Baarn in 1995. In the same year she started the course "Science and Policy" at Utrecht University, with a semester at the University of Wisconsin-Madison. She wrote her masters thesis at TNO Inro on the topic of co-operation between different stakeholders for developing new dynamic travel information service. She graduated in 2001. In 2001 she became a PhD student at the Planning Department of Utrecht University (three days a week) and started working at TNO Inro (now mobility and logistics) as a junior researcher (two days a week). At TNO Rebecca worked on projects related to travel information or other services aimed at travellers. During her time at the University she represented the PhD students from the faculty of Geosciences in the PhD student council Utrecht (PrOUt). From July 2006 to July 2007 Rebecca will make a recreational trip along the Pan American highway.