

**Radboud University**



**Master Thesis**

*Exploring the important factors that influence  
government support for radical innovations in personal  
mobility*

**Business Administration  
Innovation & Entrepreneurship**

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## Acknowledgement

*Nijmegen, June 2021*

Time goes fast. In 2019, I graduated from HBO Business Administration and started the premaster business administration at Radboud University. Today, two years later, I hand in my master thesis.

Due to Covid lockdowns and the limited amount of previous research, the writing of this master thesis was a very intensive process for me. However, I look back on a positive period in which I developed personally, but also as a researcher. Moreover, I increased my network and met many people that I learned from a lot. Now I will take the opportunity to express my sincere gratitude to the people that have been supporting me during the entire process.

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I hope you will enjoy reading my master thesis.

Mathijs Mulder  
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## Abstract

This research provides a clear understanding of what factors influence government support for radical innovations in personal mobility to create a comprehension of what companies can do to increase the probability of obtaining government support. Research about important factors regarding support for radical innovations has not been conducted yet in The Netherlands. (Former) strategic policy advisors from Dutch governments, as well as consultants and advisors that deal with governments were selected as respondents for this study. The data was collected by conducting semi-structured interviews. The results show that companies can increase the chance on obtaining government support through the factors network, sustainability, certainty, economic advantages, government contacts, knowledge and research quality, and safety. In addition, a link between the identified factors and pursuing government interests was found. A conceptual model that presents the relations between the identified important factors, pursuing government interests, and government support emerged.

**Keywords:** *government support, radical innovations, personal mobility, company's network, sustainability, certainty, pursuing government interests*

## Table of Contents

1	Introduction .....	6
2	Literature Review .....	9
2.1	Government support .....	9
2.2	Relevance .....	10
2.3	Determinants government support.....	11
3	Methodology .....	16
3.2	Sample Strategy.....	16
3.3	Data collection .....	17
3.4	Data analysis .....	18
3.5	Research Ethics.....	18
3.6	Validity and Reliability .....	19
3.6.1	Validity .....	19
3.6.2	Reliability.....	20
3.7	Operationalization.....	20
3.6.1	Interviews.....	20
3.6.2	Operationalization scheme .....	21
4	Results .....	23
4.1	Differences in government support .....	23
4.1.1	Knowledge and resources through government's network.....	23
4.1.2	Financial Support .....	25
4.2	Identified categories.....	26
4.2.1	Company's network .....	27
4.2.2	Sustainability .....	29
4.2.3	Certainty.....	30
4.2.4	Economic Advantages.....	32
4.2.5	Government contacts .....	33
4.2.6	Knowledge and research quality .....	35
4.2.7	Safety .....	36
4.3.	The core category: Pursuing government interests .....	36
5	Conclusion & Discussion .....	38
5.1	Conclusion.....	38
5.2	Discussion .....	39
5.2.1	Theoretical Implications.....	40
5.2.2	Practical Implications .....	40
5.2.3	Limitations and Future Research .....	41

5.2.4	Reflection .....	42
6	References .....	44
	Appendix 1: Introduction interview protocol .....	48
	Appendix 2: Topic list interview protocol .....	49
	Appendix 3: Respondent list interviews.....	50
	Appendix 4: Timeline .....	51
	Appendix 5: The process of government support .....	53
	Appendix 6: Code groups data collection .....	54

# 1 Introduction

The current climate transition leads to fundamental reconsiderations of the arranged mobility. The current trend is that countries focus more and more on the electrification of vehicles. To implement this, the government works together with municipalities, provinces, and network operators to develop a nationwide charging infrastructure for electric vehicles. However, one could question whether electrification is the most efficient option of future road transport. In Nijmegen, the Radboud University invented a radical innovation called NIFTI (National Individual Floating Transport Infrastructure). The technique is based on magnetic levitation and consists of a floating module that is propelled by magnets in the road. Also, it is supposed to be cleaner and safer than our current road mobility applications (RU, 2020).

Unfortunately, radical innovations come with specific external barriers which a firm must overcome. These include issues related to the behavior of competitors, partners, customers, and governments (Madrid-Guijarro, Garcia, & Van Auken, 2009). According to Sandberg (2008), an unsupportive government is the second most common restrictive external actor for implementing radical innovations (Sandberg & Aarikka-Stenroos, 2014). Moreover, it is possible for a firm to influence government decisions; ‘‘Although most firms might find it hard to influence government actions, the government was still regarded as an actor that can be influenced’’ (Sandberg & Aarikka-Stenroos, 2014). Governments can support firms to accelerate the implementation and improve the quality of their radical innovations by providing them with knowledge, capital, and technology. Affecting governments is especially necessary when firms implement radical innovations that do not fit existing regulation, like Nifti, causing firms to lobby to change legislation (Sandberg B. , 2008).

To be able to acquire government support, a firm needs at least to satisfy the government’s policy plan. However, there might be more underlying determinants for governments to accept or deny support.

As described, it is clear that the success of a radical innovation from a firm can heavily depend on whether or not it acquires government support. Insights in the predictors apart from public policy plans for acquiring government support for radical innovations in personal mobility, could contribute to an increase of a firms’ success in obtaining government support.

Following Hopp et al (2018), radical innovation is the creation of new knowledge and the commercialization of completely novel ideas or products (Velis, 2020). Little research that focusses specifically on government influence factors towards radical innovations has been conducted. This might be because a radical innovation concerns a transformation in society,

which following Stirling (2015) involves diverse, emergent and unruly political alignments, and more about social innovations, challenging incumbent structures, subject to incommensurable knowledges and pursuing contending ends, compared to transitions (Temper, Walter, Rodriguez, Kothari, & Turhan, 2018). Especially in the case of Nifti, the implementation will come with many complexities and implications for both society as well as for governments; (parts of) the current infrastructure must be adjusted, new regulations have to be made, public opinions and behavioral changes could arise, possible resistance from current transport providers, car manufacturers and other stakeholders, causes for government costs and incomes, effects on climate, and many more. This implies that governments must take many factors into account when making decisions about radical innovations in the mobility area.

One of the common ways to influence governments for sustainable radical transformations as stated by Rodriguez et al (2015) is to create and strengthen own networks to advance political actions and social mobilization that can help them make an impact (Temper, Walter, Rodriguez, Kothari, & Turhan, 2018). The underlying meaning of these statements is that a firm which is backed by an extensive network of different organizations, gains more hegemonic power which helps them to exert pressure on governments (Temper, Walter, Rodriguez, Kothari, & Turhan, 2018). Due to broader implications of environmentally friendly innovations, governments potentially have more incentive to act than they do for other types of innovations (Naor, Bernardes, Druehl, & Shiftan, 2014). Although these do not necessarily involve radical innovations, the authors imply that environmentally friendly innovations possibly lead to more government incentive to act, since it serves political agendas. Because radical innovations can largely differ from case-to-case, the determining factors change with it. A Dutch strategic policy advisor spatial development and mobility confirmed this, and added that there are many underlying factors regarding decision making within governments when it concerns radical innovations (Gräfe, First conversation radical innovation in (local) governments, 2021). Therefore, the research question of this study is stated as:

*“What are the main factors that help generate government support in The Netherlands for radical innovations in personal mobility?”*

Multiple reasons underpin the importance of a study that focusses on retrieving the most important factors for obtaining government support for radical innovations. First of all,

this paper could prevent firms from not getting government support when it concerns a radical innovation in personal mobility. Firms with great ideas who are dependent on the government in one way or another, can use this study to improve their business or presentation when approaching a government for support. Secondly, the outcomes of this paper can be used to explain why some firms failed in acquiring government support and why some succeeded. Finally, this study could lead to new insights about underlying important conditions for impacting governments that have not been previously exposed.

To answer the stated research question, a qualitative explorative study is used. The use of qualitative research makes it possible to dug deeper in the case of uncertainties and enables the researcher to discover important underlying factors. Since limited information is known about this specific area and underlying factors, and because we cannot exclude specific factors beforehand, qualitative research is the appropriate method to use. Data was collected by interviewing strategic policy advisors from Dutch governments as well as consultants and advisors that deal with governments.



## 2 Literature Review

Several authors have written about government support in general, as well as about encouraging factors for influencing governments and people in general and in case studies, as represented in this chapter. However, no research has been executed that focusses specifically on the most important factors for getting government support in The Netherlands. In this paper, radical innovation is defined the creation of new knowledge and the commercialization of completely novel ideas or products (Velis, 2020).

### 2.1 Government support

In order to discover the main drivers for government support, it is critical to first determine what government support constitutes. According to Hofman & Bruij (2010), government support relates to state institutions bolstering firms' innovation activities by supporting *knowledge diffusion, technology transfer, funding searches, and project management* (Thongsri & Kung-Hsiung Chang, 2019). Since government support can be divided into four different categories, it is possible that the different categories require different efforts or factors to increase the likability of getting support.

The first form of government support is knowledge diffusion, stated as the process where valuable information is transferred from one party to another, whereby the receiving party obtains access to external knowledge that can support innovation (Thongsri & Kung-Hsiung Chang, 2019). The second section of government support is technology transfer (Thongsri & Kung-Hsiung Chang, 2019). Technology transfer is the managed process of conveying a technology from one party to its adoption by another party (Soeder, Nashar, & Padmanabhan, 1990). In this case, the government agency can be considered as the transfer agent and Nifti, or another support-seeking radical innovator, can be seen as the transfer recipient (Bozeman, 2000). Governments in Western-Europe do usually not own specific technology or technology knowledge itself. However, they can establish technology transfer to a start-up by supporting collaboration programs between universities, R&D laboratories and industries, and by setting up technology (transfer)-based regional development policies for SMEs (Rothwell & Dodgson, 1992). The vast majority of research about technology transfer has been conducted within the private sector since capitalistic governments itself usually do not possess specific technology knowledge.

The third form of government support constitutes the financial part. Because implementing new radical innovations often comes with high costs (Bers, Dismukes, Miller, & Dubrovensky, 2009), many startups who aim to disrupt the market with their products are

dependent upon government funding or funding searches by the government (Pergelova & Angulo-Ruiz, 2014). The fourth part of government support is the support for project management, where governments can help firms by providing them with other resources to successfully complete goals and objectives of specific projects (Ollus, Jansson, Karvonen, Uoti, & Riikonen, 2011). This includes the ability of governments to change public policy, which is of increasing importance to strategic management of business firms (Shaffer & Hillman, 2000). To wrap up what government support includes in this research, here an overview.

<b>Government Support</b>			
<b>Knowledge Diffusion</b> - Provision valuable market information - Provision valuable information support programs	<b>Technology Transfer</b> - Provision valuable technology - Linking to sources with valuable technology	<b>Funding Searches</b> - Grants - Loans - Subsidy programs	<b>Project Management</b> - Policy changes - Provision of work space/prototype building

*Table 1* - Concept of Government Support (Thongsri & Kung-Hsiung Chang, 2019)

Previous literature did not include studies about the process of government support. Therefore, a government official was interviewed to gain more background information about this process. The information derived from that interview can be referred to in *Appendix 5*.

## 2.2 Relevance

It is a fact that an unsupportive government is the second most common restrictive external factor for implementing radical innovations (Sandberg & Aarikka-Stenroos, 2014), implying that supportive governments help firms with disrupting products and services to increase their survival rate. It could therefore be important for innovative firms to have governments on their side. An important example of unsupportive governments is the unwillingness to change legislation for implementing radical innovations (Sandberg & Aarikka-Stenroos, 2014). Since radical innovations often need changes in legislation to succeed, studying the indicators of government support is needed. Mui Hung Kee et al. (2019) confirmed that government support is important, by concluding that finance-, technology-, and soft-related types of government support have a positive impact on start-up success (Mui Hung Kee, Mohd Yusoff, & Khin, 2019). Financial-related support appeared to be the most critical resource for start-up growth and survival, followed by technology-related support and soft-related support respectively, highlighting the importance of these types of government support in driving start-up success (Mui Hung Kee, Mohd Yusoff, & Khin, 2019). One of the main problems of government support is that the different programs are often not known by

entrepreneurs, even though it is the main goal of some government agencies to inform and help entrepreneurs by providing them with these kinds of valuable information (Manigart & Struyf, 1997). This leads to the expectation that government agencies do not diffuse their knowledge equally across all entrepreneurs in a specific region. Thus, there may be factors that determine the choice of government officials to provide information to one, and to keep quiet to another.

## 2.3 Determinants government support

We identified 19 indicators that could influence government support for radical innovations. These factors are categorized in five overarching concepts according to own judgement, which form our conceptual model. The overarching concepts are environmental factors, relational factors, firm characteristics, individual characteristics, and manager style. Important to note is the fact that the indicators are derived from different contexts, case-studies, and governments. Since this research is explorative, we cannot assume that these indicators also apply to our context: regarding Dutch governments, focused on support to radical innovations in mobility. Therefore, it is not appropriate to formulate hypotheses.

### **Environmental factors**

One of the key parameters for assessing private-sector technology transfer, which is an element of government support (Thongsri & Kung-Hsiung Chang, 2019), is the lack of commercial viability (Schneider, Holzer, & Hoffman, 2008). Governments want to be sure the radical innovative firm will be capable of competing efficiently and making profit. Besides the barriers of commercial viability, efficient technology transfer also largely depends on cost savings: ‘‘The most important driver for technology transfer in most technology clusters is the amount of long-term cost savings’’ (Puig, Haselip, & Bakhtiari, 2018). Central governments explicitly mentioned the reduction of spending on large infrastructure projects (Puig, Haselip, & Bakhtiari, 2018), which could imply they desire the lowest as possible up-front costs, maintenance costs and usage costs. Similar to long-term cost savings, economic profitability is stated to be positively related to a higher chance of local government support (Damanpour & Schneider, 2008). This is relatable, because governments aim to embrace projects that add value to the region. The radical innovation should also have a relative advantage compared to other alternatives in a specific market, causing the radical innovation to become more attractive to invest local government’s resources in (Damanpour & Schneider, 2008). Thirdly, social benefit has similar effects on the likability of obtaining government support. Social benefits can contain many factors, such as an increase in happiness of inhabitants of a city or

region. Coming up with more social benefits due to the implementation of a radical innovation, leads to a higher probability of government support. Economic profitability, relative advantage, and social benefit together form innovation impact. Together with costs and complexity, innovation impact form the main characteristics of innovation (Damanpour & Schneider, 2008). Finally, sustainability plays a role in the chance of obtaining government support. Due to broader implications of environmentally friendly innovations, governments potentially have more incentive to act than they do for other types of innovations (Naor, Bernardes, Druehl, & Shiftan, 2014). This could even play a more significant role now than it did seven years ago, due to new international climate agreements.

### **Relational factors**

The acquisition of knowledge from governments can be crucial for the economic success and innovativeness of firms (Grossman & Helpman, 1991), especially when it concerns firms in emerging high-technology industries (Murtha, Lenway, & Hart, 2001). A main determinant for fostering knowledge diffusion in general, is the presence of good interpersonal relationships between the firm and government agency (Singh, 2005). When managers have positive relationships with government officials, they can obtain useful information on industrial regulations and policies more easily (Lester, Hillman, Zardkoohi, & Cannella, 2008). Political ties can be considered as an example of interpersonal relationships, and in line with the findings of Singh (2005), Li & Zhou (2010) stated that one of the main determinants for government support concerning innovations is the presence of political ties, defined as the personal and social relationships managers develop and maintain with politicians (Guo & Jacobs, 2014). This suggests that political ties make it easier for firms to obtain policy information or benefit from government projects (Thongsri & Kung-Hsiung Chang, 2019). Since interpersonal relationships and political ties do determine knowledge diffusion and thus government support, the interaction frequency within these networks might also play a role. In the presented social knowledge diffusion model (SKD), it appeared that the higher the interaction frequency of a certain relationship is, the more knowledge will be transferred from one person to another (Jian-Guo, et al., 2017). This suggests that when firms do have more contact with government agencies, they can increase the chance of obtaining valuable government support. Kester et al (2011) argue that cultural factors influence the decision-making process in NPD. The factors trust and collective ambition are both positively related to cross-functional collaboration, where collective ambition is defined as the extent to which people across domains and levels share goals and values (Kester, Griffin, Hultink, &

Lauche, 2011). These factors have not been explored yet in government decision making for innovations, but may be interesting to investigate further in this research.

### **Firm Characteristics**

Salamon & Siegfried (1977) and Lenway & Rehbein (1991) suggest that firm size does play a significant role in influencing governments (Macher, Mayo, & Schiffer, 2011). This is similar to the findings of Damanpour & Schneider (2008), who argue that firm size has a positive effect on local government adoption (Damanpour & Schneider, 2008). Larger firms wield more political influence than smaller firms for at least three reasons (Macher, Mayo, & Schiffer, 2011). First of all, larger firms possess more scale to warrant political efforts. Second, larger firms offer more to government decisionmakers in the form of votes and income in comparison to smaller firms. Finally, larger firms are more likely to engage in more intense influence-seeking activities because the productivity of larger firms are generally higher (Macher, Mayo, & Schiffer, 2011). By building strong networks, a startup could possess more or less the same benefits as large firms. The findings of Macher et al. (2011) are in line with statements of Rodriguez et al. (2015) who suggests that a common way to influence powerful people and networks is to create and strengthen own networks to advance political action which can help them impact on political systems and economic frameworks (Temper, Walter, Rodriguez, Kothari, & Turhan, 2018). It is therefore important to small firms to create a strong network of businesses and NGOs to increase support likability. However, it is not stated in literature whether having a strong network gives the exact same benefits as being a large firm. Besides the size of a firm, it is also suggested that the age of a firm is a determinant for getting government support., wherein older firms are more likely to influence government outcomes compared to younger firms (Macher, Mayo, & Schiffer, 2011). One of the main arguments for this statement is that older firms are more likely to survive than younger firms causing decision makers to think that providing support to younger firms is less beneficial than providing older firms with advantages (Mata & Portugal, 1994). Because interpersonal relationships tend to be regional in nature, geography matters at least in part for knowledge diffusion, where firms located in the same region as a government leads to higher chance of support (Singh, 2005).

### **Individual characteristics**

Some individual characteristics of a government official are also expected to impact the likability for government support. For government employees, the motives for technology transfer are achieving self-satisfaction, completing a job element, and benefiting research,

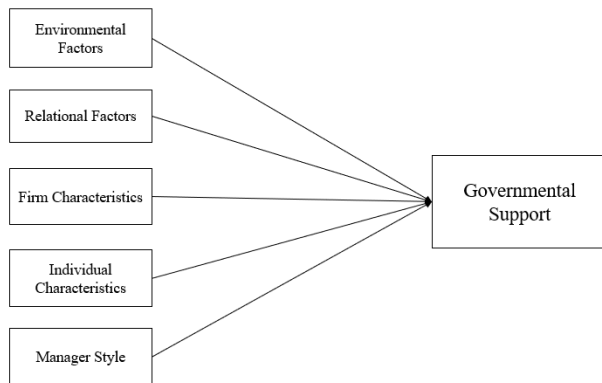
suggesting that favorable personal outcomes can foster technology transfer from government to firm (Kremic, 2003). Also, a pro-innovation attitude, indicated by receptiveness to new ideas, change orientation, and attitudes towards risk of the receiving party (Lapuenta & Suzuki, 2020), was likely to lead to a higher chance of local government adoption (Damanpour & Schneider, 2008). While it is more relevant in this research to learn from studies in the government area, we might also find similarities between factors for general or managerial support and predictors for government support. Lu et al (2019) state that the idea enactment of one is positively related to the creativity assessment of a decision maker leading to a higher chance of idea implementation when influence tactics and idea novelty are high (Lu, Bartol, & Venkataramani, 2019). Herein, high novelty indicates a breakthrough new idea that challenges current ways of looking at products and services (Mumford & Gustafson, 1988), which can also be called radical innovation. Therefore, it can be argued that the decision maker's perceived creativity for an idea leads to a higher amount of support.

### **Manager style**

In this category, we look at how the style of a manager can change the likability of having success in acquiring support from a government official. A lack of provided information by a manager is seen as a barrier for a successful assessment of a radical innovation concerning private-sector technology transfer (Schneider, Holzer, & Hoffman, 2008). This suggests that managers that act transparently and are willing to exchange information, have more chance in acquiring useful technology through governments compared to managers that act opaque. The second predictor within the manager style category is the narrative style being used; a predictor of convincing people to make financial investments is the use of different types of narrative styles (Manning & Bejarano, 2017), which is claimed to serve as trigger for action towards goals that are forever changing (Garud, Gehman, & Giuliani, 2014). Successfully funded projects show a clear narrative pattern, whereas projects that failed do not. Besides that, failed campaigns show a tendency of overemphasizing future aspects while neglecting the past. High-tech projects tend to have a results-in-progress narration, which would be the case for most radical innovations. The article therefore argues that the success of a presentation for radical innovation ideas should deliver critical elements of a results-in-progress narration style (Manning & Bejarano, 2017).

Since this research is particularly explorative and qualitative, drawing a detailed conceptual model would be ungrounded. Therefore, our conceptual model constitutes of five overarching elements which all include two or more indicators as described in literature. We

expect at least some relation between these categories and government support for firms with radical innovations. Concluding, this is what our conceptual model looks like.



*Figure 1* - Conceptual model based on literature

### **3 Methodology**

#### **3.1 Research strategy**

This research aims to explore the most important determinants for acquiring different sorts of government support for firms with radical innovations in personal mobility. Data is needed to investigate how different factors affect the support of governments and to produce contextual real-world knowledge about the behaviors, social structures, and beliefs of governments. To find this out, the best option was to investigate the governments themselves, as well as other experts in the field. This led to a complete model of the situation. The complexity of the phenomenon and the wish to obtain a fine-grained understanding of the determinants and conceptual frameworks for supporting radical innovations by governments led to the choice of a qualitative research in the form of interviews. Moreover, this method enabled the researcher to explore the underlying factors for specific choices and created the possibility to go deeper into mentioned important predictors for government support within the expected areas. Besides that, with the use of qualitative research it is easier to track down what a firm can actually do about mentioned barriers for acquiring government support compared to quantitative research. This was important, because mainly this contributed to the practical relevance of the research. Qualitative research was a good method to discover all the factors and relations.

The interview technique included three types of questions: main questions, follow-up questions and probes. The main questions were designed to focus on the research question and to stay on target regarding answering this research question. The follow-up and probe questions helped to ensure that depth, detail, vividness, and nuance are pursued (Owen, 2014). Depth refers to “asking about distinct points of view while learning enough of the history or context” and searching explanations. Vividness is used to obtain narrative reports or to request step-by-step descriptions of what happened, which is important to track down more indicators (Owen, 2014).

#### **3.2 Sample Strategy**

The interview sample consists of several (local) government officials throughout The Netherlands. We included mostly officials working in the relatively large government agencies, since they have more resources and experience with radical innovation projects compared to officials in small local governments. Therefore, they could provide us with more valuable information. Only officials of involved departments (mobility and economics) are



included in the sample set. Because it is important to make sure that the people interviewed represent various voices (Myers & Newman, 2007), other relevant people in the field were interviewed as well (consultants, grant applicants, former government officials, and government advisors). By interviewing both support providers and recipients of support, the outcomes can be compared to test for similarities and differences. An overview of the interviewed respondents, as well as explanations of their added value, is visualized in *Appendix 3*.

While sample size is not central to qualitative research, in this research we stopped information gathering based on redundancy of information (Sandelowski, 1995). Sample size was justified based on quality data, rather than on the number of observations. Redundancy is the process of sequentially conducting interviews until all concepts are repeated multiple times without new concepts or themes emerging (Trotter, 2012). When interviewees reiterate each other's ideas, redundancy has been achieved and reliability is then guaranteed in this area (Trotter, 2012). This phenomenon is also known as 'saturation', when no new insights are being discovered in the interviews (Myers & Newman, 2007). In this research, we reached saturation during the 5<sup>th</sup> interview. To be certain that saturation really had been reached, another interview was conducted. When it appeared that also this interview did not give any new insights, it was appropriate to stop interviewing after this 6<sup>th</sup> interview.

### 3.3 Data collection

The used interview form is semi-structured, since this enabled us to involve the use of some pre-formulated questions where new questions could emerge during the conversation based on the answers of the respondent. Some phenomena or factors asked for more understanding during the interviews, and this semi-structured form allowed me to ask for clarities. The interviews were recorded and transcribed by the researcher himself. The aim was to perform a document analysis as a checking tool, but despite multiple requests, obtaining government documents such as internal conversations and e-mail traffic was unfortunately not possible. Because interviews are subject to reactivity bias, this risk was minimized by avoiding leading questions (Maxwell, 2005).

Consistency was very important in this research. The topic list was followed in every interview, and the main questions were asked the same way. However, two deviations in the data collection process occurred. First, interview five consisted of two respondents. I allowed this because they could complement each other during the interview, and it enabled me to find differences and similarities between the two respondents. Second, every interview took place

by using videoconferencing tools, except for the third interview. This respondent preferred to meet on a terrace, because he was sick of all the video conferencing calls. I accepted this, as long as it was not influencing his openness negatively. This specific interview turned out to be the second longest one. Thus, both deviations from the consistent data collection did not cause any problems in the process.

### 3.4 Data analysis

Each interview was recorded with the approval of the interviewees to ensure all information would be included in the transcript. Although literature has already been collected, an inductive approach was used in the analysis. This was the best option, since all relevant sources have pointed out that the determinants that change the likability of government support change in different environments. Moreover, the literature is from many different contexts, which cannot be compared directly to this study. Working with an inductive approach minimized the chance of testing wrong assumptions. Besides that, our research question has not been tested in this environment yet, which would make it unwise to point the interview in a specific direction by testing the literature.

After the recordings were transcribed, the interview transcripts were coded with the qualitative software program Atlas.ti, where we made use of open-, axial-, and selective coding (Williams & Moser, 2019). The dynamic function and nonlinear directionality of the coding process enables essential themes to be identified, codified, and interpreted in the service of the research study's focus and contributes to the associated literature (Williams & Moser, 2019). By using this technique, I was able to spot both the specific characteristics and barriers for acquiring government support for radical innovations, as well as the broader characteristics and overarching themes. After open- axial-, and selective coding, the relevant quotations were translated, and the connected codes were controlled for relevance and appropriateness. The chance of any quotation or coding mistakes was minimized by doing this.

### 3.5 Research Ethics

First of all, it is appropriate to accredit the respondents for their valuable insights. Without them, this research could not be made possible. All respondents were informed on the purpose of this research, the requirements of the interview, and the process of data collection. Before the interviews, the respondents received a document with this information, as presented in *Appendix I*. Furthermore, respondents were asked for permission to record the

interviews. Luckily, all respondents had no problems with their voices being recorded which positively contributed to the quality of the transcripts. A very important part of ethics is privacy. To respect the privacy of the respondents, the recordings were deleted after the interviews had been conducted. Because some of the respondents were interested in acquiring the report when it would be finished, the information about respondents, transcripts, and coding information inclusive quotations, will not be included in their version of the report. This report is written following the general APA principles throughout the entire process to respect and accredit the researchers who made it possible to write the literature review as the basis of this research (Smith, 2003).

### 3.6 Validity and Reliability

#### 3.6.1 Validity

As mentioned earlier in this chapter, the sufficiency of the number of respondents is based on saturation in this research (Myers & Newman, 2007). Saturation was reached when six respondents were interviewed. To be absolute certain that saturation was achieved, one more respondent was interviewed after that. When it appeared that again no new insights were discovered, the sufficient number of seven respondents could be assumed. The respondents were suitable to interview; every respondent is employable at a government within the mobility or economy departments, or has the ability to judge and estimate about government officials due to their current role or experience. Three respondents work at municipalities as strategic policy advisor mobility, one respondent works at a municipality as senior account manager specialized in innovations and start-ups, two respondents work at an advisory organization with experience at multiple provinces and ministries, and one respondent works at a consultancy firm where he advises governments about mobility issues. An elaborated view of the respondents is given in *Appendix 3*. It can be concluded that the respondents do correspond with the population. However, the fact is that government officials working at provinces and ministries are slightly underrepresented compared to government officials working at municipalities in this study. Although no significant differences between respondents of both groups were found, this could be disadvantageous for the external validity and generalizability of the research.

Five interviews were conducted by using video conferencing tools like Zoom and Microsoft Teams. The respondents all worked from home and thus were in a trusted environment while answering the questions. The other interview took place physically at a

terrace in Nijmegen at 09:00 A.M. The respondent proposed this idea, because he preferred to meet in public. The terrace was empty, so no one could hear the interview. The fact that all respondents were in a confident environment, positively impacts the ecological validity.

### 3.6.2 Reliability

When comparing the different interviews, it becomes clear that the main themes are returning in the vast majority of interviews. Furthermore, no contradicts have been found in the interviews, which makes it plausible that the replicability of the research is guaranteed. Recording and transcribing the interviews prevented the possibility of any big mistakes during the analytical process. The interview transcripts are attached in *Appendix 8*, making the research repeatable and traceable. Moreover, the structure and analysis of the coding process (*Appendix 9*), as well as the frequency tables which enabled me to determine the most important factors (*Appendix 6*), are projected to create full transparency of the research that was conducted. In addition, the codes of every quotation for the separate interviews are presented in *Appendix 7*. Here, the quotations are also translated from Dutch to English.

Coding was performed via Atlas.ti, but also in Word where the quotations were translated. Random errors were eliminated by doing this.

## 3.7 Operationalization

To find out what the determinants for government support regarding radical innovations in mobility are, the definition of Hofman & Bruij (2010) is used: “government support relates to state institutions bolstering firms’ innovation activities by supporting knowledge diffusion, technology transfer, funding searches, and project management”. To make the understanding of government support clearer, a scheme has been drawn up.

Government Support			
<b>Knowledge Diffusion</b> - Provision valuable information market - Provision valuable information support programs	<b>Technology Transfer</b> - Provision valuable technology - Linking to sources with technology	<b>Funding Searches</b> - Grants - Loans - Subsidy programs	<b>Project Management</b> - Policy changes - Provision of work space/prototype building

Table 2 - Government support

### 3.6.1 Interviews

An operational framework is created based on literature about possible factors that influence the probability of government support (*Table 3 – Operationalization*). The

indicators stated in the operationalization are derived from literature from many different contexts, and can therefore not be generalized beforehand. This is why interviewees were not asked directly whether they think that a specific indicator does change the probability for obtaining government support. The indicators were more of use after the data was collected, to compare the outcomes with the existing literature.

The interview protocol is based on open questions instead of on predefined concepts, due to the explorative character of the research. The questions were asked by following a topic list. Globally, the topic list consists of an introduction, experience, examples and reflection, an assessment of radical innovation Nifti, and category testing. The topic list can be consulted in *Appendix 2*. Testing the not addressed categories is necessary, because it is possible that respondents will tend to not come up with any personal or managerial explanations regarding support.

Before the interviews, interviewees were provided with the conceptual model (*Figure 1*), as well as with the government support scheme (*Table 2*). In addition, interviewees were asked to come up with situations in the past where they had to make support decisions for radical innovations beforehand. This saved time during the interviews. The indicators from prior literature were not provided to prevent bias.

All interviews except interview three were conducted by using video conference programs like Zoom and Microsoft Teams. Interview three took place face-to-face on a terrace near to the city council of Nijmegen. The introduction of the interview protocol was sent to the interviewees one day before the interview and repeated in the initial phase of the interview to make sure everything is clear (*Appendix 1*).

### **3.6.2 Operationalization scheme**

Below, all indicators from literature that could influence government support are presented in one scheme. This creates a clear picture of what indicators belong to which category. These indicators will not be tested directly, because the indicators are derived also from non-government related studies and this research is explorative.

<b>Construct</b>	<b>Categories</b>	<b>Indicators</b>	<b>References</b>
Determinants of government support for radical innovations	Environmental Factors	<ul style="list-style-type: none"> <li>- Commercial viability</li> <li>- Long-term cost savings</li> <li>- Economic profitability</li> <li>- Relative advantage</li> <li>- Social benefit</li> <li>- Sustainability</li> </ul>	(Schneider et al., 2008; Puig et al., 2018; Damanpour & Schneider, 2008)
	Relational Factors	<ul style="list-style-type: none"> <li>- Interpersonal relationships</li> <li>- Political ties</li> <li>- Interaction frequency</li> <li>- Collective ambition</li> <li>- Trust</li> </ul>	(Singh, 2005; Lester et al., 2008; Li & Zhou, 2010; Guo & Jacobs, 2014; Thongsri & Kung-Hsiung Chang, 2019; Jian-Guo et al., 2017; Kester et al., 2011)
	Firm Characteristics	<ul style="list-style-type: none"> <li>- Firm size</li> <li>- Firm age</li> <li>- Geography</li> <li>- Network strength</li> </ul>	(Salamon & Siegfried, 1977; Lenway & Rehbein, 1991; Macher et al., 2011; Damanpour & Schneider, 2008; Rodriguez et al. 2015; Temper & Walter, 2018; Singh, 2005)
	Individual Characteristics	<ul style="list-style-type: none"> <li>- Self-satisfaction</li> <li>- Pro-innovation attitude</li> <li>- Perceived creativity</li> </ul>	(Kremic, 2003; Lapuente & Suzuki, 2020; Damanpour & Schneider, 2008; Lu et al, 2019; Mumford & Gustafson, 1988)
	Manager style	<ul style="list-style-type: none"> <li>- Degree of information providing</li> <li>- Used narration style</li> </ul>	(Manning & Bejarano, 2017; Garud et al., 2014; Schneider et al., 2008)

*Table 3 - Operationalization*

## 4 Results

This study provides insights into what factors affect the probability of government support for radical innovations in personal transport. During the interviews, insights have been gained on what government officials pay most attention to and what they find most important before supporting a company with a radical innovation. As stated in the introduction and methodology, government support consists of several parts. Therefore, the interviews were also used to learn whether the determinants for support differ for the different types of government support. These differences are described in sub-chapter one.

The analyses of the transcripts led to 22 categories that could determine the probability for government support. Within that group, seven categories are perceived to be the most important, because these categories were mentioned in at least 85% of the interviews. These categories form the second sub-chapter where the results for every category are being described.

### 4.1 Differences in government support

To start with, it might be good to shortly repeat what is meant with government support in this research, as extensively addressed in chapter two. Government support consists of four components, which are *knowledge diffusion, technology transfer, funding searches, and project management*. Because existing literature did not provide much comparison between the types of support, insights about the differences and similarities were gained in this research. Even though respondents were confronted with the concept of government support as we consider it in this research, I noticed that all of them answered the questions as it was only about the financial part. Therefore, more specific questions were asked about the differences between financial support and other types of support.

#### 4.1.1 Knowledge and resources through government's network

The respondents admitted that most of the knowledge and technology does not come from the government itself, but from the network that they have. Support would thus consist of connecting a company to a network with interesting organizations from which it could learn in terms of knowledge or technology. The respondents considered this kind of support as very low risk, which made the barrier for providing a company with that specific kind of support very low. *‘Putting in our network is something we do first, which is very low risk for the government which is why it is always possible. We say: let's talk to the boys of Nifti*

*because they think they have a high potential product, that's it. The other party loses 1 hour of their time in the worst case.*'' (Respondent 3, Sr. Account Manager Nijmegen).

Assuming that this is true, companies would only have to connect a government agency in order to acquire the needed knowledge and technology. It is a bit more complicated though, as claimed by this respondent: *''And for example for knowledge or networks and everything isn't much needed actually, for that you just have to connect with local governments and making lots of contacts, then you will become part of a network and you will get access to other businesses and knowledge.*'' (Respondent 4, Mobility Consultant). This implies that as a company, you need to make many contacts and connect with local governments. Networking skills are thus necessary for acquiring knowledge and technology. Another reason why it might be more difficult to gain the needed knowledge and technology than is described, is the fact that after a business is connected to a network, it still needs to convince the organizations of why they should give them the needed information.

That the barriers for a government to provide a business with knowledge and technology are low compared to other types of support, was confirmed once again: *''You actually go from small to big. So yes, for knowledge the requirements for a government are quite small, for subsidies and policy changes this is very different.*'' (Respondent 4, Mobility Consultant). The first sentence of this interview section implies that businesses first are helped with knowledge and technology, before governments get into financing and policy changes. This is similar to the statement of respondent three at the beginning, where was claimed that enabling a network to a business is the first thing that a government undertakes when being approached.

Governments intend to always support new innovative ideas with networks, since governments are subservient to the society. However, when a process takes too long at the end, the government might consider pulling the plug, as described in the following section. *''No, no, I, no it is important that we try to support initiatives from the society and the university. Then you have to wait, how much time are you going to stick in it. Look, at least you can have a few exploring conversations, an introduction in a network, or we can set up a meeting where a business can give a presentation. That kind of things we always do. When it's going to take more time, you should consider whether it is worth the effort and how feasible it is. But for sure a few exploring conversation to help someone along their way, is always possible. We are always open to that.*'' (Respondent 1, Strategic Policy Advisor).

Although there are some slight differences, all respondents agree on the claim that



there is not much needed for getting support in terms of knowledge and technology (via the networks of governments). Most of them see it as their duty to help entrepreneurs with radical innovations to achieve success, as long as the support itself does not cost them too many resources. *‘I think at least they are always prepared to contribute in terms of hours. They often want to think with you, blocking some time, (...).’* (Respondent 7, Strategic Policy Advisor Mobility). This is very positive for organizations, especially because of the fact that governments often have a rich regional network with all kinds of organizations it can connect a business with. *‘Network access is of course easy to apply, because as a government you have access to many parties and doors can be opened easily.’* (Respondent 3, Senior Account Manager).

Now we know that governments mostly help businesses by giving them access to their network without real requirements, it is important to also look at the other side of government support. This will create a full picture of the differences in types of government support.

#### **4.1.2 Financial Support**

As mentioned in the previous paragraph, respondents were by far paying most of their attention to financial support in the form of subsidies. They see this as the riskiest type of support, since it is about investing public money in something new. *‘When I look at the interests of the government and it is money from the citizen, then you must invest it in a responsible project, and then investing in a risky initiative is often not desired.’* (Respondent 3, Senior Account Manager). This is why for financial support, many other factors do play a role, which will be discussed extensively in the next sub-chapter. When money is involved, policy advisors have to make a more justified consideration about whether or not to support a radical innovation: *‘So they are open to it in that sense, but the question must be how do I justify it to the community. Ultimately you do it with public money, and that remains a very difficult decision’* (Respondent 7, Strategic Policy Advisor Mobility)

In the previous paragraph, respondent four claimed that the low threshold for connecting a business to networks is very different for financial support and policy changes. He argued: *‘Well, policy changes will mostly follow after financial support or at the same time, firstly the radical innovation must have 100% chance of succeeding, so the province, or the municipality, or the central government say like yes right we give you one million to implement it, then the policy should be changed with it. So actually, for both things the same factors are important.’* (Respondent 4, Consultant Mobility). This seems obvious; after financial support has been provided, the policy should be changed in order to implement the

radical innovation smoothly.

Similarly, it does not make sense to change the policy when a business is not able to implement a radical innovation in a specific area. The explained phenomenon was also confirmed in the third interview: *‘Policy changes are an important part. Because something has to be made possible. But the main points are not that different. You don’t change a policy if you don’t have any confidence or what does not contribute to the goals. So, you might apply for something different, but the core remains the same.’* (Respondent 3, Senior Account Manager).

To summarize the results in this sub-chapter, there are differences in the requirements for the different types of government support. Because all respondents stated that there are no or minimal requirements for knowledge-, technology-, and network support, the results as described in the next sub-chapter are based on financial support and project management support (policy changes). A model has been created that shows the differences in government support as found in this research.

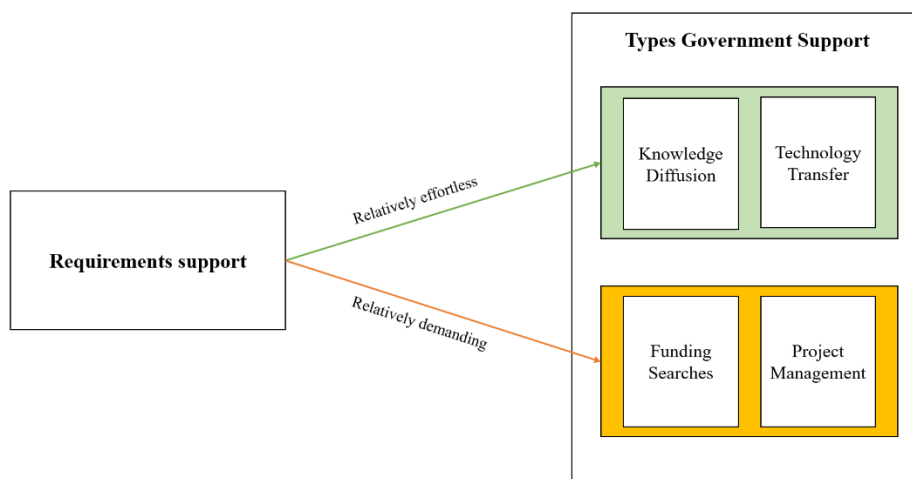


Figure 2 - Differences in Government Support

## 4.2 Identified categories

In this subchapter, only the most important categories are extensively described, because exploring this was the main purpose of this research. Out of 22 categories, we perceived 7 categories as most important based on the number of respondents that indicated that these categories played a role in the decision making for support of governments (Table 4). An overview of all the categories can be referred to in Appendix 5.

Categories	Frequency interviews	%
Company's network	7	100
Sustainability	7	100
Certainty	6	86
Economic advantages	6	86
Government contacts	6	86
Knowledge and research quality	6	86
Safety	6	86

Table 4 - Identified most important categories

As can be observed in *table 4*, seven categories were mentioned in at least 86% of the interviews. Two of them even had a 100% frequency rate. Every category will represent a specific sub-paragraph.

#### 4.2.1 Company's network

In every interview, the respondents urged for having a strong network as a company before asking for support. This category consists of 19 different codes, all of them relate to each other to a large extend. Although there are some small differences between the answers when it concerns a company's network, the core remains the same. Furthermore, there is some variation in argumentation across the respondents.

Most of the respondents argue that when a company is connected to (multiple) commercial organizations, it offers the government some amount of certainty. *'And it helps when you have a bigger company behind you that can help you or guarantee financial capital. That is also important. As a government, you just have some more certainty'* (..) *'By the way, I did not say that you need to be big as a company, but I did say that big companies should support you, so in a sort of cooperation or a good network for stability and certainty.'* (Respondent 1, Strategic Policy Advisor Mobility). *'At least it is nice when a company is backed by multiple commercial parties, that gives you some extra safety and certainty.'* (Respondent 7, Strategic Policy Advisor Mobility). When a company with a radical innovation has a strong network of business partners and cooperation's, this leads to an increased tendency for governments to support a business. It is a way for governments to reduce the amount of risk involved with radical innovations. This is similar to the findings in the previous sub-chapter, where governments were found to be risk-averse when it comes to spending public money in a specific area.

Another reason why governments like to see a strong network, is because it gives a business credibility. *‘Because you need some partners to get that credibility. To be taken seriously. Often those subsidy trajectories that are open, where you propose for, and which will be assessed. If you do that with sponsors or partners, it will certainly be different than when you say I will propose something with a few students with a nice idea. So these partners in your, in your project or initiative, are important if you’re going that way.’* (Respondent 6, Strategic Advisor Smart Mobility). The fact that governments prefer a business with an extensive network over a start-up with little resources seems obvious, since this also contributes to the amount of certainty that it offers a government. Connected to credibility, is the professionalism of a business. *‘Companies to which much larger parties are affiliated and in particular transport companies still give a one, a certain form of professionalism and they are also just a very important stakeholder in the whole dimension of that of transporting eh, of parties and people.’* (Respondent 3, Senior Account Manager). The risk of financing start-up companies without a network of bigger organizations is too high for governments according to all respondents. This does not necessarily have to be a network of only businesses; it could also be an investor that backs a company with financial resources: *‘(..) and maybe there is a big investor behind it. So actually, if you can make a good proposal together with a bigger corporation, the chance is higher that as a government we support that.’* (Respondent 1, Strategic Policy Advisor). Moreover, it could be an influential person: *‘But it is not excluded at all that you can come within a network through a more powerful figure. So that are things to look at. Like eh well, who has influence. What are the influencers right?’* (Respondent 6, Strategic Advisor Smart Mobility). *‘It is not about organizations perse; it is often about people. You need to bind people with influence at governments so that they dare to experiment.’* (Respondent 4, Consultant Mobility).

The fact that a company’s network is important, also has to do with governments not wanting to stay behind when many parties get involved. *‘And certainly, when what Han also said, if more parties join it, then a government doesn’t want to stay behind.’* (Respondent 5, Advisor Mobility and Space). This can be seen as a form of fear of missing out (FoMo): A pervasive apprehension that others might be having rewarding experience from which one is absent, characterized by the desire to stay continually connected with what others are doing (Przybylski, Murayama, DeHaan, & Gladwell, 2013).

To conclude, the network of a business has a positive influence on the probability of acquiring government support for radical innovations in personal transport. It is mainly

important that a network consists of influential organizations and individuals with valuable resources and a good reputation. Governments find this particularly important, because it provides them some certainty during the process and implementation of the radical innovation.

#### 4.2.2 Sustainability

The first sentence of the introduction in this research paper stated that the current climate transition leads to fundamental reconsiderations of the arranged mobility. Now it appears that sustainability is one of the most important factors for governments when deciding to give a company support for a radical innovation in personal transport. The term sustainability consists of multiple factors. The important factors of sustainability as argued by the respondents are discussed in this section.

That sustainability is one of the primary concerns for governments, arises from the Paris Agreement. Countries, including The Netherlands, agreed to reduce CO<sub>2</sub> emissions significantly. The European Union and the Dutch state do simply have targets, that local governments need to help them with. *“The EU and the central government are very curious to sustainability of course, the climate, the viability. Also to the new economy, so new job opportunities, the Green Deal of Frans Timmermans, (..)”* (Respondent 5, Advisor Mobility and Space). That the country is responsible for reaching the climate goals, is an extra incentive for governments: *“Sustainability plays certainly a role, more and more of course. We have to reach the climate goals, and as you know, traffic contributes for a quarter to all CO<sub>2</sub> emissions, so that is quite a lot. So a new innovation would be compared to what we use at this moment.”* (Respondent 4, Consultant Mobility). Next to central governments, the EU, and provinces, the same applies for support by municipalities: *“Contribute to societal goals, so safety, CO<sub>2</sub> reduction, less car movements within the environment, and the coming of zero emission zones does play a role as well, and it helps with the transition.”* (Respondent 3, Senior Account Manager). It is thus vital that a company has a more sustainable alternative compared to the present transportation vehicles being used.

Sustainability also plays a big role because governments want to increase the liveability in their cities. Clean air in the area is therefore important to governments. *“The councilor has made a goal of two: to increase the livability with cleaner air. The air quality in The Netherlands is already not too good and this applies to people living close to roads even more.”* (Respondent 3, Senior Account Manager). That sustainability and liveability are intertwined with each other, so the aim for a more liveable city or region can be reached

through sustainability: *‘‘We talk about liveability and accessibility. (..). Liveability is about sustainability, so less CO2 emissions, and a more efficient use of the road network.’’*

(Respondent 5, Advisor Mobility and Space). Improving the quality of life and environment is an important incentive for governments to act on. When a radical innovation can reduce the amount of CO2 emissions, this is a huge advantage for governments: *‘‘Of course, you also look at what it means for the environment. That is where governments look the most at, those busses, in the past they were polluting, diesel busses, noise disturbance, and you name it. And then would Nifti, which floats, has no CO2 emissions, and silent. Yes, that are interesting things to at least improve the quality of life in the city. I think that is a very interesting one.’’*

(Respondent 7, Strategic Policy Advisor Mobility).

The codes connected to this category are very coherent with each other. CO2 reduction was the most mentioned indicator of sustainability across the respondents in this research. It can be concluded that sustainability is a very important determinant for acquiring government support for radical innovations in personal mobility. Sustainability is important for government agencies because it increases the liveability in a city, region, or country. Furthermore, it is consistent with current trends and international agreements such as the Paris climate agreement.

#### **4.2.3 Certainty**

In the first sub-chapter, the importance of certainty for governments was already mentioned. A strong network as a company leads to higher probability of government support, especially due to the increased certainty. The importance of certainty was stressed by six of the respondents, suggesting that certainty relates to more than just to a company’s network. In this sub-chapter, the way how certainty influences government support will be discussed.

Governments are risk averse to a high extend. Due to the uncertain nature of radical innovations, governments pay extra attention to possible risks involved and whether the new product or service will actually succeed. Again, the thought that it is public money plays a role: *‘‘When I look at the interests of the government and it is money from the citizen, then you must invest it in a responsible project, and then investing in a risky initiative is often not desired.’’* (Respondent 3, Senior Account Manager). It can also exist due to the general attitude of government officials towards new things: *‘‘Yes I think that government officials in general are very skeptical and conservative.’’* (Respondent 7, Strategic Policy Advisor Mobility). Moreover, the consequences for a government official when a radical innovation fails after it has been supported can play a role in this risk averse attitude: *‘‘(..) governments*

*are very risk averse; we deal with community money, so you are really under de scope of the press, the local council, etc.*'' (Respondent 1, Strategic Policy Advisor Mobility). Especially negative attention in the press could scare officials to take risky decisions: *''Because you yourself, or the councilor, will be in the newspaper for something new and when it goes wrong. For example, in Zwolle there is a new bicycle roundabout. When something would happen, the press will immediately find out who came up with it, and therefore you will be negative in the news.*'' (Respondent 7, Strategic Policy Advisor Mobility).

A good way to give government officials confidence that a new system is reliable, is by testing it intensively according to the respondents. Of course, when a radical innovation in mobility is going to be implemented on the road, it needs to satisfy multiple technical tests performed by professionals. For government support this is not necessarily needed, although respondents would like to see that the system actually works. *''I think if you tested it properly, you show it works well. Under diverse conditions with different frequencies, at least after intensive use. It should be tested in a protecting environment where the product can be proved well.*'' (Respondent 1, Strategic Policy Advisor Mobility). This testing needs to be done in a protected environment where it can not do any harm to people. However, real life situations need to be simulated: *''If it is about how do I start, to draw attention to it, then you could do that based on simulations, or based on fantastic presentations, like they did that with Hardt as well, at the end they started from scratch as well. That is how people were made enthusiastic.*'' (Respondent 5, Advisor Mobility and Space). It is clear that a business needs to have a reliable innovation before governments support them. Radical innovations in the starting typically have a lot of insecurity.

In the starting phase of a business there are always risks, especially with radical innovations that are made to transport people. Therefore, it is very difficult for a starting company to get support from a government in that stage. However, respondents claim that it does not necessarily have to be a proven success to be able to get support: *''And then, that is also something crucial: there must be a certain prospect that it will become a profitable business case at some point and that there is indeed a future in the innovation. You don't know it up front, but the risk needs to be excluded at a certain moment.*'' (Respondent 4, Consultant Mobility). Government officials realize that radical innovations can not be reliable for 100% at the beginning. When this is the case, they at least desire a clear perspective of the system working within a certain period of time. *''But yeah, of course it is new, it's innovative, and it takes a while before everything goes perfect probably. So, you must have some guts as a government. Such a company thus needs to have a good story, have clear milestones, and a*

*good plan of action. Writing down where you are going, what they need to municipality for and what they need. And yes, the sharper you can project this, the more chance that a municipality will give a subsidy.*'' (Respondent 7, Strategic Policy Advisor Mobility).

It can be concluded that certainty of the radical innovation is very much required, where governments want the radical innovation to be tested properly and to be reliable. The involved risks need to be as low as possible to increase the probability of acquiring support. A clear perspective on the system being reliable and successful in the future could give positive support outcomes to a lesser extent.

#### **4.2.4 Economic Advantages**

The fourth important category for obtaining government support in this research is to what extent the radical innovation leads to economic advantages. The term 'economic advantages' itself is a very broad concept. In this section, an explanation is given about which factors of economic advantages were mostly discussed during the interviews.

Efficiency is seen as one of the most important facets that a radical innovation must meet. It is especially about decreasing travel times and preventing traffic jams. This improves the accessibility of a city or region and stimulates economic growth. *'Well, those things are cost-wise never attractive actually. Does it contribute to the realization of accessibility, of preventing traffic jams, do you contribute to the accessibility of course is an important question. And how many people can benefit from it?'* (Respondent 4, Advisor Mobility). Besides helping the economy, a higher traffic efficiency also reduces the amount of CO<sub>2</sub> emissions. However, preventing travel jams was linked more to societal and economic effects: *'Yes, in terms of economy, does it offer jobs for the municipality, can the citizens travel faster than they can do now, can we save costs with it, that kind of considerations are important.'* (Respondent 2, Strategic Policy Advisor Mobility).

The previous quotation above also highlights the importance of job offers. That brings us to the second important indicator in the field of economic advantages; the creation of employment opportunities: *'It was a very important aspect; it delivers lots of job opportunities in Nijmegen. So how, like we yes, that we just want less unemployment, that people from all layers of the society get a chance to live and earn better.'* (Respondent 3, Senior Account Manager). In this matter, it is important to not only create job opportunities in general, but to create job opportunities in the municipality, province, or central government where the support provider is responsible for: *'If a new business emerges in Nijmegen and can grow here, or create work, or contribute to the innovative climate, then this could also be*



*a reason to support the innovation as a government.*'' (Respondent 1, Strategic Policy Advisor Mobility).

'To align yourself as a company with government interests' was one of the identified categories (*Appendix 5*). Although this category is not perceived as 'most important', it is intertwined with some aspects of economic advantages; the interests of governments are often to create more jobs and attract more businesses. A company can take advantage of this: *''(...), is that the municipality of Nijmegen wants 10000 extra jobs in the next 10 years. If you have an initiative that contributes to that goal, that is a huge incentive, which is, let's say, the vision from an economic perspective.*'' (Respondent 3, Senior Account Manager).

From an economic point of view, a radical innovation that comes with multiple economic advantages is very important for getting government support. This can be considered logical, since it is completely in line with previous findings; it is public money that a government spends, so the money or benefits should eventually return to the citizens directly or indirectly. As discovered in this area, it is especially important for governments that a new innovation creates job opportunities, improves the innovative climate, attracts businesses, and can be used efficiently. The better the prospect of economic advantages, the higher the probability that a business acquires government support.

#### **4.2.5 Government contacts**

The category of government contacts can be interpreted in two ways. First, it can involve the interaction between a business and a government. Secondly, it can involve having a network with government officials. Both are found to be very important determinants of government support for radical innovations. Also, the two are to a high extent related to each other, because interaction could lead to closer relationships. It is a category that does not involve product- or business-related requirements. However, it is about the networking skills from the company's initiative takers.

It starts with making contacts, where it is important to start as early as possible to build sustainable relationships with many relevant people in government agencies: *(..) at a meantime when it works well ask for subsidy, and that you in the preliminary stage invite the councilor and know his/her political agenda. (..).* *''Start immediately with networking. With making contacts, keeping officials up to date, finding the entries''* (Respondent 3, Senior Account Manager). Networking with governments is relevant in person, as well as online via social media platforms: *''They are networking in such a good way and are good in making*

*governments enthusiastic that they really get things done. (...). 'They are active on social media a lot, on LinkedIn they are active, there they also make these Reels, and they are always present at networking events. There they always make sure to have a talk with some people or they ask me at an event like 'Hey, I see that the councilor is here, could you introduce us to him?'' (Respondent 1, Strategic Policy Advisor Mobility). In this passage the respondent was made enthusiastic due the networking effort of the entrepreneurs, this could help a lot in finally getting support.*

Not having the right networks could lead to an extreme delay in the process. This stresses the importance of beginning as fast as possible with networking; the sooner one starts networking, the higher the chance that you built the right relationships with government officials. Here is an example of what could be the effects of not knowing the right persons at governments: *'Well it is handy when you know people of course. There is a saying that says that acquaintances are more important than knowledge. (...). But if you have a good idea and you know nobody, then your idea is more difficult to sell. So, you need to find a channel. I know someone who came up with something very exciting to push back nitrogen emissions, but he has to lobby for 1,5 years to finally get to the right minister. Yes, if you can create some shortcuts in that long road via a province where you have some connections with the right people, yes.'* (Respondent 5, Advisor Mobility and Space)

The importance of networking is relevant in both the top and bottom of a government, but as presented in the previous quotation, it helps when you know the right powerful people within governments. Decisions are not only made based upon facts and in an objective way. Respondents describe that it should be done objectively, but in practice people stay people who have their preferences. This also accounts for municipalities: *'So the relation does definitely matter. It is also possible at another level right, when an entrepreneur has a good relationship with the councilor, so it can work top-down as well, then the councilor gives the order to arrange something.'* (Respondent 2, Strategic Policy Advisor Mobility).

It is clear that networking with governments and building sustainable relationships are very important determinants for government support. It is meaningful for entrepreneurs to start as early as possible and to build relationships with government officials from all kinds that could help you further in the process. Inviting government officials, giving presentations, and approaching government officials at network events were emphasized the most by the respondents in this research. The more powerful the official is, the more efficiently you can be supported, as stated in the last two quotations above.

#### 4.2.6 Knowledge and research quality

The sixth identified important category is all about the knowledge that a company possesses and the research quality it can lead to. All respondents except respondent one stressed the importance of a company having done proper research. Moreover, governments must have confidence in the conducted research where the knowledge comes from. It is clear that also this category is connected to certainty to a high extend. Governments aim to reduce the risk of the project, and therefore want to have evidence that a radical innovation will really succeed. Furthermore, research and analysis can help and entrepreneur to sell the product better and to convince government officials.

First of all, it is important for a company to have a clear view about the market of transportation in a specific region, who the stakeholders are, and how everything is connected to each other. This enables a government to make a clear risk assessment of the possible implementation of the radical innovation. What contributes to this as well, is a feasibility study as argued by three respondents. All of this can be summarized by a quotation of respondent six: *“You need to be able to sell it. For that you need some kind of feasibility research, so how does the market look, investments, structure and operations, what does it look like. Who will earn something and who solves a problem? What are the competitors. That kind of analysis, it certainly helps when you can bring your story convincing to take the first step to some small investment and the next step.”* (Respondent 6, Advisor Smart Mobility).

A second part in this category that can improve the chance of government support is to develop knowledge about governments and influential people within governments. With this information, a company can present their radical innovation or solution based on the interests and priorities of a government. Important is to keep up to date with developments in the relevant political agendas and to track what government officials do and like. The advantages of collecting this kind of knowledge is that it enables a company to align their interests with the government while presenting it to them. This gives a government more incentive to act upon. The importance of acquiring this kind of knowledge and acting upon it was argued by three of the respondents: *“One is doing your homework to look at: what is the opinion of the person that has to make the decision? What is on his or her agenda? And that is often publicly available. If you do your homework really well in that area, you can take a huge benefit from it. Because if you know what a councilor or mayor has recently said or found important, and you can take that into account by presenting your pitch, then you can become 1000% more*

*effective. So that is an absolute tip that I would give.*'' (Respondent 3, Senior Account Manager).

To summarize, doing analysis and making clear plans give governments more certainty and confidence. This generally leads to a higher chance of acquiring government support. Companies can increase their chances for government support by the research quality; keeping up to date with governments and gaining valuable information to make excellent analysis and plans is very important in this area. Aligning the interests of the company with the interests of a government is critical in enthusing government officials. In consequence, knowledge and research quality increase the chance of government support for radical innovations.

#### **4.2.7 Safety**

By looking at the fact that certainty plays a significant role in government support for radical innovations in personal transport, it is not surprising that safety was found to be one of the most important categories. When a system is planned to be implemented, it must be tested by several organizations such as the RDW. The results of this research show that safety is also a requirement for supporting the radical innovation. In the field of personal transportation, where this research mainly focusses on, this is seen extra important factors. Nobody wants a person to be hurt during an experiment or testing phase. This has happened in the past and governments want to minimize this risk: *''And you talk about safety, because well, that thing what hung in Groningen, there happened a terrible accident, that was immediately the end of the magnetic track.*'' (Respondent 6, Advisor Smart Mobility).

Because it is very logical that governments want a system to be safe before supporting it, this category does not need further explanations. The respondents were very short about this one; it must be safe. This means it has to be tested, as also described in the results of the category 'Certainty'. Since safety is hard to assess by government officials, it can help to perform technical tests by certified organizations to proof the system is safe for a specific application.

### **4.3. The core category: Pursuing government interests**

The result of the selective coding analyses pointed out that all identified categories were intertwined or connected with 'pursuing government interests', which is therefore believed to be the core category. All major categories, as discussed in sub-chapter two, can be

retraced to this core category. Below is described how the main categories are related to the core category.

The network of a business, safety, certainty, and knowledge and research quality do all relate to the core category because one of the main interests of a government is to keep the risks as low as possible. When these four categories are satisfied, this is in line with the interests of a government and thus increases the chance for support.

Government contacts are needed to learn about the interests and needs of governments. Logically, without knowing the exact interests of a government, it is not possible to pursue government interests. When the interests are pursued due to government contacts, this network can be used to speed up the support process.

Sustainability and economic advantages have everything to do with the targets of governments and their vision. These two categories were important to almost every respondent, and therefore can definitely be called government interests.

The connections between the most important categories, the core category, and government support, are visualized in an adapted conceptual model. The adapted model reflects the findings in this research on important factors for government support regarding radical innovations in personal transport. As can be seen, three of the categories do not only influence the probability of government support via the core category (pursuing government interests), but also directly as described in the corresponding sections. Furthermore, three categories are linked to pursuing government interests via the certainty of a radical innovation.

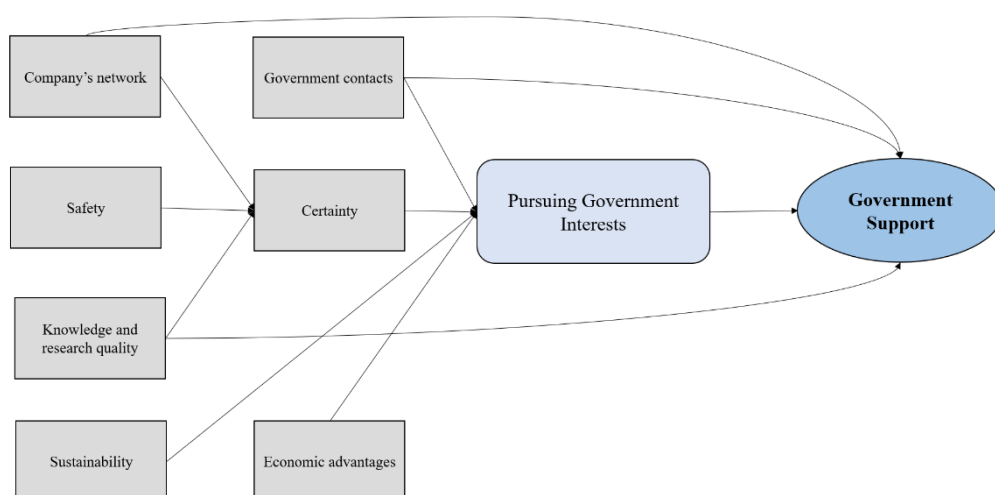


Figure 3 - Adapted conceptual model

## 5 Conclusion & Discussion

In this chapter, the conclusion is given, after which the thesis is discussed by the researcher. In addition, the theoretical and practical implications of the research are given, as well as the limitations of this research. Finally, the chapter is ended by a self-reflection.

### 5.1 Conclusion

The research question in this thesis is as follows: *“What are the main factors that help generate government support in The Netherlands for radical innovations in personal mobility?”*

Governments in The Netherlands can be influenced based on many characteristics related to a company, the people within a company, or its radical innovation. Indeed, the results showed that numerous factors do play a role in government decision making. It appears that government support can be divided in two parts. The first part is where a government can help companies by the provision of knowledge and technology through a government's network. The results show that generating support for these elements are relatively effortless to accomplish for companies, since the risk for this type of support is very low for governments. Governments are always open to help companies with their networks. The second part of government support is about financial support and project management support, which includes policy changes. Requirements for companies to gain support for these elements are more demanding. The logical consequence is that the results are based on this second element of government support, financial- and project management support.

The results show that seven categories can be considered as main factors for acquiring receiving support by companies with radical innovations in personal mobility. First of all, a strong company's network can help generate government support, because it provides a government more certainty and governments do not want to stay behind when multiple parties are involved. Secondly, a sustainable radical innovation has a higher chance of gaining government support, especially when it is more sustainable than current systems and CO<sub>2</sub> emissions will be reduced. Certainty is a third main factor, which is connected to multiple other factors. The more certainty a company can give a government about its radical innovation in terms of reliability, safety, and the future success of the radical innovation, the more chance a company can obtain government support. Fourth, the higher the economic advantages it brings to a city or region, the higher the probability of government support. Furthermore, networking and networks with government officials appear to be highly correlated to the chance of success in obtaining government support. Also, having strong

relations with government officials could accelerate the support process. Sixth, companies that can deliver good analysis by knowledge and research quality have advantages over companies who do not for getting government support. Finally, the results show that safety plays an important role and increases the probability of government support for a radical innovation in personal mobility.

All of the found important factors do at least partly relate to pursuing government interests.

## 5.2 Discussion

This thesis examined the most important factors for acquiring government support regarding radical innovations in personal mobility. The results indicate that seven categories are the most important to obtain government support in this area. Notable findings and connections will be discussed, as well as how the results of this thesis relate to previous research.

In this research, selecting the most important categories was performed based on the frequency of the categories in the interviews. However, by reviewing the transcripts thoroughly, it becomes clear that certainty might be even more important than the results indicate. The reason is that three of the main categories correspond to the category ‘Certainty’, as can be observed in the adapted conceptual model. When these three categories, safety, company’s network, and knowledge and research quality, are perceived to lead to more certainty, then the importance of certainty was mentioned by 100% of the respondents, instead of the described 86%.

The conceptual model as shown in chapter 2 includes a summary of all the indicators found in literature. The scope of this model was very wide, because the literature consists of very diverse information and from different environments. Information from different environments was gathered, because previous research about radical innovations connected to government support was very limited. However, there are some similarities between literature and this research.

Firstly, literature pointed out that governments have more incentive to act for environmentally friendly innovations compared to other innovations (Naor, Bernardes, Druehl, & Shiftan, 2014). Similar, the findings in this research show that sustainability is one of the most important determinants for government support.

Second, there is a similarity in the field of the network of a company; one of the common ways to influence governments for radical innovations following Rodriguez (2015),

is to create and strengthen own networks of different organizations to advance government actions, while in this research a company's network was founded to be a very important factor for government support with a frequency rate of 100%.

Finally, the importance of personal relationships were highlighted in this research, as well as in previous work of Singh (2005), who argued that knowledge diffusion can be reached through interpersonal relationships between a company and a government agency. In this thesis, only one respondent mentioned that relationships influence the knowledge a government gives a company. More specified research could possibly show different results for the support of radical innovations in The Netherlands, and might be similar to the research of Singh (2005). However, this research does not show an effect on knowledge diffusion, but shows that personal relationships with government officials increase the probability of financial-, and thus project management support.

### **5.2.1 Theoretical Implications**

This thesis provides some theoretical implications. First, this research provides insights in what the most important factors are for obtaining government support for radical innovations in personal mobility in The Netherlands; explorative research in this field has not been conducted so far in The Netherlands, nor in Europe. Secondly, this thesis provides an understanding in why different categories are important to governments. Last, this thesis provides a new conceptual model for government support with new drivers added compared to previous literature. Herein, certainty is the most important factor that has not been exposed in literature previously.

### **5.2.2 Practical Implications**

This research provides some practical implications for companies with radical innovations that aim to acquire government support. First of all, this thesis shows that it is important for companies to have an extensive network of organizations, investors, and influencing people before applying for support. Secondly, the thesis explains the role of sustainability in government decision making, which a company can use. Thirdly, this research shows the importance of aligning interests with the government and how to realize this with the help of knowledge and research quality, and government contacts. Furthermore, this research stresses the importance of certainty as a requirement for government support. It explains in which areas certainty is important and what companies can do to improve the probability of acquiring support by increasing certainty. Last, it shows how to pursue government interests and thus how to increase the probability of gaining government support.



The inducement of writing this thesis is Radboud University's spin-off Nifti. Since one part of the interview concerned questions about Nifti specifically as example for radical innovation in personal mobility, the practical implications for them apply to a higher extend. This thesis could thus contribute to the success of Nifti in having success for obtaining government support.

### **5.2.3 Limitations and Future Research**

This research has multiple limitations and suggestions for further research. When interpreting the results, the various limitations should be taken into account.

First of all, the respondents with experience in provinces and ministries are slightly underrepresented in this research. Only three respondents have experience in working or dealing with these governments. The majority of interviewees have experience in relatively large municipalities. Although the answers between interviewees with experience in different governments did hardly vary, it should be taken into account that the majority of the respondents work, worked, or deal with municipalities. Especially given the fact that the largest subsidy amounts are provided by provinces and ministries. Further research could investigate whether the presented results hold for support from provinces and ministries as well to make the results indisputable.

A second limitation is the fact that the interview questions were not tested before the data collection. Testing the interview questions can help to prevent unclarities and misunderstandings during the actual interviews. Although questions were not tested beforehand, I asked the first two respondents afterwards for feedback and misunderstandings in the interview. Fortunately, they were satisfied with the interview questions and found the set-up and interview questions very clear. This allowed me to continue the data collection process without any problems.

A third limitation is that the response rate was lower than I expected. As a result, gathering a sufficient number of respondents took more time than I anticipated. Most of the refusers indicated that they did not have time for an interview or that they were not the right person for this interview. Luckily, all the participants were very open-minded and helpful during the data collection process. Further studies could conduct quantitative research to test the theory and results under a larger number of respondents. Moreover, quantitative research would make it easier to find differences between the types of government in giving support.

The fourth limitation is about a possible incomplete picture of the reality. Because the scope of the research was wide and the aim to identify the most important factors, it was not

possible to zoom in on the identified categories to create a detailed picture. This could have led to an incomplete picture of the various categories, because other factors within the categories may also have played a role in the explanation of it. Further research could focus on smaller parts of the research to achieve more detailed understandings of the different relations.

The fifth limitation could be that the data collection of this research only consists of interviews. Although the openness of the conversations were stimulated and the risks were covered as much as possible, there is always a chance that respondents gave socially desirable answers. Therefore, future research is needed to use different types of data collection, such as observations and document analysis.

The final limitation is that this research is performed by only one researcher. This could have led to misinterpretations of interview quotations. To anticipate on that, the interviews were recorded and transcribed manually afterwards. In addition, some parts of the data analysis might not have been noticed, although this was checked by the researcher himself.

In addition to the future research areas already mentioned, future research could perform this study in other European countries for comparison. The role of the European Union on determinants for national (local) government support could be discovered by executing this research.

#### **5.2.4 Reflection**

Looking back over the last five months in which I conducted this research, I realize that writing a master thesis requires a lot of time and effort. At the beginning, I did not have a clear overview, so I worked very hard to track down what I was actually researching. Moreover, my limited knowledge about the research topic led me to searching for unrelated articles and deviating from the scope of the research. Because of the fuzzy start, I made multiple adjustments to the research; writing this thesis was an iterative process. I started to get an eye for detail and regularly controlled if I was still on the right track to keep a clear overview. I learned that less is more, not in the amount of effort one puts in a research, but in the scope of a research. One of my biggest pitfalls in the past is that I wanted to do everything on my own and never asked for help. In this research, I am happy that I asked for help regarding things I did not exactly understand. I asked multiple government officials in order to get an understanding of the process of government support for radical innovations and they supported me with their network to gain more respondents. This taught me all the more that

asking for help and making use of your network is a very important thing to do.

## 6 References

- AD. (2019, November 15). *Information about road traffic and emissions*. Retrieved from Website Algemeen Dagblad: <https://www.ad.nl/binnenland/wegverkeer-veroorzaakt-17-procent-co2-uitstoot~a72a4d0c/?referrer=https%3A%2F%2Fwww.google.com%2F>
- Bers, J., Dismukes, J., Miller, L., & Dubrovensky, A. (2009). Accelerated radical innovation: Theory and application. *Elsevier Technological Forecasting*, 169.
- Bozeman, B. (2000). Technology transfer and public policy: a review of reserach and theory. *Elsevier: School of public policy*, 627-655.
- Damanpour, F., & Schneider, M. (2008). Adoption in public organizations: assessing the role of managers. *Journal of Public Administration Research and Theory*, 495-522.
- Duchin, R., & Sosyura, D. (2011). The politics of government investment. *Journal of Financial Economics*, 24-48.
- Garud, R., Gehman, J., & Giuliani, A. (2014). Contextualizing entrepreneurial innovation: A narrative perspective . *Research Policy*, 1177-1188.
- Gräfe, K.-J. (2021, February 6). First conversation radical innovation in (local)governments. (M. Mulder, Interviewer)
- Gräfe, K.-J. (2021, March 22). Interview process government support. (M. Mulder, Interviewer)
- Grossman, G., & Helpman, E. (1991). Innovation and Growth in the World Economy. *MIT Press Cambridge*.
- Guo, H. X., & Jacobs, M. (2014). Managerial political ties and firm performance during institutional transitions: an analysis of mediating mechanisms. *Academic Managerial Journal*, 116-127.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis Eight Edition*. Andover: Cengage.
- Jian-Guo, L., Qing, Z., Qiang, G., Zhen-Hua, Y., Fei, X., & Jing-Ti, H. (2017). Knowledge difusion of dynamical network in terms of interaction frequency . *Nature Scientific Reports*, 1-7.
- Kester, L., Griffin, A., Hultink, E. J., & Lauche, K. (2011). Exploring portfolio decision-making processes. *Product Development & Management Association*, 641-661.
- Kremic, T. (2003). Technology Transfer: A Conceptual Approach. *Kluwer Academic Publishers - Journal of Technology Transfer*, 149-158.
- Lapuenta, V., & Suzuki, K. (2020). Politicization, Bureaucratic Legalism, and Innovation Attitudes in the Public Sector. *Public Administration Review*, 454-467.
- Lester, R., Hillman, A., Zardkoohi, A., & Cannella, A. (2008). Former government officials as outside directors: The role of human and social capital. *Journal Academic Management*, 999-1013.

- Lu, S., Bartol, K. M., & Venkataramani, V. (2019). Pitching novel ideas to the boss: the interactive effects of employees' idea enactment and influence tactics on creativity assessment and implementation. *Academy of Management Journal*, 579-606.
- Macher, J. T., Mayo, J. W., & Schiffer, M. (2011). The Influence of Firms on Government. *The Berkeley Electronic Journal of Economic Analysis & Policy*, 1-25.
- Madrid-Guijarro, A., Garcia, D., & Van Auken, H. (2009). Barriers to innovation among Spanish manufacturing SMEs. *Journal of small business management*, 465-488.
- Manigart, S., & Struyf, C. (1997). Financing High Technology Startups In Belgium: An Explorative Study. *Small Business Economics*, 125-135.
- Manning, S., & Bejarano, T. A. (2017). Convincing the crowd: Entrepreneurial storytelling in crowdfunding campaigns. *Organizaing Crowds and Innovation*, 194-219.
- Mata, J., & Portugal, P. (1994). Life duration of new firms. *Journal of Industrial Economics*, 227-246.
- Maxwell, J. (2005). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: Sage Publications.
- Mui Hung Kee, D., Mohd Yusoff, Y., & Khin, S. (2019). The role of support on start-up success: a PLS-SEM approach. *Asian Academy of Management Journal*, 43-59.
- Mumford, M., & Gustafson, S. (1988). Creativity syndrome: integration, application and innovation. *Psychological Bulletin*, 27-43.
- Murtha, T., Lenway, S., & Hart, J. (2001). Managing new industry creation: global knowledge formation and entrepreneurship in high technology . *Stanford University Press*.
- Myers, M., & Newman, M. (2007). The qualitative interview in IS reserach: examining the craft. *Information and Organization*, 2-26.
- Naor, M., Bernardes, E. S., Druehl, C. T., & Shiftan, Y. (2014). Overcoming barriers to adoption of environmentally-friendly innovation through design and strategy. *International Journal of Operations & Production Management*, 26-59. Retrieved from Emerald Insight.
- Ollus, M., Jansson, K., Karvonen, I., Uoti, M., & Riikonen, H. (2011). Supporting collaborative project management. *Production planning and control*, 538-553.
- Owen, G. T. (2014). Qualitative methods in higher education policy analysis: using interviews and document analysis. *The Qualitative Report*, 1-19.
- Pergelova, A., & Angulo-Ruiz, F. (2014). The impact of government financial support on the performance of new firms: the role of competitive advantage as an intermediate outcome. *Entrepreneurship and regional development journey*, 663-705.
- Przybylski, A., Murayama, A., DeHaan, K., & Gladwell, C. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behaviour*, 1841-1849.

- Puig, D., Haselip, J. A., & Bakhtiari, F. (2018). The mismatch between the in-country determinants of technology transfer, and the scope of technology transfer initiatives under the United Nations Framework Convention on Climate Change. *Springer Nature*, 659-669.
- Rijksoverheid. (2020, July 8). *Information about chargepoints prediction in The Netherlands*. Retrieved from Website Rijksoverheid: <https://www.rijksoverheid.nl/actueel/nieuws/2020/07/08/aanleg-laadpalen-in-stroomversnelling>
- Rijksoverheid. (2021, January 1). *Information Paris Agreement*. Retrieved from Rijksoverheid website: <https://www.rijksoverheid.nl/onderwerpen/klimaatverandering/klimaatbeleid>
- Rodriguez I, Inturias ML, Robledo J, Sarti C, Borel R, Melace AC (2015). Abordando la Justicia Ambiental desde la transformación de conflictos: experiencias con Pueblos Indígenas en América Latina. *Paz y Conflictos*, 97-128
- Rothwell, R., & Dodgson, M. (1992). European technology policy evolution: convergence towards SMEs and regional technology transfer. *Elsevier Technovation*, 223-238.
- RU. (2020, May 6). *Information NIFTI - National Individual Floating Transport Infrastructure*. Retrieved from Website RU Science: <https://www.ru.nl/science/news-agenda/news/vm/items/transporting-people-magnets-nifti-new-technology/>
- Sandberg, B. (2008). Managing and marketing radical innovations. *Marketing new technology*.
- Sandberg, B., & Aarikka-Stenroos, L. (2014). What makes it so difficult? A systematic review on barriers to radical innovation. *Elsevier inc.*, 1293-1305.
- Sandelowski, M. (1995). Sample size in qualitative research. *Research in Nursing & Health*, 179-183.
- Schneider, M., Holzer, A., & Hoffman, V. (2008). Understanding the CDM's contribution to technology transfer. *Elsevier*, 2930-2938.
- Schwartz, G., & Clements, B. (1999). Government subsidies . *Journal of Economic Surveys*, 119-146.
- Shaffer, B., & Hillman, A. Y. (2000). The development of business-government strategies by diversifying firms. *Strategic Management Journal*, 175-190.
- Sheng, S., Zhou, K. Z., & Li, J. J. (2011). The Effects of Business and Political Ties on Firm Performance: Evidence from China. *SAGE Journals, Journal of Marketing*, 1-15.
- Singh, J. (2005). Collaborative Networks as Determinants of Knowledge diffusion patterns. *Management Science*, 756-770.
- Smith, D. (2003). Five principles for research ethics. *Monitor on psychology*.
- Soeder, W., Nashar, A., & Padmanabhan, V. (1990). A Guide to the Best Technology–Transfer Practices. *Journal Technology Transfer*, 5.

- Temper, L., Walter, M., Rodriguez, I., Kothari, A., & Turhan, E. (2018). A perspective on radical transformations to sustainability: resistances, movements and alternatives. *Sustainability Science*, 747-764. Retrieved from Sustainability Science.
- Thongsri, N., & Kung-Hsiung Chang, A. (2019). Interactions Among Factors Influencing Product Innovation and Innovation Behaviour: Market Orientation, Managerial Ties, and Government Support. *MDPI Journal*, 1-21.
- Trotter, R. (2012). Qualitative research sample design and sample size: resolving and unresolved issues and inferential imperatives. *Preventive Medicine*, 398-400.
- Velis, T. (2020, August 31). *2.0 A Literature Review*. Retrieved from Website of Medium: <https://medium.com/radical-innovation/2-0-a-literature-review-974e3f2b23aa#:~:text=In%20their%20study%2C%20Hopp%20et,firms%2C%20often%20despite%20inferior%20resources>.
- Williams, M., & Moser, T. (2019). The Art of Coding and Thematic Exploration in Qualitative Research. *International Management Review*, 45-55.

## Appendix 1: Introduction interview protocol

### Inleiding

Allereerst bedankt voor uw deelname aan het interview. Voor mijn scriptie aan de Radboud Universiteit, doe ik onderzoek naar de belangrijkste determinanten voor overheidssteun betreffende radicale innovaties. Hierin gaat het vooral over wat op basis van uw ervaringen en bedenkingen belangrijk is voor het verkrijgen van overheidssteun voor radicale innovaties. Gezien het feit dat elke innovatie andere prioriteiten en kenmerken heeft, en hierdoor ook anders wordt beoordeeld, vraag ik u om de volgende case als uitgangspunt te nemen bij beantwoording van de vragen.

Nifti is een spin-off van de Radboud Universiteit. Op dit moment zijn zij bezig met de ontwikkeling van een voertuig op basis van magnetische straling. In de praktijk ziet dit eruit als een zwevend object boven de weg dat zich volledig autonoom kan verplaatsen. De verschillende mogelijkheden van Nifti zijn enorm. Hierom is gekozen voor de mogelijke vervanging van huidige buslijn (...) in (...) voor de pods van Nifti om personen te vervoeren. Een dergelijk voertuig zou er zo uit kunnen zien:



*Dit is een futuristische weergave van hoe een dergelijk concept er uit zou kunnen zien. Het is dan ook nog onbekend of het daadwerkelijke model dezelfde structuur heeft. Gezien het daadwerkelijke voertuig er anders uit kan zien, vraag ik u om geen antwoorden te geven op basis van de afbeelding.*

Dit interview is semigestructureerd, waardoor op sommige antwoorden kan worden doorgevraagd. Informatie opgedaan uit dit interview is volledig anoniem. Dit houdt in dat er in het rapport niet wordt gerefereerd naar de geïnterviewde en antwoorden niet te herleiden zijn \*. Ten behoeve van nauwkeurige verwerking van de interviews, zou ik het erg waarderen als u mij in de gelegenheid stelt om dit interview op te nemen. Na transcriptie zullen de opnames direct worden verwijderd. Bent u hiermee akkoord?

\* Ten behoeve van het mogelijk maken van een kwalitatief goede beoordeling, zal alleen het rapport dat beschikbaar is voor mijn scriptiebeoordelaars alle informatie bevatten, inclusief referenties en volledige transcripten.



## Appendix 2: Topic list interview protocol

### Introduction

*Goal: Create clarities about profession, activities, and experience.*

- Can you briefly tell us what your profession is, what it entails, and how long you have been working in this field?

### Experience (radical) innovations in mobility

*Goal: Learn from previous experiences, let the interviewee reflect and/or evaluate the situation, and finding out how choices were made.*

- Have you ever given any kind of government support to a company with a radical innovation?

*If yes:*

- Do you have an example?
- What kind of support did you give?
- What considerations did you make?
- What were your interests in the radical innovations and how did it influence your decision?
- Were there any problems you had to overcome?
- Did you hesitate, and why did you eventually choose to support the innovation?

Did you ever choose **not** to give support to a firm with a radical innovation?

*If yes:*

“ – Why not, Considerations, etc.

### Assessment Nifti

*Goal: Checking for similarities and differences compared to previous experiences, finding out where they would base their decisions on regarding Nifti.*

- How do you determine whether this radical innovation is promising for the future and applicable for support?
- When can uncertainties be accepted?
- What is important?
- Who are involved?
- When are you likely to provide knowledge/advice to the firm?
- When are you likely to provide technology to the firm?
- When are you likely to provide any form of financing to the firm?
- When would you be willing to support the firm with project management?

### Importance for government support

*Goal: Spotting differences between types of support and tracking important variables.*

- What is important for the different types of government support?
- Are there cases where you would never give a firm support?
- Are there cases where you would always give a firm support?

### Category testing

*Goal: Discover indicators for not yet addressed categories.*

- Are there any characteristics you would like to see before getting support in environmental factors, personal relations, firm characteristics, personal characteristics, and manager style?

### Appendix 3: Respondent list interviews

R=Respondent, I=Interview

R	I	Organization	Function	Importance for the research	Time
1	1	Municipality of Nijmegen	Strategic Policy Advisor Mobility	Can judge about radical innovations from a mobility perspective. Participated in several projects in which larger governments were also involved.	59:30 Zoom
2	2	Gemeente Gouda	Strategic Policy Advisor Mobility	Can judge about radical innovations from a mobility perspective. Also established its own consultancy agency where provinces and municipalities are advised and cooperated with.	30:49 Zoom
3	3	Gemeente Nijmegen	Senior accountmanager economics	Can look at radical innovations in the field of mobility from an economic point of view and knows what is important in this area for the municipality and province.	47:31 Terrace
4	4	MuConsult	Consultant mobility	Years of experience in advising governments with research on mobility plans, mobility projects, and innovations. Has a lot of cooperation with governments and knows what is required.	27:39 MS Teams
5	5	Goudappel	Advisor mobility and space	Knows how provinces and municipalities deal with radical innovations and what is important for obtain this. Worked for various provinces and municipalities. Also helps organizations to get support for mobility innovations.	45:14* MS Teams
6	5	Goudappel	Strategic advisor smart mobility	Knows how ministries and provinces view radical innovations and what is important in this regard. Has worked for several of these governments in the past. Also helps organizations to get support for mobility innovations.	45:14* MS Teams
7	6	Gemeente Zwolle	Strategic Policy Advisor Mobility	Years of experience in mobility at various municipalities and governments. Also worked at a consultancy agency in the past and can therefore approach the important elements from both perspectives.	44:59 Zoom

\* Respondent 5 and 6 participated in the same interview. This took 45 minutes and 14 seconds.

## Appendix 4: Timeline

Week	Activity	Deliverable	Critical dates
12	-Finishing thesis proposal	Thesis proposal	<b>26-3-2021 Deadline Thesis proposal</b>
13	-Set up interview protocol - Approaching government (officials) for openness interview	Interview protocol	
14	- Interview protocol finetuning - Possibly approaching more gov. officials	Interview protocol Sample complete	<b>09-04-2021 Assessment deadline thesis proposal GO/NO</b>
15	-GO: data collection and data analysis -NO: correct thesis proposal	GO: Coded transcripts, valuable information NO: weekly update improvement thesis proposal	<b>GO was received</b>
16	-GO: data collection and data analysis -NO: correct thesis proposal	GO: Coded transcripts, valuable information NO: weekly update improvement thesis proposal	<b>Feedback Thesis proposal was received</b>
17	-GO: data collection and data analysis -NO: correct thesis proposal	GO: Coded transcripts, valuable information NO: weekly update improvement thesis proposal	
18	-GO: data collection and data analysis -NO: correct thesis proposal	GO: Coded transcripts, valuable information NO: weekly update	

		improvement thesis proposal	
19	-GO: Last coding, start results section -NO: finish revised thesis proposal	GO: completed transcripts and coding process NO: Revised thesis proposal	<b>14-05-2021 Deadline revised proposal</b>
20	- Working on results		
21	- Working on results		
22	- Discussion (theoretical and managerial implications, limitations and future research) and Conclusion		
23	- Discussion (theoretical and managerial implications, limitations and future research) and -Conclusion - Finetuning Thesis	Discussion and conclusion	
24	-Finetuning thesis, layout, grammar check, peruse report	Master Thesis	<b>14-06-2021 Deadline Master Thesis</b>

This timetable was created 10-03-2021

## **Appendix 5: The process of government support**

On the question what the process for acquiring government support looks like, is no straightforward answer. This depends mainly on two factors. Firstly, governments make a distinction between start-ups from the region who are in the development stage of their innovation and could contribute to the (local) economy in the future and firms with a product ready to launch who need capital (Gräfe, Interview process government support, 2021). Secondly, the process depends on the type of support a firm needs, whether it be knowledge, technology, financial capital, or support in project management (Thongsri & Kung-Hsiung Chang, 2019) (Gräfe, Interview process government support, 2021). When financial support is needed, firms must deliver well-defined plans, risks of failure, proven added value, and relative advantages. Besides that, when the subsidy amount is substantial and (local) governments back the radical innovation, other organizations like the European Union also have their influence on the support (Gräfe, Interview process government support, 2021). When firms only ask for help in the form of knowledge or technology diffusion, firms are first invited to clarify and elaborate their idea to the governments. When the idea is found interesting enough, the government can connect a firm to other organizations and industry knowledge institutions (Gräfe, Interview process government support, 2021). Whatever kind of support is needed, the department of mobility and the department of economics regularly perform together in making support decisions. It seems that governments can turn out to be a first gateway towards more extensive support.

## Appendix 6: Code groups data collection

Identified categories (axial codes)	Open Codes Count	Open codes within category	Frequency mentioned times*	Frequency mentioned interviews
<b>Applicability</b>	6	Applicability Applicability in network Applicable in infrastructure Connecting to transport network Fitting in transport network Practical usefulness	7	4 (R1, R2, R6, R7)
<b>Costs</b>	7	Affordability Cost advantage Cost differences Cost reduction Costs Labour costs Prospect affordability	9	5 (R1, R2, R4, R5, R7)
<b>Company's network</b>	19	Attractive companies connected Backing company Backing investors Big organizations connected Binding big corporations Binding influential people Coalition forming Connected companies Connected firms from the region Cooperation's Cooperation's big parties Have backing investors Having partners If more parties are involved, governments don't want to stay behind Influencing people Network Propose together Support from big companies Support from multiple commercial parties	20	7 (R1 t/m R7)

<b>Safety</b>	9	Avoiding accidents Comply to new safety regulations Safe Safer Safety Safety issues Solid Technical tests Testing	18	6 (R1, R3, R4, R5, R6, R7)
<b>Sustainability</b>	12	Clean air Climate CO2 emissions CO2 reduction Contribution energy transition Greening Less CO2 emissions Less polluting More sustainable Sustainability Sustainable Sustainable business model canvas	19	7 (R1 t/m R7)
<b>Business characteristics</b>	5	Company size Connection with region Innovative Network Social media skills	6	4 (R1, R2, R6, R7)
<b>Feasibility</b>	4	Feasibility Feasibility perspective Feasibility research Financial feasibility	7	3 (R5, R6, R7)
<b>Government contacts</b>	15	Attending network events Basics of networking Building long term relations Interaction frequency Lobby knowledge/competences Making contacts Making governments enthusiastic Network with government officials Networking Networking with government officials Networks in governments Personal relationship with government official Relation with person and innovation	16	6 (R1, R2, R3, R4, R5, R7)

		Relationship building Start networking early		
<b>Certainty</b>	16	Certainty Clarity Demonstrate Explaining the difference this time Low risk No risk Offer perspective Officials are skeptical and conservative Perspective Prove of concept Realistic Reliability Risk averse Simulations Testing Trust	25	6 (R1, R2, R3, R4, R6, R7)
<b>Economic advantages</b>	9	Efficiency Employment opportunities Growth in city Helping the economy Innovative climate Job creation Lifespan Renewal Smart	14	6 (R1, R2, R3, R5, R6, R7)
<b>Flexibility</b>	5	Adapting innovation Capacity Flexibility Prepared to change Weather flexibility	9	5 (R1, R2, R3, R4, R7)



<b>Societal benefits</b>	16	Accessibility Added value Better traffic flow Effectivity Effects for society Efficiency Efficient road usage Immeasurable things Less traffic jams Number of benefitting people Quality of life Traffic jam preventing Use of space Viability Viable environment What's in it for the municipality?	20	5 (R2, R4, R5, R6, R7)
<b>Support base</b>	3	Enough market Support base Technology acceptance	6	5 (R1, R2, R3, R4, R7)
<b>Relative advantage</b>	4	Competitive advantage More silent More sustainable Relative advantage	7	4 (R1, R2, R4, R7)
<b>Visualization</b>	5	Fantastic presentations Future perspective Less fear due to visualization Make it visible Visualization	8	4 (R5, R7, R6, R3)
<b>Knowledge and research quality</b>	16	Analysis Clear plan Coming up with a solution to a problem Concrete plan Insightfulness consequences Know the interests Knowing political agenda Knowing powerful people Knowing the interests Knowledge Making analysis Mapping interested parties Serving the interests of the government Substantiation of the case Well thought out plan Who will be responsible for what?	19	6 (R2, R3, R4, R5, R6, R7)

<b>Align with governments</b>	7	Align with government goals Align with political agenda Being the solution Contribute to political agenda Following government officials Serving the interests of the government Show that you help them	8	3 (R3, R5, R7)
<b>Detrimental attributes</b>	4	Not open to innovation Not pushy Reacting bad Unfair competition	4	2 (R1, R2)
<b>Government's effort</b>	2	Energy Time	2	1 (R2)
<b>Publicity value</b>	2	Good press image Publicity value	4	3 (R1, R4, R7)
<b>Personal reasons</b>	2	Own interest Self-satisfaction	2	1 (R1)
<b>Differences in types of support</b>	10	Always open to contribute in hours Big subsidies come from provinces, the central government and EU Important factors for financing and policy changes are the same Knowledge/Technology always possible More difficult to get financial and PM support Not much needed for knowledge and networks Policy and financial support same factors Requirements for knowledge are small Requirements for subsidies and policy changes different Small to big	11	6 (R1,R3, R4, R5, R6, R7)

<b>Positive attributes</b>	14	Ambitious Convincing Convincing power Decisive Empathy Enthusiastic Experience Expressing the right tone Perseverance Positivity Selling skills Showing guts Start is convincing story Taking responsibility	18	5 (R1, R2, R3, R5, R6)
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\* The frequency of all named codes underlying the specific identified group across all the interviews.

### Ranking categories on importance

Categories	Frequency interviews	%
Company's network	7	100
Sustainability	7	100
Certainty	6	86
Economic advantages	6	86
Government contacts	6	86
Knowledge and research quality	6	86
Safety	6	86
Differences in type of support	6	86
Costs	5	71
Flexibility	5	71
Positive attributes	5	71
Societal benefits	5	71
Support base	5	71
Applicability	4	57
Business characteristics	4	57
Relative advantage	4	57
Visualization	4	57
Align with governments	3	43
Feasibility	3	43
Publicity value	3	43
Detrimental attributes	2	29
Government's effort	1	14
Personal reasons	1	14

The category ‘Differences in type of support’ is marked red, because this is not a factor that influences government, but a category that explains the differences in government support.