

Master Facility & Real Estate Management

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Science Parks

What factors played a decisive role in the decision to locate at a Dutch science park, and what are the differences/similarities between the different science parks considered in this research?



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Foreword

Dear Reader,

You have before you the master's thesis for the Master's in Facility and Real Estate Management at the University of Applied Science Saxion and the University of Greenwich. The reason for pursuing this master's is both the challenge and knowledge expansion in the field of facility and real estate management. It has been an educational and interesting 2-year journey.

Throughout the process I have had guidance from several individuals, these I hereby thank. During the research Mr. Joris Verwijmeren has guided me directly, for this I would like to thank him. Furthermore, I would like to thank Dr. B.H. Groen for her help in developing my research methods, especially her creative ideas for conducting the research and her constructive feedback. I would also like to thank my family, friends, colleagues, and fellow students for the support. Finally, my thanks for the cooperation, openness, and honesty of the interviewees in sharing the knowledge and experience.

In presenting the contents contained within this thesis I declare that the product is my work, and my work alone.

Yours sincerely,

Marieke Stokkers

Management Summary

This Management Summary contains necessary background information which makes the context of the research problem understandable.

Research question

Science parks are an instrument of great importance for governments, companies, and knowledge institutions. Not only to improve the (international) competitive position of a country or region but also to create knowledge sharing and innovation. The Netherlands has fewer well-developed science parks than neighboring countries (Dinteren, 2007). According to recent studies, this is a disadvantage for the international competitive position of the Netherlands. Most previous studies focus on the success of science parks as seen from the park management perspective rather than from the end-user, the tenant/buyer perspective. That makes this study interesting because there may be a gap between what park management offers and what the user demands and wants.

The research question states;

What factors played a decisive role in the decision to locate at a Dutch science park, and what are the differences/similarities between the different science parks considered in this research?

Definition Science Park

One of the distinguishing characteristics of a science park is a small center with high building density and a medium park with low building density (Zhang, 2002). It follows that the classification is related to the total area, the number of organizations, and the services and facilities that a science park can provide. The science park includes a mix of multi-tenant buildings, collaborative spaces, single-tenant buildings, and vacant lots for future development (European Commission, 2013).

There are five different stakeholders involved with the development of a theme-based science park in the Netherlands. These are;

- Governments and other supporting institutions (e.g. an incubator);
- Public and private research institutions;
- Companies;
- Management of the parks;
- The real-estate sector (e.g. real-estate developers and/or investors).

From a policy perspective, science parks are supply-driven measures aimed at improving networking and collaboration among park tenants (Edler & Georghiou, 2007). In addition, the co-location of different companies and, if present, universities provide proximity benefits (Ferrara et al., 2015). At the macro level, they primarily address potential market failures by encouraging R&D in selected locations (Appold 2004). At the micro-level, housed firms share facilities and services, allowing them to avoid large capital investments in expensive facilities, optimize utilization, and promote synergies.

Research approach

This research focuses on three cases, namely High-Tech Campus Eindhoven, Science Centre Delft, and Science Park Twente. These three cases differ in size, and ecosystem and are located to the south, west, and east of the Netherlands. Based on these three cases, a statement is made concerning the Netherlands. For this research, data have been collected using in-depth interviews. In-depth interviews are used to gain insight into the interviewees' underlying thoughts on the decision to locate in a science park. The interviews are semi-structured, meaning that the interviews are conducted using a checklist of issues, also known as a "topic list."

Interviews have taken place both physically and digitally, based on the preference of the respondents. Since COVID is still active and one still works hybrid, it was up to the respondents to determine a physical or digital appointment. To recruit respondents, "snowball sampling" is used, the sample starts small but "snowballs" into a larger sample throughout for the study. As a starting point, Dynamis advised a number of individuals to approach for an interview.

Conclusions & Recommendations

The most important factor in choosing to locate a science park is the location factor. What makes a science park attractive according to the companies is the presence of a manifest knowledge carrier, in the sense of a university, and thus the presence of knowledge and talent. After the location factor, the accessibility factor is seen as an important factor. For all three cases, accessibility is good. On the other hand, parking facilities appear to be less well organized at the science parks. Although this factor is not seen as important for the Eindhoven and Delft cases, it is for the Twente case.

The other factors, image, and the financial aspect are certainly seen as important factors, but the importance does not differ concerning a science park or a traditional business park. Though all respondents indicated that they would be willing to pay more for a place in the science park.

Concerning the facilities offered in a science park, these have had surprisingly little influence on the choice to locate in the science park. Contrary to the literature in which the facilities offered are seen as one of the most important characteristics of a science park and therefore increase its attractiveness, this had little or no influence on the respondents, this applies to all three cases.

In addition to the above-mentioned key success factors, the preconditions are important during the development of a science park. The most important condition is the presence of a knowledge institute. Without a knowledge institute, a science park is not attractive.

The survey of the respondents revealed several aspects that can certainly be improved. For example, potential organizations appear to be unfamiliar with the availability of (shared) facilities at the science park. Furthermore, there appears to be little or no cooperation between the companies located in the science park and the municipality in which the science park is located. While research initiated at the science park can also be interesting for the municipality, this applies not only to the research but also to the events taking place there, etc.

In summary, this study analyzed several notable findings. There certainly appears to be a difference in what science parks offer with what end-users want. It is highly recommended to do more research into the wishes and demands of the end-user. In this way science parks can respond even more effectively and efficiently to the wishes and demands of the end-user.

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Introduction

Companies are more innovative and successful when they have access to diverse facilities and a powerful network (Arkhan, 2009). In this regard, physical proximity to other organizations in the network is of great importance. While working from home is currently the norm for many employees, this is not the case for many companies. That the workplace is changing is however a fact (Van Dinteren, 2008).

Companies and organizations are therefore increasingly choosing to locate closer to each other (Chen et al., 2016). To be close to the knowledge, many life sciences companies choose a location in the heart of an innovation ecosystem. In this ecosystem, various innovative companies, universities, and network organizations come together. Physical proximity makes it easier to meet each other. These meetings are the basis for knowledge sharing. By meeting and sharing knowledge, collaborations are more easily established, which in turn leads to accelerated innovation (Van Dinteren, 2008).

For life sciences companies to fully focus on research and development of solutions to societal problems, such as COVID-19, their basic needs must be met. Existing research focuses primarily on demonstrating the policy effectiveness of science parks, this research focuses on what benefits tenants think they derive from the science parks' real estate proposition.

Science Parks are managed area developments that provide housing for knowledge institutions and companies to conduct knowledge-intensive activities (Albahari et al., 2019). It is claimed that science parks improve the performance of companies and ultimately contribute to more competitive regions (Bigliardi et al., 2006), but this has only not been proven by research.

A total of 82 campus initiatives can be identified in the Netherlands, 35 of which were identified as 'full-fledged' science parks by Buck Consultants International in their research. Link and Scott (2015) describe that a science park is set up as a public-private partnership. IASP defines a science park as follows; "... an organization led by specialized professionals, with the primary goal of promoting the prosperity of its community through the culture of innovation and competitiveness of the businesses and knowledge institutions associated with it. To achieve these goals, a Science Park stimulates and manages the flow of knowledge and technology between universities, R&D institutions, businesses, and markets; facilitates the creation and growth of innovation-based businesses through incubation and spin-off processes; and provides other value-added services along with high-quality space and facilities" (IASP, 2017).

Different terms such as innovation center, research park, hi-tech park, and science and technology park have been used interchangeably in previous studies (Vásquez-Urriago et al., 2016). The popularity of terminology has proven to be country-specific, such as research parks in the United States, SP in Europe, the technology park in Asia (Link and Scott, 2015), and campus in the Netherlands (Boekholt et al., 2009).

Companies, universities, academic medical centers, and research institutes have been engaged in research and development for a long time. A new trend that has emerged in recent years is that these parties increasingly seek each other out in so-called hubs (Ng et al., 2019). The idea behind this is that together, by forming an ecosystem of talent, products, and services, they can take open innovation to the next level. One of the advantages is that parties can use shared research facilities, making R&D much more accessible, especially for startups and spin-offs (Weterings et al., 2008; Louw et al., 2004).

In general, a science park includes a mix of multi-tenant buildings, collaborative spaces, single-tenant buildings, and vacant land for future development (European Commission, 2013).

Science parks can give companies access to regional and international networks. The professional network of science parks attracts external investment (Monck and Peters, 2009). Part of business development support includes access to networks for business advice or venture capital, often in the incubator and accelerator programs (Somsuk and Laosirihongthong, 2014).

The shared use of research-related facilities is seen not only as a way to save costs but also as contributing to proximity benefits to others. Image benefits were also linked to the total package of facilities and not just how the science park looks. In particular, R&D facilities, equipment, training programs, and access to information and business networking events are said to give tenants the feeling of being closer to a university. In contrast, only the attributes of training and information were attributed to knowledge benefits. This suggests that SPs must look beyond the primary facilities and services they provide to enable knowledge benefits among park tenants. Indeed, due to cognitive barriers, preferences exist for specific partner types within the same value chain (Chen et al., 2016).

The main question of this thesis is as follows; What factors played a decisive role in the decision to locate a Dutch science park, and what are the differences/similarities between the different science parks considered in this research?

Commissioned by Dynamis, this exploratory study identifies the success and failure factors of thematic knowledge parks and the associated real estate. By linking policy, theory, and empirical observations, it is possible to create a framework that is a model for the ideal thematic business park. Dynamis is the umbrella service organization for 13 real estate partners whom they facilitate in the areas of research, knowledge sharing, training, marketing, and acquisition.

The results of the study help those responsible for the area to respond even better to the needs of companies. And indirectly, that could generate new business for companies already located at the science park. Not only for a better science park but also all science parks in the Netherlands.

CH 2. Settlement Criteria

What is central to this study are location criteria for science parks. This chapter provides theoretical background information about settlement criteria for science parks.

2.1 Real Estate

For high-tech development, there has been a recent shift from suburban to urban locations. A science park, according to Lamperti et al. (2017), should have at least one incubator or research facility. Tenants benefit from the infrastructure, services and facilities of science parks (Etzkowitz and Zhou, 2017; Van Der Borgh et al., 2012). Research and development, support, and shared facilities, flexibility in expansion options, pricing of facilities and services, and the image of science parks are among the real estate characteristics that emerge in the literature (Van Der Borgh et al., 2012).

Laboratories, pilot plants, cleanrooms, and equipment are examples of R&D facilities (Ferguson and Olofsson, 2004; Ng et al., 2017). Furthermore, science parks help with marketing, networking events, corporate support, and training (Van Der Borgh et al., 2012). Services can also be offered by science park companies, such as consulting firms, patent offices, and other service companies (Van Der Borgh et al., 2012). Companies can focus on their core business, gain economic benefits, collaborate with other parties and contribute to knowledge transfer, as science parks provide support in facilities (Dez-Vial and Fernández-Olmos, 2017).

The price of a science park's facilities and services is one of its most essential characteristics. The R&D facilities and services of Science Parks are usually cheaper than those of other business parks (Van Der Borgh et al., 2012). According to Ferguson and Olofsson (2004), companies in science parks benefit more from a positive science park image, and this benefit could help them survive. Moreover, living in a research park can attract talent because of the high-quality landscape environment, facilities, and services.

2.2 Location motives

Science parks often focus on a specific group (or groups) of companies and institutions. The IASP (2017) survey shows that 61% of science parks and other innovation areas describe themselves as specialists or semi-specialists.

The main factors determining the location choice of such establishments are the presence of talent, technology, and international accessibility. The technology-oriented companies that locate at a science park vary greatly in nature, not only in size but also in their focus and related activities. A spin-off company, given its stage of development, has different housing requirements than a stand-alone R&D facility of a large company. As a science park real estate organization, being able to accommodate companies at every stage of development is a goal in itself. Matching the building proposition to the development stage of a company is crucial to attracting companies to the campus (Chan et al., 2005). Moreover, Chan and Lau (2005) showed that even with start-ups at different stages of business development, several advantages were important within their incubator program in Science Parks.

Science parks management generally establishes selection criteria for potential future tenants. Research shows that only 2% of Science Parks do not use criteria when selecting resident organizations (Ng et al., 2017). The added value of tenant selection criteria for existing businesses at an SP is its contribution to overall success and efficiency (Somsuk and Laosirihongthong, 2014). Selection is aimed at attracting suitable companies and thus science park employees (Link and Link, 2003; Chan et al., 2005). Moreover, a clear and transparent selection policy gives a certain perceived legitimacy to selected companies towards potential investors or customers (Salvador, 2011).

Existing research mainly focuses on demonstrating the policy effectiveness of science parks on firms by evaluating the measurable impact on firms. In particular, this has found unequivocal evidence for increased networking and collaboration among firms, but not for increased economic output and for what motivations firms located in a science park (Albahari et al. 2010; Löfsten 2016).

2.3 Facilities

A science park focuses primarily on R&D and/or knowledge-intensive activities, allowing for actual information sharing, innovation, and joint product development. The vast majority of companies in science parks are spin-offs from surrounding universities. Most of these small businesses are housed in multi-tenant office buildings. As a result, the demand from university spin-offs for office space is mainly for small-scale and representative office space (IASP, 2017).

Every year, over 18,000 companies and government agencies relocate to the Netherlands, accounting for about 4% of the population. Companies that see added value in the proximity of a knowledge institution, such as a university, are particularly interested in a science park. Higher education institutions may also choose to locate in a science park. Other supporting companies may also be interested, partly because of the knock-on effect of a science park. These may include business service providers, for example. Companies from the region are not only movers but also starters (Albahari et al., 2019). The two most important categories of companies as candidates for establishment at a science park are university spin-offs and regional companies (start-ups and relocators).

2.4 Operationalization

Since this thesis examines an abstract concept, it needs to be operationalized so that it becomes measurable. These measurable variables are shown in Figure 1. The operationalization came from the literature review. To analyze these factors, several scientific articles were consulted that address location factors. Location factors are defined as reasons for companies (or people) to settle somewhere (Van der Borgh et al., 2012)..

Settlement Criteria	Real Estate	Location	Number of residents Kind of environment Attractiveness for organizations Visibility Attractiveness of city
		Parking	Number of parking spaces Type of parking facility Capacity parking spaces % parking places allocated to tenants
		Reachability	Envy highway Degree of traffic flow obstruction Proximity to public transport Accessability site access
		Image	Architecture Contruccion year
	Financial	(Length) of tenancy	Length of lease
		Pricing	Property price
	Facilities	Research & Development	Innovation Training
		Support-facilities	IT-support Administration
		Shared-facilities	Share knowledge Park maintenance Security
		Flexibility	Expansion possibilities
		Pricing	Facilities & services

Figure 1 Operationalization (Van Der Borgh et al., 2012; Berkhout & Roggeveen, 2018).

The various factors will be discussed in detail and thereby specified, beginning with the location factor. Choosing the right location for a business is crucial because of the many factors involved, including the number of residents, kind of environment, attractiveness for organizations, visibility, and attractiveness of the city.

The following factors parking and accessibility are closely related to the location factor. The starting point for companies when it comes to location is often wanting to be where your customers are. In short, knowing how to reach your target group. In addition to customers, suppliers must also be able to easily reach the organization and staff. Easy accessibility means not only the proximity of public transport but also as little traffic congestion as possible and preferably sufficient parking space.

The right image is also important. After all, as an organization, you want a building that suits your company and your activity. Chic or sober, hip or rather professional, in the center or just on the edge of a science park et cetera. In short, architecture and year of construction are factors that determine the appearance of the company and the right location can help. Also, co-tenants, such as multinationals can influence the image of the science park and thus the company.

For a starting entrepreneur, it will not be a difficult decision to first rent or go for a purchase property, since they usually have little start-up capital. The choice for either renting or buying consists of several factors.

When buying a property, you start with what you need at the moment. But science parks mostly feature start-ups and these will mostly grow or shrink or even go out of business soon. This requires a flexible contract. In many cases you sign a contract for several years, this is often negotiable.

It varies from science park to science park whether and what facilities are provided. In terms of facilities offered, 15 science park attributes could be distinguished, based on previous research (Ng et al. 2019).

Facilities Science Parks	
<i>Categories</i>	<i>Examples</i>
R&D	Laboratory
Equipment	(3D) printers
Workspaces	Co-working spaces & conference rooms
Support	ICT-support, administration & advising
Training	Workshops & lectures
Park management	Maintenance, cleaning, safety & security
Knowledge sharing	Library, databases & network platforms
Events	Conferences, courses & drinks
Eating	Restaurants & cafes
Residential	Hotel & living
Leisure	Cinema, sport, wellness & shopping
Additional	Daycare

Figure 2 Overview facilities (Ng et al., 2019).

CH 3. Objectives, questions and hypothesis

Within this section, the central research question and sub-questions are described. The purpose of this research is to determine the factors associated with the success criteria for companies to consider locating in Dutch science parks. Identifying aspects that played a decisive role in the decision to locate a Dutch science park can provide science park owners/developers with the knowledge needed to successfully develop science parks (Elling, Andeweg, De Jong & Swankhuisen, 2010).

Central Research Question

What factors played a decisive role in the decision to locate at a Dutch science park, and what are the differences/similarities between the different science parks considered in this research?

Sub Questions

To answer the main question, the study is divided into a number of sub-questions.

1. What role did the “location” factor play in the decision to locate at a science park?
 - 1.1 What are the differences/similarities in the role of the location factor in making the decision to locate at a science park between the different cases?
2. What role did the “parking” factor play in the decision to locate at a science park?
 - 2.1 What are the differences/similarities in the role of the parking factor in making the decision to locate at a science park between the different cases?
3. What role did the “reachability” factor play in the decision to locate at a science park?
 - 3.1 What are the differences/similarities in the role of the reachability factor in making the decision to locate at a science park between the different cases?
4. What role did the “image” factor play in the decision to locate at a science park?
 - 4.1 What are the differences/similarities in the role of the image factor in making the decision to locate at a science park between the different cases?
5. What role did the “(length) of tenancy” factor play in the decision to locate at a science park?
 - 5.1 What are the differences/similarities in the role of length of tenancy factor in making the decision to locate at a science park between the different cases?
6. What role do the facilities offered by a Dutch science park play a role in the decision to locate in a science park?
 - 6.1 What are the differences/similarities in the role of facilities factor in making the decision to locate at a science park between the different cases?

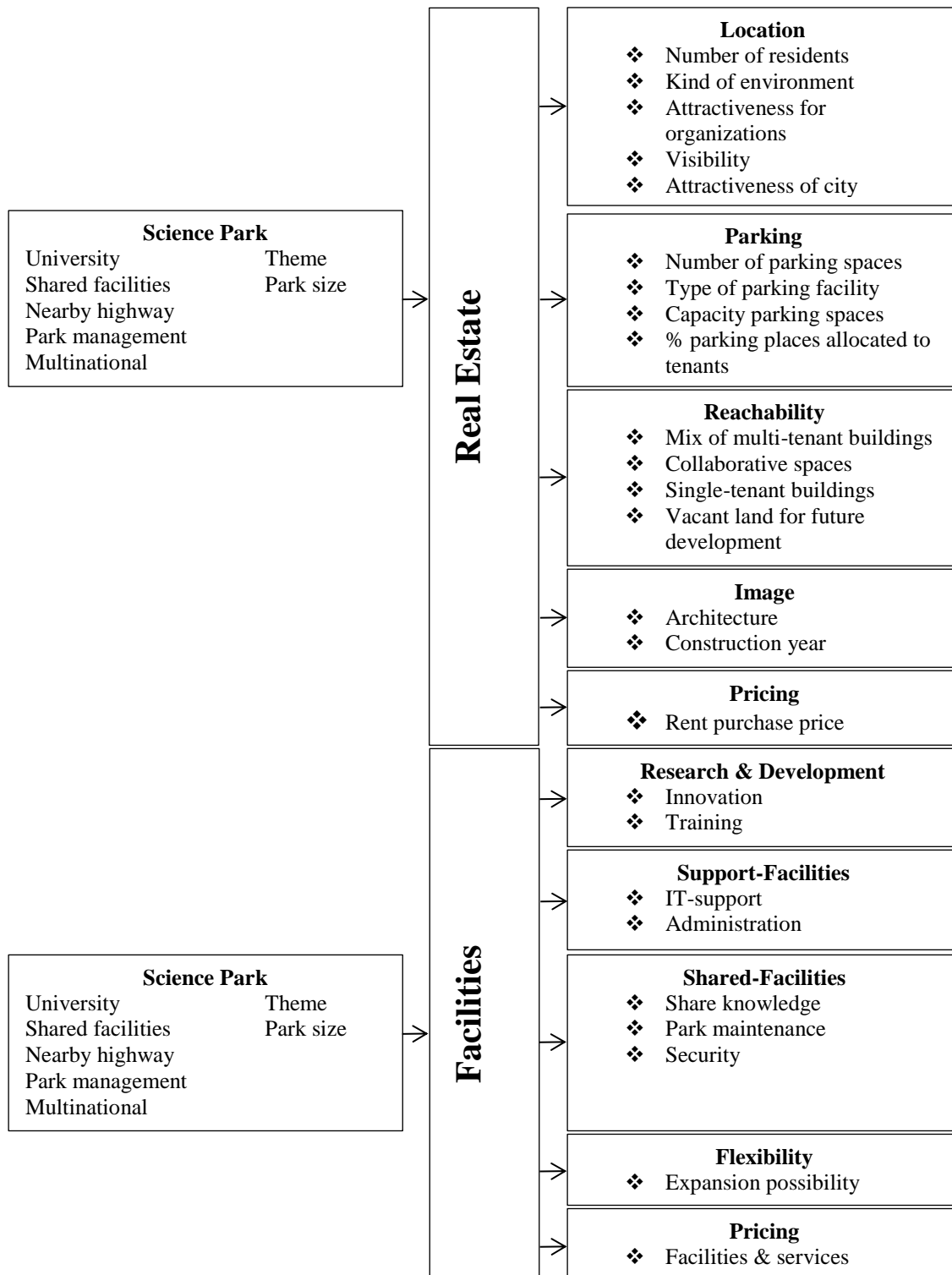


Figure 3 Schematic overview of research.

This chapter describes how the research goals will be achieved. The choice of research method(s) will be justified in light of the research objectives.

4.1 Research Strategy

In the preliminary stage, during the drafting of the proposal, literature research was carried out. This included looking at comparable previous studies that had focused on the motivations of companies to locate science parks (Stappers, 2010). These included surveys in particular. During this process, no research was found that used a case study. The reason this research does use a case study and not a survey is that a case study goes into more depth. A case study is an appropriate research method if you want to gather concrete, contextual and in-depth knowledge about a specific topic, in this case, decision factors for locating a Dutch science park. This method allows you to find out the characteristics, meanings, and implications of a case. This is in contrast to a survey.

Another advantage of a case study is that it allows you to properly delineate a research project when you are unable to conduct large-scale research due to a lack of time or resources. You can conduct one case study in which you go into detail about a topic, or you can conduct multiple case studies to compare or highlight different aspects of your research problem. The latter has been applied in this thesis, namely the comparison of several Science Parks.

Case study research is considered a form of qualitative research because of its small sample size and dominance of qualitative research techniques, such as in-depth interviews and document analysis. The case study focuses on a broad question, leaving the research open to possible new insights.

The research on the decision factors for settling on a Dutch science park concerns a multiple case study, in which three cases (Science Parks) were selected. A case study lends itself to examining "how and why" questions (Yin, 1989). A multiple case study was chosen because the research question is aimed at finding explanations for whether or not people settle in a Dutch science park.

An important principle of the case study is to investigate "multiple realities"; the different and sometimes even opposing views of those involved (Swanborn, 1996). Multiple case studies hardly lend themselves to statistical generalization, but primarily to theoretical generalization (Hutjes & van Buuren, 1992; Rosenthal & 't Hart, 1994). This involves generalizing certain results from the case studies to a more generally applicable theory or providing empirical material that supports such a theory. Swanborg steeps from generalizing to a broader domain. Hutjes and Van Buuren (1992) emphasize that a case or several cases cannot be separated from their context. Generalizing to a broader domain means that, given all kinds of background and contextual characteristics that the cases have in common, generalization can be made to a domain of cases that are similar to those characteristics (Swanborn, 1996). When two or more cases are selected the generalizability is enhanced.

4.1.1 Process multiple case study method

The research describes what the chosen aspects are who played a decisive role in the decision to locate a Dutch science park. For this purpose, a multiple case study is used. A multiple case study deals with multiple cases. This provides the opportunity to compare collating cases. Using this method, possible similarities are analyzed between similar science parks. The evidence is stronger than in a single case study. We call this logic for selecting cases the "replication logic. It is therefore dependent on the purpose and question of the study.

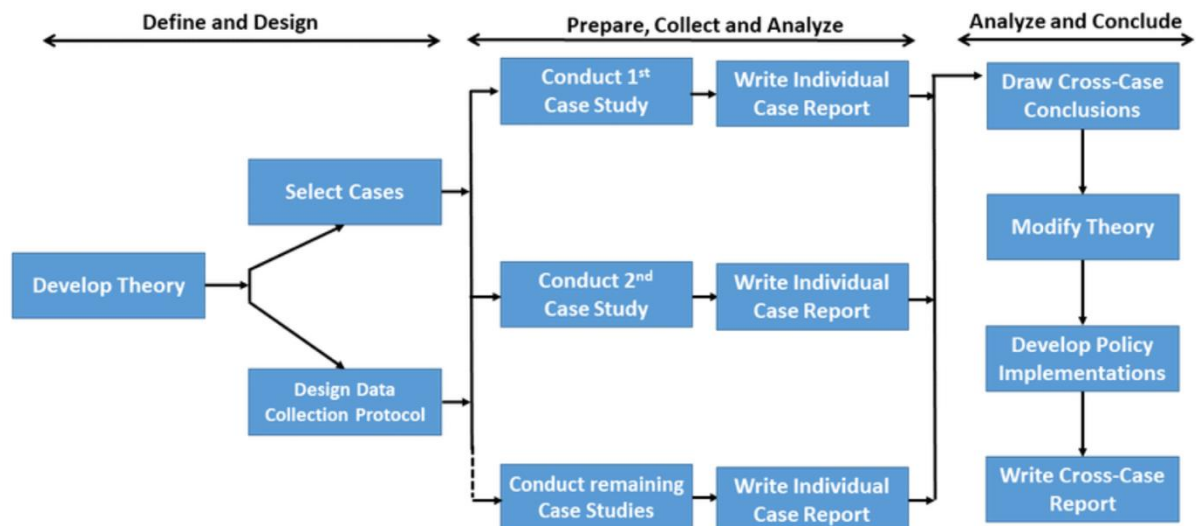


Figure 4 Process multiple case study method (Yin, 2013).

Phase 1 Define & Design includes the preliminary process and was drafted during the proposal phase. Phase 2 Prepare, Collect & Analyze includes the data collection phase, Chapters 5 and 6. The final phase Analyze & Conclude includes chapters 7 and 8.

4.2 Case Selection

Much has been written about the selection of cases within multiple case studies in the literature. Gerring & McDermott (2007) argues that cases are best selected based on statistical calculations and nuances a few years later stating that pragmatic considerations can also guide the selection process (Gerring & McDermott, 2008). Examples include time and money available for expertise and accessibility of cases. Geddes (2003) states that when selecting cases it is important that the total bandwidth of possible outcomes in relationships is represented within the research object. Within this study, cases were not selected based on statistical data but in such a way that there is as much diversity as possible concerning several concepts. Below is a description of how the case selection was made. The criteria used for this, among others, are the size of the science park, with/without university, and industry-specific.

The following science parks (cases) were chosen for this analysis TU Delft science park, High Tech Campus Eindhoven, and Business Park Twente. To make a comparison between the different science parks, it was chosen to interview individuals from a similar organization. Furthermore, two science parks were chosen because more than two, given the time constraint, is not possible and two to be able to analyze differences and similarities. Next, it is determined who from the organization will be interviewed, landlord, tenant, and/or support person, those who are suitable to answer the questions.

The focus group for this study is on companies that have chosen to locate in a science park. In doing so, the research focuses on what factors played a role in this decision. As previously mentioned, respondents are recruited using snowball sampling. Respondents will be various companies located in different science parks and investment companies. Furthermore, the respondent will have to have been decision-makers at the time on the question of whether or not to locate in a Dutch science park.

When the researcher is free to choose one or a few cases from a larger universe, the question remains on which criteria cases are selected. The importance of this choice is underlined by Yin (1993) who notes for a particular case that 20 percent of the research budget went into the careful preparation of the selection of cases. The cases for this thesis were selected as follows.

First, three science parks were selected; these comprise the various cases. Given that the study should say something about the whole of the Netherlands, the parks were selected based on their spread. Furthermore, the fact that recruiting respondents can be difficult and that it runs smoother when you

have an entrance, in the sense of a network, has been taken into account. Taking into account the geographical spread and Snelder Zijlstra's network database, the following science parks emerged: Science Centre Delft, High Tech Campus Eindhoven, and Business Park Twente. However, a limitation in this is that the east, south, and west are covered, unlike the north. The information below, shown in the table, was obtained from the various science park websites. The aspects in the first column come from the literature review and from Figure 3 schematic of the research.

	High Tech Campus Eindhoven	Science Centre Delft	Science Park Twente
University	Yes	Yes	Yes
Shared facilities	Yes	Yes	Yes
Nearby highway	Yes	Yes	No
Park management	Yes	Yes	No
Multinational	Philips	No	Demcon
Theme	Health & Vitality	Health & Care	No
Park size	235 companies	200 companies	400 companies

Figure 5 Science park characteristics overview (Adriaansens et al., 2012; TU Delft, 2010).

To determine the cases various aspects were considered, including size, location, presence of a multinational, and presence of a theme. A conscious choice was made to select cases that differ from each other but also have certain similarities (Rosenbaum, 2004). Since the research focuses on the Netherlands as a whole, a conscious choice was made for a certain spread in the cases. Geographically, this research covers the East of the Netherlands using the science park Twente, the South with High Tech Campus Eindhoven, and the West with Science Centre Delft. Only the north is not covered, this is a limitation. Given the time and availability of respondents, it was not possible to cover the North.

Furthermore, the accessibility was considered, High Tech Campus and Science Centre Delft are located near the highway and on the edge of the Randstad, this does not apply to Knowledge Park Twente. Another interesting difference is that the real estate at both High-Tech Campus Eindhoven and Science Centre Delft is owned by one owner, unlike at science park Twente. These cases make it interesting to investigate whether the differences lead to different outcomes, or not.

4.3 Data Collection Techniques

Data was collected using in-depth interviews. An in-depth interview is an interview with one participant that focuses on the experience of the individual being interviewed (Verhoeven, 2010). In-depth interviews are used to gain insight into the interviewees' underlying thoughts on the decision to locate, or not to locate, a science park.

The interviews are semi-structured, meaning that the interviews are conducted using a checklist of issues, also known as a "topic list." This checklist can be found in the appendices. Based on the checklist, a questionnaire was prepared. This method ensures sufficient depth. In this way, data is collected. The data reveals what companies' considerations are for deciding whether or not to locate in a science park. Various findings from the literature review will comprise the issues in the checklist. Semi-structured interviewing is especially useful when researching issues where it may be important to hear voices and experiences that researchers believe "have been ignored, misrepresented, or suppressed in the past" (Byrne, 2012).

The interview is made familiar with the questionnaire in advance. In this way, he/she could prepare for the interview and gave more information about the different topics because they had given more time to think about it. The interviews are recorded. Recording allows the researcher to focus on her or his interaction with the interview participant rather than being distracted by trying to take notes (Blackstone, 2012).

These interviews were governed by an interview guide, which serves as a framework for the interview. This can be referred to feed the discussion with the respondent and in this way steer it in the direction

desired and defined by the project. This type of interview is the most common type used in qualitative research, as it combines rigor in the themes and topics covered and flexibility in the exchange. For example, it provides the opportunity to elaborate on certain points raised during the interview with the respondent. The goal is to gather opinions and comments that may not have been detected in the preparation phases and that will have a clear impact on the continuation of the project (Verhoeven, 2010).

The interview questions are based on the main and sub-questions of the thesis. The topics come from the literature review and Figure 1 operationalization. Furthermore, the option "other" had been added to each sub-question so that the respondent could bring up other possible factors that have played a role in the decisions to settle/not settle on a Dutch science park, and possible new insights arise.

To recruit respondents, "snowball sampling" is used. Snowball sampling refers to a non-probability sampling technique in which a researcher begins with a small population of known individuals and expands the sample by asking those initial participants to identify others who should participate in the study. In other words, the sample starts small but "snowballs" into a larger sample throughout the study (Smaling, 2004). As a starting point, Dynamis provided a number of individuals to approach for an interview.

Observations were also made at the different parks. The advantage of observation is that as a researcher you observe it directly, so phenomena or events are not colored by the way this is communicated in interviews (Verschuren & Doorewaard, 2015). In this study, participatory observation is used. Participatory observation is mainly used in qualitative research. This method can be used to obtain detailed information about a particular culture, group of people, or the behavior individuals want to obtain (Baarda, 2009). In this research, the observation focuses particularly on the atmosphere, culture, and appearance of the different science parks. The information obtained from the observations says little about the research content.

Documents consulted from the websites of the various science parks will also be analyzed. Science park's websites are consulted for factual stories such as the number of companies in the science park, whether a university is located, and whether an ecosystem is present. Consulting different sources for data collection is called triangulation (Verschuren & Doorewaard, 2015). This will provide a more detailed and complete understanding of the decision factors.

4.4 Data-analysis

In this study, thematic coding was used. Prior to the interview, a questionnaire was prepared with different themes/topics. This provides the researcher with a constant comparison technique with thematic categories and codes. The essence of thematic analysis is constantly comparing pieces of data to determine if it belongs to a particular theme, to identify common characteristic of themes (Tuckett, 2005). The transcribed interviews were coded into themes.

The following techniques were used to analyze the data. First, all interviews were coded, this is represented in a "code tree". Coding is a way of indexing or categorizing the text in order to establish a framework of thematic ideas about it (Gibbs, 2007). This code tree corresponds to the operationalization. Appendix F provides an overview/comparison of the data obtained from the literature review and the data obtained from the field study. All written in red include terms that came out of the literature review but were not named during the interview process. A table was also used for the comparison between the different cases. This can be found in Chapter 9, Figure 9.

CH 5. Discussion

This chapter describes the discussion of the validity, reliability, and limitations of the research.

5.1 Validity

In qualitative research, the term validity is commonly used. Also in qualitative research, even more than in quantitative research, the person of the researcher plays an important role. In qualitative research, natural situations are preferred (Saunders, Lewis, & Thornhill, 2016). In this research, the preference is to look into the situation and observe itself. Because this often keeps you closer to reality than quantitative research, what is called the validity of research is greater in qualitative research. Internal validity is ensured by triangulation, which means using multiple data collection methods. Internal validity includes being able to draw the correct conclusions (Verhoeven, 2010). The collection and comparison of this data enhance data quality based on the principles of idea convergence and the confirmation of findings (Knafl & Breitmayer, 1989). Additional strategies used throughout this study to prove credibility include the use of reflection and the keeping of (field) notes and peer review of the data. The 3 chosen cases and the chosen organizations are representative of the companies located in science parks, and the people interviewed can answer the questions.

External validity means that the findings apply to areas other than the one within. This definition is pretty much in line with the goal of case study generalization, where the findings are assumed to be relevant to other related situations and settings. Thus, the two concepts are significantly linked. Verhoeven (2010) defines external validity as follows; “External validity includes whether conclusions from the study are generalizable to the population.” The results of this research can be used in the development of science parks, as developers can respond to what factors are important to the customer regarding location, parking, accessibility, image, rental and purchase price, ability to expand, and the facilities offered. It is not a given that the results apply to every park, but the idea and purpose of science parks are the same. External validity is a well-known concern in the case of a case study, it is also the case in this study.

Construct validity is the approximate truth of the conclusion that your operationalization accurately reflects the construct. One of the ways to ensure validity in this study is to make use of the operationalization, which you can find in figure 1, and which helps you keep an eye on the concepts you're studying. How this operationalization is structured aids in maintaining the link with the head question. Also, the interview questions are checked by a second party (Campbell & Fiske, 1959); (Cronback & Meehl, 1955). The interview questions are based on the conceptual model and operationalized concepts.

Face validity is the degree to which a test is subjectively perceived as covering the concept it is intended to measure. It refers to the transparency or relevance of a test as it appears to test participants. The questionnaire is submitted to several experts for verification. This determines whether each of the measurement items matches the conceptual domain of the concept (Holden, 2010).

5.2 Reliability

Reliability in this study refers to the extent to which measurement in the thesis is free of error, measures something consistently, and is therefore repeatable (Boeije & Bleijenbergh, 2019).

The reliability of the research will be monitored as much as possible. It is important that the conclusions are based on the correct results, for this reason, the results are checked by the involved respondents. All interview reports are sent to the respondent with a request for approval. The nonverbal behavior of the interviewer and the objectivity of the study will be as neutral as possible to avoid influencing this (Saunders et al., 2016). The interviews will be conducted in a confidential environment for the interviewee, an environment where anything can be said. The interviews are recorded and fully transcribed before connections and conclusions are drawn. The final results will be submitted again to the respondents for approval. Research activities are tracked in a logbook. In this log, the various choices, changes, learning moments, and circumstances are recorded. In this way, attempts are made to stay ahead of mistakes. The choice of respondents is also extremely important in ensuring reliability since it involves a small sample.

The sampling takes place as mentioned above among three science parks, namely High-Tech Campus Eindhoven, science park Delft and Twente. Indeed, research has shown that these are three of the largest science parks in the Netherlands. The purpose of science parks is mostly the same, namely the convergence of education, research, and business, that is why the focus is on only three parks. Triangulation is applied by using multiple sources. By applying triangulation, the reliability of the research results is ensured (Baarda, 2009; Verschuren & Doorewaard, 2015).

An important technique for ensuring reliability is a reliability audit where an independent auditor reviews the activities of the researcher, this is made possible by keeping a logbook. Using this log, an independent auditor can determine if the techniques meet the credibility and transferability standards (Saunders et al., 2016).

5.3 Limitations

It is quantitative research, this was deliberately chosen. Thus, there will be no qualitative research. One disadvantage of oral interviews is the fact that they are relatively time-consuming and therefore often costly. As a result, given the time limit, you can approach fewer people. Open qualitative interviews are also time-consuming, as all interviews have to be typed out and elaborated on verbatim. This is a typical example of “practical issues only”.

As previously mentioned, +/- 10 people will be interviewed, these include the organization's executives. To ensure reliability, the choice was made to interview similar organizations from three science parks. A potential limitation of conducting interviews among three science parks is that the external reliability of the results is under pressure. As one studies fewer cases, it is more difficult to declare the findings applicable to the whole.

Given the shortage of time and resources, it is necessary to frame the research. This means that not all stakeholders will be included in the study, e.g. the municipality and province, etc. have been left out. Also, the research focuses on the Netherlands, so other countries will also be left out of consideration. Because the case study is limited to 3 cases, it is difficult to make statements about the whole of the Netherlands.

The study focuses on the needs and requirements of the end-user of the science park, and thus not on park management. The conceptual model consists of two main elements, namely the real estate of science parks and the facilities (offered) at the science park.

The companies that will be interviewed include companies that are already located in the science park, so the decision was made a while ago, this makes you as a researcher not get much insight into the decision-making process.

Finally, the study focuses on only one branch of industry to make a realistic comparison. This does mean that other organizations are not included and different conclusions may be drawn than if different organizations were surveyed.

CH 6. High-Tech Campus Eindhoven

This chapter presents the results from the various interviews. All data was obtained from field research. A total of 9 in depth interviews were successfully conducted, among including a number of investors and companies. One of the three cases is High-Tech campus Eindhoven. This chapter describes the results related to the case Eindhoven. For this purpose, four interviews were conducted.

6.1 Introduction

High-Tech Campus Eindhoven, formerly Philips High Tech Campus, is a technology-focused business campus on the outskirts of Eindhoven and Waalre, along the A2 motorway. It is located on the site of the NatLab. Originally set up by Philips in 1998, it has since been home to a multitude of companies, resulting in a cluster of technical-scientific research, development, and process and production technology. In 2012, the site was acquired from Philips by a group of investors led by Marcel Boekhoorn. In 2021 Boekhoorn sold it on again to the American investment company Oaktree Capital Management. The site includes several restaurants, sports facilities, stores, a supermarket, and a barber store. Most central facilities are located in The Strip, an elongated building.

High-Tech Campus Eindhoven is a hub of technological development with more than 235 companies and technical institutes conducting joint research. The research is divided into five clusters:

- Nano- and Microsystems
- Life Tech
- Infotainment
- Embedded Software
- High-Tech Systems



Figure 6 High-Tech Campus Eindhoven (Adriaansens et al., 2012)

6.2 Settlement Criteria

All respondents were asked what role the various factors played in the decision to locate a science park. The following factors were cited; location, parking, accessibility, image, rental and purchase price, and the possibility of expansion. These included the factors related to the real estate topic. These factors come from the operationalization of this study. The mentioned factors only relate to the science park the respondents are connected to, in this chapter High-Tech Campus Eindhoven.

It is striking that the factor location is the most important factor in the decision to locate a science park. The factors mentioned here include the presence of the main knowledge carrier, e.g. a university, and thus the presence of knowledge and talent. Also, the presence of a theme/focus, and especially the term

"ecosystem" is often mentioned. This term was described as follows by a respondent; "A cluster of companies and with that for example knowledge institutions there and suppliers and all those students and so on that together form an ecosystem, that is a kind of network" (Tenant, 2022). Furthermore, the size of the science park was seen as an important factor as well as name recognition. This name recognition, according to several respondents, is determined by companies present, by large parties with a strong name such as Phillips.

Concerning the parking factor, the following factors were cited. Several respondents mentioned that parking at the park is a problem. A solution to this was immediately suggested, namely a mobility hub. A mobility hub is a location where more mobilities come together. "You can park your car and switch to a city or an electric bike to complete to your destination" (Tenant, 2022). It was also indicated that the parking standard, in terms of % parking spaces to staff, is not proportional. Proximity to public transportation was also seen as an important aspect. This is the case with High Tech Campus Eindhoven.

The accessibility of the science park, as well as its location, is characterized as an important aspect. "High Tech Campus Eindhoven is seen as easy to reach, one respondent said that it was located near an N-road and even had a bus lane" (Tenant, 2022). When a science park is easily accessible this enhances its attractiveness. The park should not only be easily accessible by car, but also by bicycle and public transportation. One respondent encompassed this in the term; "multimodality" (Tenant, 2022).

The image of the science park is mostly determined by the companies present, especially the big names. As previously mentioned, these large parties also make the location more attractive. The name recognition of the science park is also determined by the companies present. If you look at the companies themselves rather than at the science park as a whole, the image of the companies is determined by the environment in which they are located and the premises, thinking of a modern and sustainable appearance.

The rental-purchase price factor was very important to some respondents in deciding to locate in a science park and less so to others. The importance of this factor is determined by the respondents' wealth, start-ups generally have less to spend and others have more to spend. Respondents indicate that there are possibilities in this, the formation of contracts is reasonably flexible, for example, the duration. Respondents are willing to pay more for a place in the science park.

Concerning the factor of the possibility of expansion, one respondent quoted the following; "On a science park you often have long leases, the land remains the universities but the university may therefore also determine what happens on that land." The possibility of expansion does not appear to be as simple as once thought. Respondents look for the possibility of expansion mainly in the flexibility of a building and spaces rather than in a new lot. Thus, they see more opportunity in expanding square footage.

To find out whether certain facilities are facilitated at the science park and what they consist of, the respondents were asked whether they experience a particular range of (shared) facilities and what they consist of, and whether this played a role in their decision to locate in a science park. Respondents indicated that High Tech Campus Eindhoven has a shared restaurant, reception area, meeting rooms, gym, and sanitary facilities. They also experience "community building" at the park, a term used for networking, which creates a "buzz" at the park and stimulates knowledge sharing. This is done by organizing events such as get-togethers and lectures. Respondents indicate, however, that there is still much to be gained, as the frequency of these events is very low.

Concerning the facilities offered, respondents indicated that this was not a reason to locate there. However, they do indicate that this is a nice side effect and they value it more afterward than beforehand. In short, this factor did not play a role in the decision to locate the science park.

6.3 Discussion

High-Tech campus Eindhoven appears to be a science park as the literature describes a science park should be. It has a manifest knowledge carrier in the form of a university and a big name, namely Philips, which benefits the name recognition and image of the park. These are two very important factors that played into the respondents' decision to locate in the park. Respondents indicated that the factor "location" was the most important factor in the decision to locate the science park. Parking seems to be quite a problem at High-Tech Campus Eindhoven, several respondents indicated. There is no clear reason for this, perhaps it is a conscious choice of the park management. It is striking that the facilities offered at the science park did not play a role in the decision to locate in the park. Apparently, the location, near the freeway and public transport, and the presence of knowledge and talent are the factors that make a company want to locate there.

CH 7. Science Centre Delft

This chapter presents the results from the various interviews. All data was obtained from field research. A total of 9 in depth interviews were successfully conducted, among including a number of investors and companies. One of the three cases is Science Centre Delft. This chapter describes the results related to the case Delft. For this purpose, three interviews were conducted.

7.1 Introduction

The TU Delft Campus ecosystem is powered by a world-leading technical university, many different field labs, and more than 200 startups spread across several hubs. TU Delft Campus is the breeding ground for radical innovations in robotics, AI, quantum, medtech, and the energy transition.



Figure 7 Science Centre Delft (TU Delft, 2010)

7.2 Settlement Criteria

As in the previous chapter, all respondents were asked what role the various factors played in the decision to locate a science park. The following factors were cited; location, parking, accessibility, image, rental and purchase price, and the possibility of expansion. These included the factors related to the real estate topic. These factors come from the operationalization of this study. The mentioned factors only relate to the science park the respondents are connected to, in this chapter Science Centre Delft.

Respondents interviewed regarding Science Centre Delft indicated that location is one of the most important factors in the decision to locate a science park. They mainly looked at the environment, whether it is inspiring, and the appearance and visibility of the park. They look for the connection with science and therefore with the students and professors. In short, the presence of a university is desired. They also indicate that the companies present also determine the attractiveness of the park. However, the respondents indicated that they lacked a connection with the city of Delft itself. They indicate that the projects they are working on could also be interesting for the city itself, but that they do not make use of them.

Interestingly, one respondent indicated that he did not consider parking a decisive factor, quoting; "Parking here was also not a reason to say we're not going to move here, because it's not as well organized here" (Tenant, 2022). On the other hand, several respondents indicated that they did consider this an important factor and that they included this factor in their decision to move to a science park.

Accessibility is also seen as an important factor among respondents to Science Centre Delft. A striking and interesting statement from a respondent reads as follows; "I think the science park is easy to reach, but only by car, the park is located near the highway. The A12 and A4 motorways are behind it, so it is

easy to welcome customers. What I do find is that science parks in general are large and stretched-out areas. Here in Delft, there is a bus connection from the station to the end of the park. But there is nothing in between, the accessibility could be much better in my opinion” (Tenant, 2022). The science park is located on the outskirts of the city, so staff and customers do not have to travel across town. Science Centre Delft is also easily accessible by bicycle. Sustainability is an increasingly important aspect of society, also in terms of means of transport. Respondents have noticed that more and more employees and clients are arriving on-site by bicycle. One of the respondents also indicated that ASR is in the process of developing a mobility hub, which should further improve accessibility to and from the park.

Respondents indicated that image is partly determined by the companies present, but here the image of the science park is considered and not so much that of the company itself. The name recognition of the park is also increased by the companies present, often larger noteworthy parties. When you ask respondents what influences the image of the company they work for or own, they talk about the year of construction and the architecture of the building they are in. This creates a certain aura and thus the image of the company. One of the respondents, on the other hand, indicates that the architecture of the building does not influence the image but the knowledge and talent present.

Respondents' answers indicate that they pay a higher price than in a traditional business park, for example, they say that they pay an extra price for that place. However, they are also willing to do so since they enjoy certain facilities and services. Concerning the formation of contracts, a lot is possible here. For example, the termination area is negotiable. A striking thing about Science Centre Delft is that research among the respondents shows that starters get a discount. The following was mentioned by a respondent regarding starters discount. “Once when we started at Bouwcampus we got a discount rate because we were new and starters. For forty square meters, we paid something like a thousand euros a month. Now we also get a discount because we are a scale-up. Science parks or at least TU Delft look at start-ups as they need start-up costs. They do think along with them. We are now in an open spot, which entails an additional cost, but in return, you get a lot. What you get in return is more important than the price” (Tenant, 2022).

The respondents from Science Centre Delft also indicated that the possibility of expansion is not a given. Most respondents indicate that they want to grow in the science park and therefore may want to expand there in the future. One option, mentioned by a respondent, is to indicate to the park management that there is a desire to expand, and when there is space, they will be informed of this.

To find out whether certain facilities are facilitated at the science park and what they consist of, the respondents were asked whether they experience a particular range of (shared) facilities and what they consist of, and whether this played a role in their decision to locate in a science park. Respondents from Science Center Delft indicate that they can enjoy a variety of facilities. For example, they certainly experience knowledge sharing among the different companies and can use shared spaces such as meeting rooms and restaurants. Furthermore, there is collaboration and networking at the science park, which happens in the form of drinks parties, among other things. Science Centre Delft also has a community manager and a service point, where complaints can be lodged and a concierge will deal with them. There is also central security in the park. For all this, the customer pays a premium but as said they are certainly willing to do so. The facilities offered were not factored into the decision to locate/not locate at the science park. However, the respondents do enjoy these facilities now.

7.3 Discussion

The choice for Science Centre Delft is mainly determined by its inspiring environment, the presence of knowledge and talent, and thus the contact with students and professors. A shortcoming according to the respondents is the connection between the science park and the city of Delft itself. That connection is not or hardly there. This is a missed opportunity according to the respondents, as a large number of projects are not only interesting for the science park itself but also the city of Delft. Possibly this connection is not there because science parks are seen as a "little town" in themselves, separated from the rest. This is an assumption of the respondents. To this end, the accessibility to Science Centre Delft is relatively impractical, whereas to the park it is excellent. This in turn suggests that Science Centre

Delft is a sight in itself and the city of Delft has little or no influence on it. Whether this is a wish of Science Centre Delft or the city of Delft is unknown.

CH 8. Science Park Twente

This chapter presents the results from the various interviews. All data was obtained from field research. A total of 9 in depth interviews were successfully conducted, among including a number of investors and companies. One of the three cases is Science Park Twente. This chapter describes the results related to the case Twente. For this purpose, four interviews were conducted.

8.1 Introduction

Science Park Twente is one of the eight major innovation campuses in the Netherlands. The University of Twente with its leading research institutes, its open innovation centers, and hundreds of high-tech companies: together they form a unique, international world player in attracting business activity and top talent. A position that is even stronger due to the presence of training institutes Saxion and ROC van Twente, the other top locations Hightech Systems Park, Technology Base and innovation accelerator Novel-T.



Figure 8 Science Park Twente (Karnebeek, 2001)

8.2 Settlement Criteria

As in the previous chapter, all respondents were asked what role the various factors played in the decision to locate a science park. The following factors were cited; location, parking, accessibility, image, rental and purchase price, and the possibility of expansion. These included the factors related to the real estate topic. These factors come from the operationalization of this study. The mentioned factors only relate to the science park the respondents are connected to, in this chapter Science Park Twente.

The respondents concerning Science Park Twente indicate that the location factor is the most important in the decision to locate the science park. They attach the most value to a professional, businesslike, and representative location. One of the respondents indicates that the presence of a university is the most important aspect, and thus also the presence of knowledge and talent (Tenant, 2022). A large number of them also indicate that they have settled in the science park because of the connection with the city of Enschede. The companies, universities, and a certain theme create an ecosystem, this ecosystem attracts companies that can/will contribute to it and ensures that the ecosystem continues to exist.

Remarkably, concerning the parking factor, all respondents indicated that they considered it very important. For example, respondents indicated that there should be a minimum number and the possibility of expanding these numbers. The solution of creating mobility hubs is also mentioned.

The accessibility of Science Park Twente is good according to the respondents, both by car and by train and bus. The degree of obstruction in the traffic flow is also low. This is mainly because Science Park Twente is located on the outskirts of the city and thus staff and customers do not have to enter the center of Enschede. Enschede is also fairly centrally located in the Twente region as mentioned by a respondent. However, a disadvantage of Science Park Twente is that it is not near a highway. However, it is still easily accessible via N-roads. There is also increasing use of shared scooters, in Enschede the Go-scooters. However, a disadvantage is that this is well organized in the center but not on the outskirts of town.

Respondents regarding Science Park Twente include an image of the appearance of the building and reception. The name recognition of an area/street also determines the image of a company. As well as parties present, the bigger names such as Demcon which was mentioned several times by respondents.

An interesting aspect regarding the factor of rental and purchase price is that one of the respondents indicated that they consider the price to be market comfort and, on the other hand, the remaining respondents claimed that they would have to pay an additional price anyway. This additional price comes about through certain service costs. Furthermore, it was again cited that the contract formation is reasonably flexible, for example, the duration of the contract. For example, one respondent mentioned that scale-ups carry more risks and therefore often enter into contracts for a shorter duration than companies that have existed for longer and have built up greater assets.

As previously mentioned, several individuals were approached to conduct the interview. Concerning the facilities provided at the science park, a contrast can be seen. Several respondents indicated that they did not experience any facilities offered, while another respondent indicated that they did. The respondent who did experience this described that the company can and does use a shared sports facility and lab space. He also mentioned that networking drinks are organized regularly and that there is an entrepreneurs' association.

As mentioned above, 3 out of 4 respondents indicated that they did not experience any facilities offered at Knowledge Park Twente. This seems to be the biggest shortcoming at Knowledge Park Twente, since, according to the literature, this is one of the most important characteristics of a science park. On the other hand, one respondent indicated that he did make use of the facilities offered. There is likely a range of facilities, but they may not be known by everyone.

8.3 Discussion

Location seems to be the most important factor in the decision to locate the knowledge park among the respondents. This is not so much because of the appearance of the environment, but the connection with the city of Enschede. The presence of talent and knowledge was indeed a factor in the decision to locate in the knowledge park and not somewhere in a traditional business park. Remarkably, respondents concerning the Twente Knowledge Park consider parking facilities important. This may be because the Twente Knowledge Park is not located near a freeway. It is also likely that it has to do with the fact that the respondents' customers and staff mostly travel by car. Kennispark Twente is located on the outskirts of the city of Enschede, which means that customers and staff can usually avoid the center of Enschede and therefore the degree of obstruction in the flow of traffic is low. A striking outcome from the data collection process is that one respondent indicated that the rent is market comfort and the other respondents indicated that they do pay an additional price. This could not be explained.

CH 9. Science Park Comparison

This chapter describes the differences and similarities between High-Tech Campus Eindhoven, Science Centre Delft and Science Park Twente.

9.1 Introduction

Figure 9 shows an overview, of all 3 cases, of what was named by the respondents as falling under the various factors and what played into the decision to locate in the science park. The various factors are listed in the first column, as these result from the operationalization. The 3 different cases and therefore Science Parks are shown in the top row. To clearly show the differences and similarities, different colors have been used. The blue shaded areas are aspects that apply to all three cases. The red shaded aspects are those mentioned in both the first case (High-Tech Campus Eindhoven) and the third case (Science Park Twente). The purple shaded area aspects that were mentioned in both the second case (Science Centre Delft) and the third case (Science Park Twente). The other aspects are shaded black, these are only mentioned in one case and have not been mentioned in other cases.

	Eindhoven	Delft	Twente
Real Estate			
<i>Location</i>	Knowledge carrier Knowledge & talent Ecosystem Clustering benefit Companies present Theme/focus Brand awareness Size Sustainable	Knowledge carrier Knowledge & talent Ecosystem Clustering benefit Appearance & environment Green surroundings Visible Inspiring environment Close to students and science	Knowledge carrier Knowledge & talent Ecosystem Companies present Theme/focus Brand awareness Size Professional Representative
<i>Parking</i>	Parkingnorm % Parking places	Parkingnorm % Parking places Capacity	Number of places Costs Possibility of expansion Capacity
<i>Reachability</i>	Public transport Multimodality Near highway Near N-ways Mobility hub	Public transport Multimodality Near highway Bicycle	Public transport Go-scooters Car Central region Traffic flow Train station
<i>Image</i>	Companies present Modern/sustainable building Surrounding Legitimate	Companies present Modern/sustainable building Name recognition Appearance Surrounding	Companies present Name recognition Appearance
Financial			
<i>Length of Tenancy</i>	Flexible contracts	Flexible contracts	Flexible contracts
<i>Pricing</i>	Extra charge Service costs	Extra charge	Extra charge Market comfort
Facilities			
<i>Research & Development</i>	Lectures		
<i>Support Facilities</i>	Networks Knowledge sharing Tech drinks Community building Ecosystem Events	Networks Knowledge sharing Tech drinks Business Association	Networks Knowledge sharing Community building Ecosystem Events Consultation
<i>Shared Facilities</i>	Restaurant Meeting rooms Gym	Restaurant Meeting rooms Gym	Restaurant Meeting rooms Charging Stations

	Sanitair 5G Hubs Services	Sanitair Laboratory	
<i>Flexibility</i>	Possibility of expansion More m2 Flexible spaces	Possibility of expansion More m2	Possibility of expansion Downsizing
<i>Pricing</i>	Extra charge	Extra charge	Extra charge

Figure 9 Overview comparison Science Parks

9.2 Settlement Criteria

Looking at the overview one notices that relatively much is shaded blue, which therefore means that there is a lot of cross-over between the outcomes of respondents from the different science parks. In terms of location, the presence of a manifest knowledge carrier and thus the presence of knowledge and talent is important to all respondents. The presence of an ecosystem is also highly valued. Furthermore, there are significant similarities in the outcomes between High-Tech Campus Eindhoven and Science Park Twente in terms of the location factor. Both indicate that the companies present, such as Philips in Eindhoven and Demcon in Enschede, increase the attractiveness of the location and thus the park. These parties also indicate that they consider the size of the park important, as well as the theme/focus present. While respondents from Science Centre Delft indicate that they are more interested in the green inspiring environment and the visibility of the park.

Concerning the parking factor, there are fewer similarities. Striking among these outcomes is that respondents from High-Tech Campus Eindhoven and Science Centre Delft describe this entirely as an important factor in contrast to respondents from Science Park Twente. For example, respondents from Science Park Twente indicate that they would like to see the possibility of expanding parking spaces. A possible explanation could be that since Eindhoven and Delft are larger cities they travel more by public transport and bicycle. However, according to respondents the parking facilities at all the science parks surveyed are below standard. This may be a conscious choice of the park management or the municipalities, but this has not been confirmed by these parties.

The accessibility of all the science parks studied is excellent. Both High-Tech Campus Eindhoven and Science Centre Delft are located near the highway. This does not apply to Science Park Twente. Also, all researched science parks are easily accessible by public transport, which was an important factor for many respondents. What is striking is that very few respondents mentioned accessibility by bicycle. This suggests that when talking about accessibility, respondents think about accessibility by car and public transport and not by bicycle, walking, or the modern go-scooter. Possibly this is because all the studied science parks are located on the outskirts of the city and not in the city itself.

The Image of the park is determined according to the respondents of High-Tech Campus Eindhoven and Science Centre Delft by the appearance of the building they are in, a sustainable and modern building. While the respondents concerning Knowledge Park Twente indicate that the name recognition of the site and the appearance determine the image, the respondents from Science Centre Delft also share this opinion. High-Tech Campus Eindhoven owes its good image largely to Philips, Demcon achieves the same for Science Park Twente. Research shows that big names benefit the park's name recognition and thus its image. These companies are seen as attractions for science parks.

Regarding the next two factors, (length) of tenancy and the rental & selling price, there are not many differences. All parties indicate that the flexibility of the contract is important. Research has also shown that there is a lot of possibility in this, in short, the requested flexibility is there. The demand for a flexible contract arises from the fact that many start-ups establish themselves at a science park and are not (yet) certain of their success and therefore their existence. They also often have little start-up capital. The analysis showed that science parks are certainly responding to this; for example, several respondents indicated that they had the option of concluding a contract for 3 years instead of 5. Notably respondents from Science Centre Delft were able to benefit from a starter discount. No explanation was given for this. The majority of respondents indicated that they would pay a premium for a spot in the science park,

this can be explained as follows. Science Parks offer certain facilities, as described in the literature, in the form of, for example, a shared restaurant, meeting rooms, and labs. For this, tenants pay an additional price. The facilities offered at the studied science parks are discussed in the next section.

From the literature one can conclude that one of the most important characteristics of a science park is the facilities offered, thinking of workspaces, support, park management, knowledge sharing, events, etc. (see figure 2 overview of facilities). During the analysis, several striking observations were made in this regard. The analysis showed that none of the respondents considered the facilities offered to be an important factor in their decision to locate in the science park. They did, however, attach value to them retrospectively. Respondents from High-Tech Campus Eindhoven and Science Centre Delft consistently respond that they experience a supply of facilities, in the sense of shared sports facilities, sanitary facilities, and events. High-Tech Campus Eindhoven appears to be the forerunner in this respect. Science Park Twente is strikingly behind in this respect, with all but one respondent indicating that they did not experience any facilities on offer. Figure 5 shows the characteristics of the various parks. One possible explanation is that Science Park Twente does not have park management. Thus, there seems to be no central organization that provides these facilities and thus makes them known. Since one respondent does experience facilities at Science Park Twente, these will be present but not known to all organizations.

9.3 Discussion

It is striking that despite the differences in science parks, there are many similarities in the outcomes of the data collection process. For example, with respect to the different science parks, several respondents indicated that the number of parking spaces in relation to the companies was not in line. No explanation could be found for this. Companies seem to find this more important than possibly thought by park management. What is also striking is that companies established at Science Park Twente did not consciously choose the science park, at least for two respondents. Like most companies, they opted for the city, but not consciously for the science park. These are the companies located on the other side of Hengelo Street and not near the university. These also include the companies that do not experience the facilities offered by the science park.

The most striking thing from the study is the following. What science parks are especially known for, and thus should be attractive, are the facilities offered. All respondents indicated that they did not choose the science park because of the facilities offered. They did indicate that they considered the presence of a knowledge carrier and thus knowledge and talent important. This may be because they were not familiar with the facilities offered beforehand, but only experienced them later when they were located there.

CH 10. Conclusions

This chapter answers the main question "What factors played a decisive role in the decision to locate at a Dutch science park?" The conclusion(s) are based on the results from the sub questions.

10.1 Introduction

The success, and therefore also the failure, of a science park, depends on the extent to which the infill corresponds to the formulated vision of the stakeholders involved. If renting outbuildings or selling land is a criterion on which success depends, a site can be successful. However, this is no guarantee for knowledge valorization, innovation, or the creation of cluster value for established companies.

Through this research, it is possible to indicate what is important in the development and operation of a science park. From different perspectives, the respondents have given their vision of a successful thematic knowledge park. From this information, a framework can be created within which a thematic knowledge park can be developed. This section first identifies the key success factors.

10.2 Sub Questions

What role did the "location" factor play in the decision to locate a science park?

Research has shown that the "location" factor is the most important in choosing to locate a science park. And especially in the proximity of a knowledge carrier and thus the presence of knowledge and talent. This is often described as the presence of a certain "ecosystem". This emerged from all three cases. A large number of companies deliberately chose a science park, but two decided to locate it in the city.

What role did the "parking" factor play in the decision to locate a science park?

The "parking" factor had little influence on the decision to choose to locate in a science park. This is mainly because the science parks are easily accessible by public transport. The parking factor has had very little influence on the choice of the Eindhoven and Delft cases. This is mainly because people in the big cities travel more by bike, scooter and public transport, unlike in the case of Twente. In the East of the country, everything is more spread out and people travel more by car.

What role did the "reachability" factor play in the decision to locate a science park?

The accessibility of the science park, as well as its location, is seen as an important factor. Whereby the location factor does rank above accessibility. What is considered important here is the accessibility by public transport and the proximity of a freeway. In the Twente case, the accessibility by car was considered especially important, because Science Park Twente is not located near a freeway.

What role did the "image" factor play in the decision to locate a science park?

The "image" factor was not seen as an important factor in the choice of the science park. The image of the science park is mainly determined by the companies present, in the case of Eindhoven Philips and the Twente case Demcon. These big names benefit the name recognition of the park and would thus make it more attractive to companies. Also, the appearance of the building in which companies are located is seen as part of the image of the company.

What role did the "(length) of tenancy" factor play in the decision to locate a science park?

As for the factor (length) of the lease this, like the factor of parking and image, was not seen as an important factor in the decision to locate the science park. Research has shown that these are drafted fairly flexibly, in terms of duration. This is also a requirement since many start-ups settle in a science park and do not (yet) have the security of existence for decades.

What role did the "pricing" factor play in the decision to locate a science park?

The "price" factor is certainly an important factor for companies, only the importance does not differ from when a company wants to locate in a science park or a traditional business park. Research among respondents has shown that companies pay more for a place in the science park than in a traditional business park. This is mostly because they can make use of various (shared) facilities. All three cases showed that companies are prepared to do this, so they are prepared to pay more for a space at a science park.

What role do the facilities offered by a Dutch science park play a role in the decision to locate in a science park?

As previously mentioned, one of the biggest features of science parks is the facilities offered in terms of knowledge sharing, etc. One would think that companies would locate in a science park for that reason, but in contrast, this factor plays little or no role in the decision to locate in a science park. In two of the three cases, Eindhoven and Delft, companies indicate that they are familiar with the facilities on offer and make use of them, but this was not the reason for setting up in the science park. Research shows that a large number of companies have little or no knowledge of what the options are in terms of facilities. There is certainly room for improvement here for science parks and this will therefore be included in the recommendations. Despite companies not choosing the science park for its (shared) facilities, they are willing to pay for these facilities afterward.

10.3 Central Research Question

What factors played a decisive role in the decision to locate a Dutch science park, and what are the differences/similarities between the different science parks considered in this research?

The most important factor in choosing to locate a science park is the location factor. What makes a science park attractive according to the companies is the presence of a manifest knowledge carrier, in the sense of a university, and thus the presence of knowledge and talent. After the location factor, the accessibility factor is seen as an important factor. For all three cases, accessibility is good. On the other hand, parking facilities appear to be less well organized at the science parks. Although this factor is not seen as important for the Eindhoven and Delft cases, it is for the Twente case. In the Tubantia newspaper of Tuesday 26 April 2022, it says that the municipality of Enschede wants to invest 20 million in a parking garage and adjustments to roads and public greenery in the park. The article also says that the knowledge park will soon get a mobility hub; a parking lot for shared bicycles, scooters, and cars. This mobility hub should put an end to the mess of vehicles parked here and there (Tubantia, 2022).

The other factors, image, and the financials are certainly seen as important factors, but the importance does not differ concerning a science park or a traditional business park. Though all respondents indicated that they would be willing to pay more for a place in the science park.

Finally, concerning the facilities offered in a science park, these have had surprisingly little influence on the choice to locate in the science park. Contrary to the literature in which the facilities offered are seen as one of the most important characteristics of a science park and therefore increase its attractiveness, this had little or no influence on the respondents, this applies to all three cases.

CH 11. Recommendations

Chapter 11 contains recommendations based on the results and conclusions of this research for Dutch science parks. Furthermore, this research contains recommendations for further research. The recommendations differentiate towards different stakeholders.

11.1 Further research

The case study revealed that no party chose the science park for the facilities (offered). While science parks are specifically known for this feature. A large number of parties indicated that they were not familiar with the (shared) facilities offered. An analysis could be conducted to find out why this is not known or not known well and what could be improved. This could possibly also indirectly result in (more) companies choosing science parks because of the (shared) facilities offered.

The next aspect that emerged from the field research is that there is no cooperation between science parks and the relevant municipality in which they are located. A possible cause could not be named. In this area, there are certainly opportunities for both parties because science parks produce interesting innovations which are also of interest to municipalities, and the municipality also plays a role in the development process of science parks. Here also research could be done into why there is no cooperation and how this could be stimulated.

This research focused on three cases, namely High-Tech campus Eindhoven, Science Centre Delft, and Science Park Twente. These three cases cover the south, west, and east of the Netherlands. This means that no research was done on science parks in the north of the Netherlands. This is a limitation brought about by the lack of resources and especially time. Since the outcomes of these three cases are reasonably in line, no "big" differences are expected with the northern part of the Netherlands, but research could be done on the northern part of the Netherlands as well.

Research also shows that the stimulation of knowledge exchange at a science park is not as intense as the literature describes. All respondents involved indicated this. It is unclear with whom the task lies in facilitating this. Possibly additional research could be done to this end and possibly advice could be given.

11.2 Park-Management

First, recommendations that can be made towards park management. From the findings, several concrete recommendations can be made. For one thing, cooperation between municipalities and science parks is recommended, this can be mediated by park management. Also, knowledge sharing through network events could be stimulated more. This initiative can also be taken by the park management,

The acquisition policy could also be improved; for instance, for a few potential customers, it is unclear what the advantages of a science park are, and what the (shared) facilities are. Research has shown that companies are prepared to pay more for a place in the science park. The companies already established in the science park indicate this.

Furthermore, when one looks at the lay-out of the science parks, it is striking that little attention is paid to cycling. It is also recommended to focus more on the wishes and requirements of the end-user.

In summary, this study analyzed several notable findings. There certainly appears to be a difference in what science parks offer with what end-users want. It is highly recommended to do more research into the wishes and demands of the end-user. In this way science parks can respond even more effectively and efficiently to the wishes and demands of the end-user.

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Appendix A Project progress form



Record the dates of consultations with the tutor, the action points resulting from the discussions, the tasks set for the next appointment and the date for the next appointment. Record telephone conversations (date etc.) and e-mail correspondence (attach copies of any requests and responses).

Ensure your tutor initials the “Task Set” section at the end of each session, and keep copies of any notes/correspondence.

Student: Marieke Stokkers

Tutor: Joris Verwijmeren

Date	Kind of communication	Action points, task set	Next meeting
22-12-2021	Teams meeting	Drafting of first chapters/paragraphs.	19-01-2022
19-01-2022	Teams meeting	Review main and sub-questions and create interview guide.	09-02-2022
09-02-2022	Teams meeting	Finishing interview guide and review format thesis.	16-03-2022
16-03-2022	Teams meeting	Adding Tables. Specifying coding. Elaborate operationalization textually. Starting with results.	11-04-2022
11-04-2022	Teams meeting	Prepare presentation, reduce chapter 1 to 3 to 2 chapters. Add extra paragraph to analyses. Comparison drafting cases.	10-05-2022
10-05-2022	Teams meeting	Presentation Thesis	19-05-2022
19-05-2022	Teams meeting	Checking Grammar, adapting Chapter 5 and elaborating recommendations.	09-06-2022
07-06-2022	Teams meeting	Final small details., making it ready for submission.	Unscheduled
15-06-2022 Submitting Thesis			

Signature student:

Signature tutor:

STUDENT AND TUTOR ARE EXPECTED TO HAVE PERSONAL CONTACT AT LEAST
FOUR TIMES DURING THE PROGRESS OF THE DISSERTATION.

Appendix B Invitation interview

Enschede,

Subject: Thesis research Science Parks

Dear Sir/Madam,



As part of my graduation research for the Master Facility & Real Estate Management, I am conducting a study into the success and failure factors of science parks. For this purpose, two science parks were selected, including science park, The main question of the study is what factors played a decisive role in the decision to locate in a Dutch science park.

The interview will last 30 minutes on average and can run up to one hour. The interview will include a small number of open-ended questions asked. An "open-ended question" means a question that you cannot answer with just "yes or no". Open-ended questions are asked to give interviewees the opportunity to indicate for themselves what they do or do not experience as added value at a science park.

The interviews are conducted by me, Marieke Stokkers. Participation in an interview is voluntary and can be conducted either in person or in an online environment. You will receive the questionnaire prior to the interview so that you can prepare a little for the interview, this is not a requirement.

At the time of the interview, I will ask you if I may record the conversation with a recorder to write it out later on paper. For this I will ask your permission. The interviews will be anonymized afterwards. You will receive a summary of the interview a few weeks later asking if you agree with the content.

My heartfelt thanks in advance.

Kind regards,



Marieke Stokkers

Appendix: Questionnaire science parks & model consent form.

Appendix C Interview Guide

BEDRIJFSGEGEVENS

Naam bedrijf:

Naam contactpersoon en emailadres:

Hoofdactiviteit van het bedrijf:

In welk jaar is het bedrijf opgericht (deze vestiging):

Sinds welk jaar is het bedrijf gevestigd op het Science Park:

Inleiding

- Voorstellen
- Achtergrond/Opleiding

Aanleiding & doel

- Voorstellen
- Doel Onderzoek
- Doel interview

Technische zaken

- Notities & verslaglegging
Toestemmingsformulier
- Anonimiteit
- Duur interview
- Opbouw interview

INTERVIEW VRAGEN

Algemeen

Zou u kort even uit kunnen leggen wat de bedrijfsactiviteiten zijn van het bedrijf waar u voor werkt en wat uw functie is binnen deze organisatie?

Science Parks

1. Welke rol speelde de factor “locatie” bij uw beslissing om op een science park te vestigen?
 - *Aantal bedrijven*
 - *Soort omgeving*
 - *Aantrekkelijkheid voor organisaties*
 - *Zichtbaarheid*
 - *Aantrekkelijkheid stad*
 - *Overig*
2. Welke rol speelde de factor “parkeergelegenheid” bij uw beslissing om op een science park te vestigen?
 - *Aantal parkeerplaatsen*
 - *Type parkeervoorziening*
 - *Capaciteit parkeerplaatsen*
 - *% parkeerplaatsen toegewezen aan huurders*
 - *Overig*
3. Welke rol speelde de factor “bereikbaarheid” bij uw beslissing om op een science park te vestigen?
 - *Nabijheid snelweg*
 - *Mate van belemmering van de verkeersstroom*
 - *Nabijheid openbaar vervoer*
 - *Toegankelijkheid auto/fiets enz.*
 - *Overig*

4. Welke rol speelde de factor “image” bij uw beslissing om op een science park te vestigen?
 - *Architectuur*
 - *Bouwjaar*
 - *Naamsbekendheid*
 - *Overig*
5. Welke rol speelde de factor “huur- /koop prijs” bij uw beslissing om op een science park te vestigen?
 - *Flexibiliteit (opzeggingstermijn)*
 - *Huur-/koop prijs per m2*
6. Welke rol speelde de faciliteit “mogelijkheid tot uitbreiding” op een Nederlands science park bij uw beslissing om op een science park te vestigen?

SAMENVATTEN

Faciliteiten

7. Welke rol speelde de geboden faciliteiten “IT- support” op een Nederlands science park bij uw beslissing om op een science park te vestigen?
8. Welke rol speelde de geboden faciliteit “kennisuitwisseling” op een Nederlands science park bij uw beslissing om op een science park te vestigen?
9. Welke rol speelde de geboden faciliteit parkonderhoud en beveiliging op een Nederlands science park bij uw beslissing om op een science park te vestigen?
10. Welke rol speelde de “prijs van faciliteiten en service” op een Nederlands science park bij uw beslissing om op een science park te vestigen?
 - *Contractvormen*
 - *Betalingsvoorwaarden*
11. Zijn er nog andere factoren op het gebied van geboden faciliteiten op een Nederlands science park die een rol hebben gespeeld bij uw beslissing om op een science park te vestigen?

SAMENVATTEN

AFRONDING

Danken voor deelname

- Uitwerking
- Contact bij vragen
- Opsturen resultaten/conclusies

Appendix D Participant consent form

This model consent form is intended for willing adults.

If you are conducting research involving people, you will carefully inform potential participants about your research by means of an information letter and then ask permission to participate in your research. This template is a standard format for requesting this permission. You can do this by means of a paper form, which is customary in interviews or focus groups, for example, or you can do this online if you are conducting an online questionnaire.

If you use a paper version of this consent form, you have your participants sign it prior to the interview or focus group. With an online version, you ask the participant to read the information and only click < continue> if they want to participate.

Consent form Science Parks

We ask you to indicate below whether you consent to participate in this survey. Please read the following points carefully

As a participant in this research:	yes	No
Have I been informed about the nature, method and purpose of this research in a way that is clear to me.		
Got enough time to decide on participation		
Have I had the opportunity to ask questions about this investigation		
Do I know that participation is voluntary		
I know I can stop participating at any time. I don't have to give a reason.		
I consent to the collection, retention and use of my data for the purpose of answering the research question in this study.		
Do I know that the results of this interview can be incorporated in a report or (scientific) publication?		
I consent to the re-use of my data after this research for as yet unknown research that falls within the scope of this research. In doing so, the recognised ethical standards for this form of research will be observed.		
I know that only for the purpose of verifying the scientific integrity of the research, some people can access my collected data.		
I understand that any information I provide in relation to this study will be collected anonymously and will not be traceable to me.		
Do I know that I can inspect the way in which the data is processed and stored.		
Do I know that if I withdraw, my data can be used until then, unless I also ask for the data already collected to be deleted.		
<i>Optional</i>		
Permission to make audio recordings. These can only be listened to by the researcher(s) and to check the scientific integrity.		
Permit me to make video recordings. These can only be viewed by the researcher(s) and to check the scientific integrity.		
Give me permission to take pictures. These can only be viewed by the researcher(s) and to check the scientific integrity.		

Name:

Signature:

Date:

Interviewer

As an interviewer, I declare that I have given oral explanations about the nature, method and purpose of the investigation. I declare that I am willing to answer any questions that may arise regarding the research into ability.

Name: M. Stokkers

Signature: 

Date: Maart/April 2022

Email: 307989@student.saxion.nl

Online

Once you have read the above points and agree to participate in the survey, click CONTINUE.

Appendix E Example coded interview transcript

Interview 3

Speaker 1: Could you briefly explain the business activities of your company and your role in it?

Speaker 2: Excite is a manager provider, it is an IT service. We provide advice on how companies their ambitions and goals where IT becomes the instrument. Who are you today, where do you want to go tomorrow and how do we bring that information to the end-user. We set up that workplace, what applications belong in a laptop and how secure is it. Teams, for example, is a smart application. When the playing field expands, there are more questions about security. Do I as a customer want to pass on certain information etc. What we often notice during our conversations is that people want more data to be sent. But the security of that is very important, who does it get into the hands of. They say data is the new gold. But you have to store the data in such a way that you can do something with it. So in that journey from today to tomorrow, we are working with the customer how can you become smarter. With the with the vision of becoming a data driven organization.

1: And then it's about the whole package, so to speak?

2: Yes, advice until delivery so to speak. We don't look at technology as the first point, first at the people and then at the process. We must have a very clear picture of this. How it works together. Then we look at what kind of platform goes with it, and we give advice on that. We work together towards it. We want to be the customer's business partner in order to develop together.

1: So you guys spend several years with clients in such a trajectory?

2: Yes we look at where we can give the most added value.

1: Since when is the company located here?

2: We came here October 17, 2019, it wasn't ready then. We had a business unit across the knowledge park. Sigmax is a software company that makes applications we were completely in. That is an IT specialist, we went left and the rest went right. Then an investment company approached Sigmax: we want to buy a part, are you interested. We asked [REDACTED], the boss of that unit, and he said; what do you think of this. I don't want to do it alone, but I do want to do it with you. We have said we will do that. Then you have to look for a location, then we came across this.

1: What role did the location factor play in your decision?

2: What we think is important because we are an IT service provider and finding staff is quite difficult, so you need to lead people in that you can mold a little bit (Location; Visibility).

We also think it's important that we actively participate in the social role. We also have quite an intensive collaboration with the ROC and the university of Twente (Location; Collaboration). If you have good internships you can also say; they can get a job. We wanted a high visibility location on the knowledge park close to the university in order to get familiarity (Location; Visibility; Familiarity)

1: So kind of consciously chose a science park.

2: Yes.

1: What role did the parking factor play in locating here?

2: It did; we got out with seventy-five people at the time (Parking; Number of places). We had put a plan on paper and started here with eighty-two people. The ambition was to get around one hundred and fifty people within five years (Possibility of expansion).

1: That target still stands?

2: Yes, we are currently at one hundred and thirty, so it's going well. But to be able to get rid of all those people this fits again (Parking; Number of places). If you look at the number of people who come by car, we are a service provider, that has certainly played a role. The third floor is still vacant at the moment but we will be filling it shortly.

1: Only then do I think you look more at your staff, than at customers who come by car because they do have contact online with you or not.

2: Well, they came here a lot for Corona, so we have a whole parking here for customers.

1: Yes exactly. And if you look at the factor of accessibility?

2: Very important, train, you are so here. In that respect we are relatively simple here. Public transport is close and by car we are easily accessible (Reachability; Public transport & Car).

1: Yes, I think because you also attract students, if they can come to school they can also come here of course.

2: Yes, I think so, the school is across the street.

1: Accessibility to bicycle and things like that, did that also play a role?

2: No. I found public transport very important (Reachability; Public transport), I found that more important than a bike.

1: What role did the image factor play in the decision? If you look at architecture, name, year of construction, familiarity with the area.

2: Ultimately the science park played a part in this because you have quite a connecting place there towards the educational institutions (Knowledge sharing; Connecting place). And it is a high visibility location so there is a lot of traffic (Location; Visibility). So if you're talking about image, location, whether that was a conscious choice, that certainly played a role. If you're talking about image and the name we had to come up with and how you want to portray that, we did a lot ourselves. Because this building looked completely different before that time. We wanted to have a building that stands out (Real Estate; Building stands out). An architect made a picture at the time. So businesslike with a nod to homely that was brought inside and partly outside.

1: To what extent did the factor of rent and purchase price play a role?

2: We were in a situation where we could not really choose, because you had a location and amount of square meters and the price. In the end, from the viewings, only 2 properties remained.

1: Because I think you pay a bit more here than in a normal industrial estate.

2: I don't know. We wanted to grow in it and on that basis we discussed how we could achieve that in ten years and whether that would be feasible (Possibility of expansion). We did find possibilities in that. You know what you pay, if you calculate everything this is a bit more.

1: What role did the possibility of expansion play in the decision, but of course you've already partly answered that just now. You have a large building you said and another floor available.

2: Yes, that's right, the expectation is that we'll be filling that in next year.

1: Yes, it then also becomes a bit more of a meeting place again he after corona.

2: Yes, we have a meeting place, coffee corners, free spaces to discuss (Real Estate; Meeting places).

1: Does each staff member still have his or her own workplace?

2: No.

1: Okay, because before corona you saw that more.

2: Yes, we have adjustable desks, two monitors and then you can always work. And everywhere in the building you'll find flex spaces (Real Estate; Flex spaces).

1: Do you have enough workstations, if everyone would come to the office tomorrow?

2: No, we can't. The filling goes automatically, we don't have a schedule/planning tool. And if everyone comes, we all have laptops so then you can still get to work.

1: If you look at the facilities at the science park, I then did a little theory research, and it says that a science park facilitates certain facilities do you notice anything about that? For example in the sense of knowledge exchange, ICT support and park maintenance and things like that.

2: There are consultations about that, I'm not in them myself (Facilities; Consultations). I know that this park is now more connected to the residential area behind it. the residential area behind it. We are included in that, you can join that.

1: Okay and in terms of knowledge exchange you notice that too.

2: I don't, no.

1: I hear that more often in Enschede. Do you have those spaces with a shared restaurant or something? Do you have those rooms with a joint restaurant or meeting rooms or something like that?

2: No, there is some initiative for that, you can set up interesting things with the other companies.

1: Okay, in terms of service do you notice anything about this at the science park? Are there any other factors that played a role in terms of the facilities offered?

2: No not really. Location, here in the neighborhood. Those were primary factors for us.

1: If you were to grow even more now and you had to move, would you consciously choose a science park again or not?

2: Yes, it would. That has to do with where we come from and the clientele we have here. The familiarity with Enschede as well (Location; Familiarity). We have also grown in terms of our field of work, we don't only work around here, usually an hour and a half away. That's pretty much right.

1: Are you interested in receiving conclusions and results?

2: Yes, I am curious.

1: Do you perhaps have any contacts that I could approach for an interview?

2: Leo van de hendes from sigmax you could call.

1. Okay, then I will approach that. Do you have his contact information for me? Thank you again for your cooperation.

Appendix F Code-tree

Core Concept	Sub-Concept	Axial Coding	Open Coding
Science Parks	Real Estate	Location	Professional Representative Notorious knowledge carrier Expertise Size Contribution Familiarity Collaboration Companies present Presence theme (knowledge & talent) Number of residents Kind of environment Attractiveness for organizations Visibility (high) Organizational clustering Clumping Attractiveness of city
		Parking	Expanding Mobility hubs Number of parking spaces Type of parking facility Capacity parking spaces % parking places allocated to employees % parking places allocated to tenants
		Reachability	Envy highway Degree of traffic flow obstruction Proximity to public transport Go-scooters Car Multimodality Sustainability Accessibility site access
		Image	Appearance Connection Architecture Construction year Companies present
		Contractformation	Length of contract Flexible contract
		Pricing	Market Comfort Surcharge Starters Discount Property price
		Buildings	Interchangeability functions Stands out Possibility of expansion Flex places Modern & sustainable Flexible space
	Facilities	Research & Development	Events Innovation Training
		Support-facilities	Community building Conciërge

			Community manager Business Association IT-support Administration
		Shared-facilities	Restaurants Reception Meeting rooms Share knowledge Consultations Park maintenance Security Sanitair Connection science parks Charging Stations Fitnessgym Laboratorium
		Flexibility	Expansion possibilities
		Pricing	Facilities & services

Appendix F Model Information Letter

With an information letter you inform the participants in your research about: the purpose of the research, the execution of the research and the contribution required from the participants, the way in which you handle the collected data, possible risks involved in participating in the research, that participation in the research is entirely voluntary and that the collected data will only be used for this research purpose, unless permission is requested again.

An information letter will provide the participant in your research with information on these topics. A description of the subjects and a number of sample texts in the boxes will give you tools for drawing up your information letter. The sections below for the information letter apply to the paper version as well as to digital forms of data collection.

Introduction

Dear participant, I ask you to fill in this questionnaire which is about Science Parks. Participation is voluntary. In order to participate, your permission is required. Before you decide if you want to do this, I will explain why we want to take this questionnaire. Please read this information carefully. If you have any questions, please contact me. See contact information at the bottom of this information letter.

Science Parks

What factors played a decisive role in the decision to locate at a Dutch science park, and what are the differences/similarities between the different science parks considered in this research?

Background and purpose of the research

Briefly describe the reason for this research and its purpose. Indicate within which course or module this research falls, of which study programme this course or module is part and that it is a study programme of Saxion University of Applied Sciences.

Companies are more innovative and successful when they have access to diverse facilities and a powerful network. Physical proximity to other organizations in the network is of great importance here. This physical proximity in the network is achieved at the science park. But is this the actual reason for companies to locate in a science park, or are there multiple factors at play. This study investigates the actual decision factors for a company's choice of science park. These results will help area managers to respond even better to the needs of companies. And indirectly this can generate new business for companies already located in the science park. Not just for the three cases studied but for all science parks in the Netherlands.

Execution of the research

Describe the nature and design of the study. Will there be interviews, questionnaires, experiments, etc.?

For this research, data will be collected using in-depth interviews. In-depth interviews are used to gain insight into the interviewees' underlying thoughts on the decision to locate in a science park. The interviews will be semi-structured, meaning that the interviews will be conducted using a checklist of issues, also known as a "topic list."

The interview is made familiar with the questionnaire in advance. In this way, he/she can prepare for the interview and give more information about the different topics because they have been given more time to think about it. The interviews will be recorded. Recording allows the researcher to focus on her or his interaction with the interview participant rather than being distracted by trying to take notes.

Interviews will take place both physically and digitally, based on the preference of the respondents. Since COVID is still active and one still works hybrid, it is up to the respondents to determine a physical or digital appointment. To recruit respondents, "snowball sampling" is used, the sample starts small but "snowballs" into a larger sample over the course of the study.

Contribution required from the participant

Make clear what is expected of the participant and what the estimated time it will take to participate. Indicate any possible restrictions, such as not eating or drinking prior to an examination.

The interview will last up to 30 minutes. The interview will contain a small number of open questions.

Advantages and disadvantages of participating in the survey

Describe the pros and cons of participation, for example in long-term experiments, questionnaires with confronting questions, or interviews on loaded topics.

To the best of my knowledge, there are no disadvantages associated with participation in this study.

Use, storage and reuse of data

Clarify what data you collect from your participants, how you store it, who has access to it and how long it will be kept. If the data remains available for any follow-up research that the participant needs to give permission for, you should also mention this. If you collect personal data, such as name, student number, gender and date of birth, or special personal data, such as ethnicity, religion or belief, sexuality, health data (including genetic or biometric data) and political opinions, you must comply with the General Data Protection Regulation (AVG) and state this in the information letter. This is the url that refers to the AVG. You can also include it in your information letter: <https://autoriteitpersoonsgegevens.nl/nl/over-privacy/wetten/algemene-verordening-gegevensbescherming-avg>

You may only collect special personal data if it is relevant to your research.

I will not collect any personal data in this survey. The stored data cannot be traced back to individual participants. As a student I comply with the requirements of the General Data Protection Ordinance (AVG).

Voluntary participation

Make it clear to the participant that participation is entirely voluntary. He or she can discontinue participation in the study at any time without giving any reason. Explain what then happens to his or her data. Will the data collected so far be included in the study? Can the participant submit a request for deletion of the data? This is only possible for non-anonymous data.

If you participate in this research you can always change your mind and still stop. I will then use your data until you stop. If you object to do this you can email me.

Costs or fees

If applicable, indicate whether an expense or travel allowance is involved.

You will not be paid to participate in this study. There are no costs for you to participate in this research and there is no compensation for participating in this research.

Ethical review or advice

For this research, advice has been requested from the Saxion Ethics Advisory Committee.

Contact

Indicate who the participant can contact when he or she wants more information, has questions about the study or about data protection.

For more information or questions about this study, please contact me:

Marieke Stokkers

307989@student.saxion.nl

Tel. 0612591672

In case of complaints about data management you can contact Saxion via the Complaint and Dispute Desk; <https://www.saxion.nl/over-saxion/organisatie/klachtenloket>.

Reference to the statement of consent

In the case of interviews, focus groups or other forms of data collection in which you can have the respondents sign a statement of consent, you do so in writing and keep this wording carefully and in accordance with the instructions of your study programme.

In the case of online data collection, the consent form is a page in, for example, Qualtrics where the participant indicates by clicking on <continue> that he or she has read the information letter, agrees to participate in the survey and agrees to the use of his or her data in accordance with the conditions of the information letter.

(online) On the next page you will see a statement of consent. This form provides you with information on how we process the data you enter in this questionnaire. By digitally signing this form, you give permission to use (anonymously) the data you have entered. Whether or not you participate in this survey has no effect on your further study progress and no assessment will be given for it. Click through to the next page for the statement of consent to give your permission to participate in this study. After signing, you can proceed to the questionnaire.

(offline) This information letter is accompanied by a statement of consent. By signing this statement of consent you agree to participate in the survey.