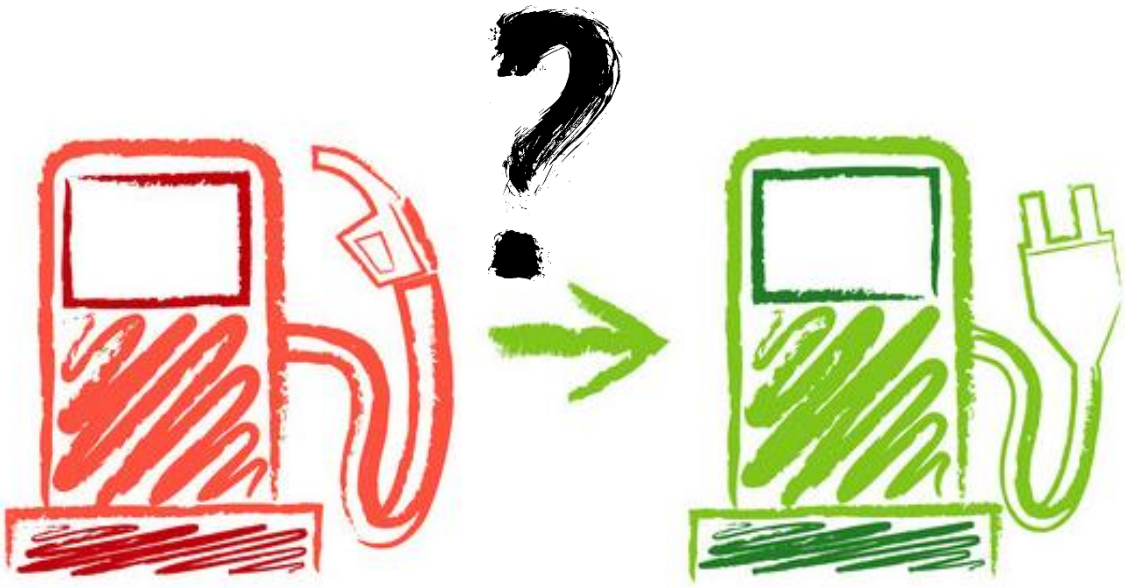
The Business Model of Gas Stations in the Future

Kolkman Brandstoffen



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THE BUSINESS MODEL OF GAS STATIONS IN THE FUTURE: WHAT ARE THE EFFECTS ON THE BUSINESS DEVELOPMENT OF GAS STATIONS IN THE CHANGING FUEL MARKET?

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Management summary

Topic: This research was conducted under the supervision of the University of Twente and Kolkman Brandstoffen bv as part of a master's thesis project. The changing climate and the pressure from politicians and society to become more sustainable are resulting in an energy transition in the mobility sector. Harmful emissions must be curbed, especially CO_2 emissions. That is why alternative energy sources are coming onto the market, including renewable and more sustainable fuels. This has consequences for gas stations, because the uncertainty regarding the change of the fuel type and income in the future is increasing, which has led to the decision to research the business model of gas stations for the future.

Goal and main research question: Kolkman Brandstoffen also experiences the uncertainty outlined in the previous paragraph. In order to sketch out what the business model for gas stations will look like in the future and how to deal with them, the central research question is as follows: *''What are the effects on the business development of gas stations in the changing fuel market?''*

Methodology: In order to answer the main question, three sub-questions need to be answered. Sub-questions 1 and 3 will be answered by a careful systematic literature review. Sub-question 2 will be answered by semi-structured interviews, because exploratory research is carried out and this type of data collection falls within the qualitative research method. In order to conduct good qualitative research, Interpretative Phenomenological Analysis (IPA) is used. This ensures reliability because the purpose of the IPA is to receive valuable information about a particular subject in a particular context. Validity is ensured in this research because there is both internal, and external validity.

Main results: The findings indicate that mobility is changing towards battery-electric and hydrogen-electric in the coming decades. For heavier transport this will take longer, for which the demand will in the meantime increase for intermediate solutions such as HVO and (bio-)LNG. More development is needed before electric vehicles can be driven on a larger scale. The gas station of the future will continue to provide mobility for motorists, the question is which energy source the gas station will offer. However, this depends on the service area and the customer's wishes and needs. Therefore, the shop will become increasingly important for manned gas stations. Besides, there is certainly a future for the unmanned gas station. The location and the extent to which the wishes, needs and perceptions are met determines the degree of success for both stations. In addition, as an entrepreneur, it is wise to look at the services that can be provided in the area of the customer's mobility problems, outside the forecourt of the gas station. The entrepreneur needs all the resources with all conceivable processes to add sustainable value. In order to respond to the alternative energy sources that are currently emerging and by responding to the remaining needs of the customer, a proper strategy is expected from the gas station entrepreneur where long-term thinking should be linked to short-term action by carrying out a scenario analysis. When the current business model of the gas station needs to be replaced by the future business model, the strategy, dynamic capabilities, and business model need to be aligned.

Main contributions: The practical implications of the results of this research is to align the strategy, dynamic capabilities, and business model to replace the current gas station business model with the business model of the future. In addition, the results of the interviews will show which developments are imminent

and how entrepreneurs can respond to them. An active role of the gas station entrepreneur is recommended, because in this way the entrepreneur will encounter opportunities. Theoretically, this research adds a lot to the conservative sector, because limited research had been done before on the combination of dynamic capabilities, business modelling, and scenario development.

Preface & acknowledgments

This thesis is the completion of the Master Business Administration programme with a specialisation in Strategic Marketing & Servitisation at the University of Twente. This thesis stems from my desire to carry out research for our family's life work: our family business. My interest in mobility and the increasing uncertainty as to the type of fuel and income that awaits the whole sector resulted in the fact that I wanted to research the business model of gas stations for the future. I am very satisfied with how this thesis paper has turned out. This thesis is written as partial fulfilment of the requirements for the degree of MSc. in Business Administration. Nevertheless, without the help of some people, this thesis project would not have been possible. I therefore would like to thank a variety of people that have participated in this research project.

First of all, I would like to thank my first supervisor Dr. R.P.A. Loohuis for his effort, time, guidance, and feedback. With his input, I was able to look differently at some aspects of my thesis. Moreover, his kindness and enthusiasm helped me to stay motivated. Secondly, I would like to thank Drs. P. Bliek for being willing to step in as second supervisor. Thanks for the constructive feedback, it has helped me enormously to improve the writing style and content of this thesis. Thanks to the help of both of them, the thesis has improved in level and quality thanks to both supervisors, but I also learned from it and enjoyed it a lot. I am very grateful to both supervisors for that.

I would also like to thank my graduation company Kolkman Brandstoffen bv for allowing me to do the graduation project on behalf of our family business. Many thanks to my colleagues Michèle, Marcel and other colleagues who gave me the possibilities to finish the thesis successfully.

Furthermore, I would like to thank the six respondents for their input and enthusiasm during the interviews, but also for the time they made available to complete the interviews successfully. The interesting answers they gave were not only useful for my thesis, but also for my possible professional career in the mobility industry.

Furthermore, during my time at the University of Twente, I have had the honour of working with some great people. I want to thank them all, but especially Koen, for the great time I had at the University of Twente. Furthermore, I would like to thank my study advisor, Mrs Röring, for her efforts to make it possible for me to graduate. Finally, I would like to thank my family and friends for their tremendous support during the study. Although it was not easy at times due to private circumstances, I nevertheless completed my studies successfully.

Thank you all, and enjoy reading this thesis,

T.F.C. Kolkman

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1. Introduction

One of the biggest challenges that the world has to deal with for decades is climate change. One industry that is partly responsible for climate change is the fuel trade, which includes gas stations. Almost all transport by water, road, air and rail requires fuel that is harmful to the climate. The combustion of the fuels, which results in the propulsion of the vehicle, releases harmful substances, including CO_2. This is why more and more sustainable fuels are coming onto the market, as well as renewable fuels and alternatives, which means that gas stations are in the middle of an energy transition, resulting in an uncertain situation for now, and for the future.

1.1 Traditional gas stations

The traditional gas station is a place where fuel vehicles are refuelled and serviced. Before gas stations sold fuel such as petrol and diesel, the supply consisted of coal. In the middle of the 20th century, there was the first energy transition from coal to heating oil and motor fuels, where heating oil has also disappeared today (Allen, 2012). Over the last decades, gas stations were separated from automobile garages and stood on their own. In the beginning of this second transformation the gas station contained a kiosk where, in particular, confectionery and drinks were offered to drivers when paying for fuel. The supply was increased by non-fuel related products. With this, the gas stations meet the customer's need of offering on-the-move products. Azimont and Araujo (2010) state that many purchases at gas stations are not fuel-related, but are consumption purchases. As a result, gas stations used their own concepts to lure the customer into their gas stations to buy a product that has a higher margin. KPMG (2020)[1] found out the role of retail experience is essential to stand out from the competition. This subject will not be discussed further as it is a study in itself. Besides, KPMG (2020) confirms the trend described by Azimont and Araujo (2010): customers used to come to gas stations mainly for fuel and minor repairs or spare parts for their car in the past, but nowadays convenience and 'to-go' are more important, which leads to the gas stations offering more than just fuel: retail and food and beverage. Although the demand for non-fuel related products is increasing, in 2019 still 62% of the turnover of gas stations came from fuel and 38% from other shop purchases (VNPI, 2019)[2]. In addition, gas stations are increasingly serving as pick-up points for packages (KPMG, 2020). This shows that gas stations are in a constant state of development, where the next energy transition is just around the corner.

1.2 Fossil fuels

Fossil fuels have been used since the industrial revolution and over the years people have become more and more dependent on it. In 2010, more than 80% of the world's primary energy came from fossil fuels, which consist of oil, coal, and natural gas. After fossil fuels, the largest source of energy is combustible biomass and waste, nuclear power, and hydroelectric dams. Only 0.8% of the world's primary energy comes from natural energy sources, such as wind and solar. Fossil fuels, given their current

[1] Fuel Forecourt Retail Market, KPMG, 2020
[2] Tankstations in transitie, VNPI, 2019

dominance, will remain the backbone of the world energy system for the foreseeable future. The associated emissions is the related problem to the dependence on fossil fuels. Energy production is the main source of greenhouse gases, in particular CO_2, since roughly 70% of all CO_2 emissions come from the energy sector, with the largest contribution coming from fossil fuel combustion. Compared to 1970, in 2008 30 billion tonnes of CO_2 were emitted from fossil fuel consumption and this is a doubling. So Höök and Tang (2013) conclude global warming and climate change caused by CO_2 emissions are closely linked to the production and use of fossil fuels. Besides the fact that fossil fuels are detrimental to the climate, fossil fuels are available in limited quantities. In today's economy, stocks run out more quickly because it takes millions of years for them to be replenished. Especially when the Special Report on Emission Scenarios (SRES), published by the IPCC[3], expects the global production of fossil fuels to be twice as large in 2040 as it was in 2010. This means that in this period more fossil fuels will be used than in 2010 (Höök & Tang, 2013). This expectation is worrying, because the amount of fossil fuel the earth contains is limited.

Climate change and global warming and the limits to the availability of fossil fuels warn mankind to anticipate alternative energy sources, however this is a complex situation. Höök and Tang (2013) note the energy substitution process is made difficult by the fact that the following three parameters have to be matched: energy, economics, and environment. The problem with the economic aspect is that it is a challenge not to let the costs of investments exceed the revenues. Secondly, these investments need to have a significant lower net energy consumption compared to current vehicles. Finally, for a smooth energy transition, innovations must be accessible to everyone in society.

1.3 Alternative fuels

Where previously the supply at gas stations consisted mainly of unleaded petrol and diesel, nowadays the supply consists of premium and super unleaded petrol, diesel, LPG auto gas, biofuels (ethanol) and electricity. So it is possible to change the global energy system into something that is less dependent on fossil fuels, gas stations now offer such kinds of alternatives. These alternatives are divided into three categories: renewable fuels, more sustainable fuels and finally synthetic fuels.

The renewable fuel consists of ethanol. Ethanol comes from biomass sources of feedstock, such as sugar or grain (starch), so it is a form of renewable energy. Ethanol can be mixed with petrol or can be used as pure alcohol in special engines, making use of the higher octane number and the higher heat of evaporation; moreover, it is an excellent fuel for future advanced flex-fuel hybrid vehicles (Hahn-Hägerdal, Galbe, Gorwa-Grauslund, Lidén, & Zacchi, 2006). Apart from the fact that bio-ethanol is added to petrol to reduce CO_2 emissions, Balat and Balat (2009) claims that bio-ethanol also reduces the consumption of crude oil, making it a sustainable energy source. In most cases, the bio-ethanol is mixed with gasoline with a concentration of 10% bio-ethanol and 90% gasoline, better known as E10. Another ratio is 5% bio-ethanol with petrol (E5) or with specified engines it is possible to add bio-ethanol up to a ratio of 85%, which makes the product E85. In addition to the renewable fuel alternative, ethanol, there is also renewable diesel fuel, namely hydrotreated vegetable oils (HVO). HVO is made from waste vegetable oils and residues such as

[3] IPCC, 2014: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

animal fats, making it a fossil-free and renewable fuel. This renewable diesel can be obtained in various ways. Firstly, to add a few percentages of the bio component to the diesel. A maximum of 5-20% is acceptable, but at higher percentages extra precautions have to be taken, both for the fuel and for the vehicle, and the fuel has to meet various requirements. Finally, it is also possible to run the vehicle entirely on HVO to drastically reduce CO_2 emissions and improve air quality, however, the vehicle must be fully HVO compatible (Aatola, Larmi, Sarjovaara, & Mikkonen, 2009). According to Sugiyama, Goto, Kitano, Mogi, and Honkanen (2012) HVO not only reduces CO_2 emissions, but also fuel consumption, because the heat release rate was increased with a shorter ignition time to improve combustion.

The next category of alternative fuels are the more sustainable fuels, starting with the oldest fuel: autogas. Unleaded petrol and diesel are seen as more polluting fuels than liquefied petroleum gas (LPG). In many countries, LPG is seen as an alternative fuel for vehicles, since Raslavičius, Keršys, Mockus, Keršienė and Starevičius (2014) state that LPG is more ecologically sound, because the emissions are much less harmful and because LPG does not contain heavy metals. To support this statement, Ning and Chan (2007) conducted a study in Hong Kong where the HKSAR government started a campaign to replace diesel taxis with LPG taxis starting in 1998. The study indeed concluded that LPG taxis have significantly improved air quality compared to diesel taxis. LPG is a mixture of gases produced as residual products in oil refining and is the best known fuel in the gas category, where there are also two alternatives that are both a form of natural gas. Compressed natural gas (CNG) is pure natural gas that has been put under pressure. This fuel is the cleanest fossil fuel and therefore an excellent alternative in terms of environmental friendliness compared to diesel, petrol or LPG. The second alternative is liquefied natural gas (LNG), which is also produced from natural gas, but is a liquid. As with CNG, the harmful emissions from LNG are less compared to other fossil fuels and both CNG and LNG have the same characteristics (Raslavičiu et al., 2014). An increasingly common alternative are electric vehicles. Hawkins, Gausen, and Strømman (2012) make a distinction in the electric vehicles industry. The first is battery electric vehicles (BEV), which use only an electric motor. The next is the internal combustion engine vehicle (ICEV) that uses only an internal combustion engine (ICE). Finally, there is the hybrid electric vehicle (HEV) which uses both the electric motor (EM) and the ICE. The term HEV includes plug-in hybrid electric vehicles (PHEV) that can be charged through the electricity grid as well as grid-independent HEV (GI-HEV) that can only be charged through the ICE. Assessing electric vehicles is difficult, because comparing different studies is difficult and uncertain, as there are many factors and variables involved. However, it can be concluded that an electric vehicle is cleaner than a fuel car, but it is not climate-neutral. This is because the production of the battery emits a lot of CO_2 and the production of electricity is not free of emissions either (Yuan, Deng, Li & Yang, 2017), as most electricity is generated by coal and gas-fired power plants (Solarin, Bello & Bekun, 2020). After autogas and battery-powered electric vehicles, a relatively new fuel will be discussed: hydrogen. The energy source of hydrogen is low-carbon, which is why Tollefson (2010) says that hydrogen has long-term potential and that it simply cannot be ignored. Hydrogen can be produced by a chemical reaction between steam and natural gas, and although this still generates emissions, there are plenty of investments to make this process emit less greenhouse gases. Fuel cells are the basis for running a hydrogen vehicle. A fuel cell is a device that takes in oxygen from the air and hydrogen from the tank and reacts with each other in a controlled way to produce water vapour and electric power. The power then drives an electric motor in the vehicle that makes the vehicle run. Although hydrogen is still in the early stages of its life, it is a sustainable alternative to fossil fuels (Murugan et al., 2019).

Finally, the last alternative is synthetic petrol and diesel. This type of fuel is the least developed of the above, but it has enormous potential according to Bracker (2017). To produce synthetic fuels, CO_2 is

needed in the production process. Greenhouse gases become a raw material and are added to the hydrogen, which is produced using renewable energy, and so petrol, diesel, gas and even paraffin can be produced in a climate-neutral way. The advantage of synthetic fuels is that they are suitable for any fuel car, so existing vehicles do not have to be electrified.

1.4 Research objective and questions

As discussed in the previous paragraph, climate change is causing a search for sustainable solutions, also in the fuel market for the transport sector. Although alternative fuels are already on offer, it is unclear how gas stations should deal with these alternatives. Moreover, it remains uncertain for gas stations how the future will look like in terms of the changing type of fuel and income and in what way the future business model will influence the current business model. Kolkman Brandstoffen bv also experiences these issues. This family business, located in Groenlo, has been active in this market for decades, with three gas stations, a car wash and fuel delivery to companies. One manned gas station and the car wash is located at the main site in Groenlo, another unmanned gas station is located at the Groenlo industrial estate, and the third is an unmanned gas station in Beltrum. With its fuel deliveries Kolkman Brandstoffen is a household name in the Achterhoek and Twente (regions in the provinces of Gelderland and Overijssel respectively), but also outside these regions fuels are delivered for customers with the two delivery trucks. In total, the company employs fourteen people across the various departments, four of whom work full-time. Since the family business also experiences uncertainty with the future in terms of the changing type of fuel and income, the following central research question was formulated on behalf of Kolkman Brandstoffen:

CRQ: *''What are the effects on the business development of gas stations in the changing fuel market?''*

The central research question is divided into three sub-questions. The first sub-question serves a description of the current situation, namely how gas station entrepreneurs should deal with the alternative fuels. The second sub-question is about finding out what the business model of gas stations will look like in the future. Finally, the last sub-question deals with the practical application of the results found in the study.

For decades, gas stations have been offering fuels, but this market is also becoming more sustainable, so that nowadays more and more sustainable fuels are being offered. This makes it important for gas station entrepreneurs to know how to handle this. This results in sub-question 1 that is answered by secondary data that is used in a systematic literature review.

SQ1: *''How should gas station entrepreneurs deal with the alternative energy sources that are currently on the rise?''*

The first sub-question provides a better picture of the range of alternative fuels that gas stations can offer and how entrepreneurs should deal with that. To answer this question, the conceptual model of manufacturing strategy in its context by Ward and Duray (2000) is used, because the right strategies positively influence performance in terms of market share and sales growth when there are competing forces in the environment. Through its positive influence on performance, the model adds value in answering sub-question 1. Although alternative fuels play a role in today's transport, it remains extremely uncertain what

the business model will look like for gas stations in the future. For this reason, industry stakeholders are interviewed by means of a semi-structured interview in order to gain more certainty about their expectations. The results of the interviews answer the next sub-question:

SQ2: *''What will the future business model of gas stations look like?''*

For a representative picture of the business model for gas stations in the future, the business model of Johson et al. (2008) was used, as this model consists of only four aspects, which provided clarity in the interviews. After it has become clear what the business model for gas stations will look like in the future, it is important to apply the new business model properly. This process is an important one, as many factors come into play, as will be shown in the literature review. Among other things, the dynamic capabilities largely determine the degree to which the new business model is successfully implemented. By using this theory, the external environment is considered. This is the basis for answering the last sub-question:

SQ3: *''What do gas station entrepreneurs have to do to turn the current business model into the business model of the future?''*

To demonstrate the importance of dynamic capabilities, Teece's (2018) diagram was used. This model is relevant for answering this sub-question, since the strategy and dynamic capabilities directly influence the development of the business model and thus setting in motion the process of changing the current business model.

2. Literature review

This section of the paper contains a review of the literature that deals with the change in the fuel market that gas stations face. A systematic literature review is applied to increase transparency and clarity. When papers add value it is used, when papers do not meet these criteria they are filtered out. This way the chance of bias in the procedure of selecting articles is avoided. The results of Knopf (2006) are applied in the preparation of writing this chapter, where the literature review consists of two parts: a summary of the findings or claims that the research has investigated and, secondly, an overview of how accurate or complete the knowledge is. These two parts can only be answered when the paper is critically examined and critical questions are asked. The aim is to filter out relevant sources that actually add value and that can be read in this chapter.

A systematic literature review is conducted for each sub-question to ensure transparency and clarity. The first section contains valuable theory on how a gas station entrepreneur can deal with alternative energy sources that are emerging. Sub-question 2 is then discussed and deals with what the business model of gas stations will look like in the future. Finally, relevant literature is offered that has to do with the last sub-question, namely what a gas station entrepreneur should do to convert the current business model into the intended business model of the future.

2.1 Dealing with alternative energy sources

2.1.1 Competitive forces

As discussed in the introduction, climate change is causing a search for sustainable solutions, including the fuel market for the transport sector. As a result, three categories of alternative energy sources have been introduced to the market: renewable fuels, more sustainable fuels, and synthetic fuels. Competition in markets is quite normal, every market experiences competition in their own way and it affects profitability. The extent to which profitability is affected depends on the amount of competitive forces present in the market and the strength of the forces. According to Porter (2008), the competition in a market consists of five forces. The first force is the threat of entry, whereby the level of simplicity of the barrier to entry is relevant. The next force is power of suppliers, whereby the negotiating position of suppliers is relevant. Power of buyers is the third competitive force that assesses the bargaining power of buyers. The fourth force is the threat of substitutes, which assesses to what extent the substitutes are a threat. The final competitive force is rivalry among existing competitors. This is about the intensity of rivalry.

While more and more vehicles run on alternative fuels, such as electric cars, many gas stations are not yet ready to offer alternative fuels. This means that their offer is usually limited to fossil fuels (Gan et al., 2020). Since the alternatives have the same function as fossil fuels, namely to get vehicles moving (Dahlquist, Vassileva, Thorin, & Wallin, 2012), according to Hokroh (2014) and Porter (2008) the alternative sources of energy can be seen as a possible substitutes. When the threat of substitutes is high, the profitability of the industry suffers. Profitability, or growth potential, does not suffer from substitutes when the company invests in product performance, marketing or other means (Porter 2008). The problem for gas stations, however, is that the government is implementing a policy that ensures that more and more people drive with alternative fuels, rather than using fossil fuels (Gan et al., 2020). No matter how well a gas station performs in terms of its products, services or marketing, it is unlikely that there will be people

with electric cars at the pump for example. Besides the fact that there are alternative fuels on the market, it remains uncertain which alternative will win the competition in the future.

Now that it is clear that gas stations are in a difficult industry, where there is uncertainty about the future and where the government already wants to get rid of fossil fuels, it can be concluded that the profitability in the future of gas stations will decrease if it does not respond to today's developments. Porter (2008) indicates to develop an appropriate strategy for the company to respond to the competitive environment.

2.1.2 Strategy

In the previous section, it became clear that there is a strong competitive force in the fuel market, namely the force of substitutes. Porter (1997) suggests that the company in question should adopt and implement a generic competitive strategy. The goal is to perform better than the competition, although this says nothing about the (potential) profitability of the company. Porter (1997) distinguishes between three strategies, the first of which is cost leadership. Although this strategy mainly focuses on offering products or services at the lowest possible price, this does not mean that quality no longer matters. Other goals of the cost leadership strategy are gaining market share by pursuing economies of scale, keeping a tight grip on the market and increasing the efficiency of the gaining market share by pursuing economies of scale, keeping overhead costs tightly under control and maximising costs benefits from industry experience and new technology. The second strategy is differentiation, which involves looking for significant aspects of products that differentiate them from the competition. Finally, the focus strategy is the third strategy in which products are targeted at a specific segment of the market. The company aims to provide an exhaustive service to a precisely identified buyer group, product line or geographic market. Porter (1997) adds that companies in an industry with relatively strong substitutes and with potential new entrants can best arm themselves with the cost leadership strategy. Before applying the strategy, the company should have some competitive advantage. Furthermore, the current product line will be adapted and optimised to have as wide a customer base as possible, where a start-up can expect substantial costs, but the price differential should be maintained through continual streamlining and reinvestments in processes. Finally, there is a chance that other players in the market will also reduce their costs by imitating the technology or production processes, which then results in decreasing profitability in the industry (Porter, 1997).

In the previous section, it became clear that there are different differentiation strategies that suit different circumstances. Ward and Duray (2000) have developed a model in which various strategies are tested and what influence they have on business performance. Figure 1 shows the model where the numbering of the arrows indicates the hypotheses that were tested. In Ward and Duray's (2000) research, the environment is described by means of "environmental dynamism", where respondents had to give each dynamism a score. This corresponds to Porter's five forces (Porter, 2008). Whereas Porter (1997) has named three competitive strategies, Ward and Duray (2000) use the competitive strategies of Dess and Davis (1984), consisting of the cost and differentiation strategy, where Porter's third strategy, the focus strategy, is part of the differentiation strategy. After dealing with the competitive strategy, the manufacturing strategy in the model of Ward and Duray (2000) follows, also called the operations strategy or competitive priorities. Here a company has to make a choice between quality, flexibility, delivery, and finally low cost. Finally, performance is assessed by measuring two components, namely market share and sales growth, relating to the business unit's perceived position in relation to competitors.

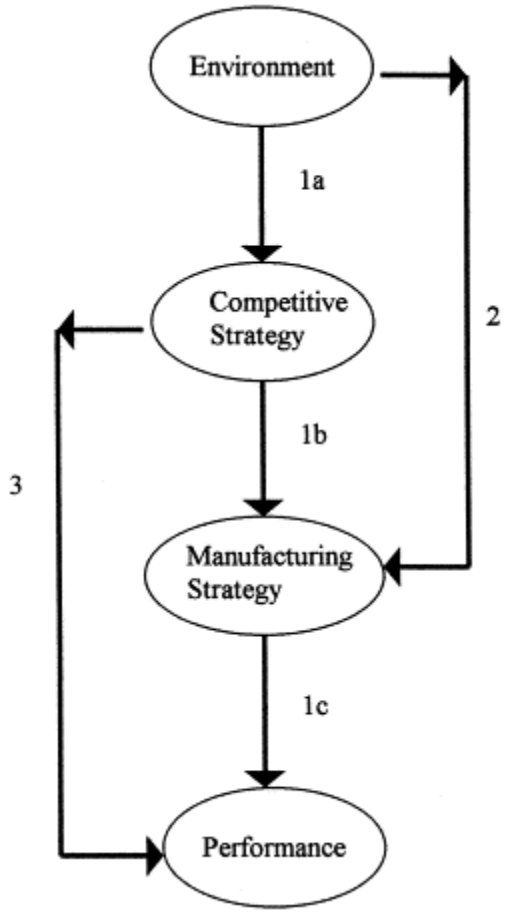

Figure 1. Conceptual model of manufacturing strategy in its context (Ward & Duray, 2000).

The results of Ward and Duray's (2000) research are that the environment influences the competitive strategy *(1a)*, where the competitive strategy influences the manufacturing strategy *(1b)*, and finally business performance is influenced by the manufacturing strategy *(1c)*. There is no evidence to support hypotheses 2 and 3, which means that the environment dynamism does not directly affect manufacturing *(2)* and business performance is not directly affected by the competitive strategy *(3)*.

As discussed earlier, the first two variables of Ward and Duray's (2000) model have already been completed. Since the path of the manufacturing strategy is performance significant, it is essential for business performance to implement a good manufacturing strategy. It is up to the entrepreneur to determine on which capability or priority the company wants to gain competitive advantage. If the entrepreneur or manager in question wants to offer a wide range of products or services, it must compete in terms of quality. Another possibility is to compete on low cost, keeping the costs as low as possible and using the capacity as well as possible. This means that no investments are made. The entrepreneur can also compete on flexibility, where preparations are made for offering the alternative and when the time comes to definitely offer the alternative, this step is actually taken. This makes the company less risky, because it spreads out investments until the time is right, although it reduces the chance of being a strong player in the market (Wernerfelt & Karnani, 1987). Finally, the operator can gain a competitive advantage through delivery, consisting of delivery reliability or delivery speed (Ward & Duray, 2000). To conclude, entrepreneurs and managers have to make a well-considered choice between manufacturing strategies, because it significantly affects the business performance.

2.1.3 Strategy under uncertainty

There is always uncertainty when defining strategy. At least, that is what Wernerfelt and Karnani (1987) and Foster (1993) claim and Vecchiato and Roveda (2010) state that managers of companies experience uncertainty when it comes to identifying opportunities or threats and responding to them quickly. According to Vecchiato and Roveda (2010), the uncertainty comes from the environment, where there is insufficient information from the micro-environment, but mainly from the macro-environment. The degree of uncertainty and the source from which the uncertainty comes from differ among companies. There are four sources from which uncertainty can originate and these are demand structure, supply structure, competitors and externalities (Wernerfelt & Karnani, 1987). Besides, in principle, two components determine the degree of uncertainty, namely complexity and rate of change. The complexity is caused by the amount of heterogeneous factors and events that take place in the environment and are relevant for the organisation. The higher these numbers are, the more complex the situation is. The second component is the rate of change in the environment. The more changes take place in the external environment, the more difficult it becomes for the strategic decision-makers to obtain the right information (Vecchiato & Roveda, 2010). In order to deal with the uncertain environment, Vecchiato and Roveda (2010) state it is advisable to use strategic foresight, because strategic foresight ensures that policy makers anticipate the evolution of changes and improve long-term strategic thinking. Strategic foresight is a combination of strategy and forecast, where the field of research, scope of analysis, and finally the time horizon should be taken into account. According to Wernerfelt and Karnani (1987), a company has three strategic options to make during uncertain situations. First, the company can focus its resources entirely on just one technology. If investing in this technology turns out to be the right choice, the company can become a strong competitor. The trick, however, is to choose the right technology to invest in. To do this, a company can perform a scenario analysis. According to Kirchgeorg, Jung, and Klante (2010) the analysis starts with the preparation of different scenarios by defining scenario target groups, time and scope of analysis. Then the environmental scenario analysis takes place, in which the stakeholders are identified, as well as factors of influence and reduction to core factors. The scenarios are then mapped, resulting in an analysis of drivers of change and prediction of alternative developments. After this, scenarios are defined by combining factors of influence, definition of scenarios and consistency check. Finally, the scenario is transferred and the implications of the strategies and decisions are identified. If these skills are lacking, Wernerfelt and Karnani (1987) and Foster (1993) suggest choosing the most logical scenario. So, focus is strategic option one. The company can also spread its resources over different technologies, thus spreading the risk but only having a small chance of becoming a strong player in the market. In addition, the company has to deal with opportunity costs. Flexibility is option two. The last strategic option is wait. The company waits until the uncertainty is gone and then invests its resources in the desired technology.

One aspect that is generally given too little attention in energy transitions in general is the long-term effects of the energy systems (Kemp, Rotmans, & Loorbach, 2010). These are only superficially explored. Various studies show that the long-term sustainability aspects of energy and society are not addressed in detail. As Vecchiato and Roveda (2010) point out, it is important to carry out scenario analysis in order to identify robust elements of the energy of the future that will play a role in the transition. The scenario analysis for exploration is often done on a smaller scale, rather than in the (inter)national context. Special paths for the transition set up by transition platforms that involve private and public, whereby a goal is first set. For sustainable mobility, the paths consisted of hybrid propulsion, biofuels, hydrogen

vehicles, and intelligent transport systems in 2010. In the Netherlands, this platform consisted of 18.75% government, 18.75% NGOs, and 62.5% businesses. The paths studied are purely for exploration, not for implementation. To deal with the uncertainty caused by the transition, definitive choices must be postponed, but small-scale experiments must be set up and carried out in order to learn from them. At a later stage, more information will be available on the aspects of the paths and the related experiments. This will enable better informed choices to be made, because the policymakers will be better informed. The strongest aspect of transition management is a practical tool that connects long-term thinking with short-term action, without relying on planning. Selecting transition paths, called transition experiments, help to work towards long-term change in the form of system innovation. The transition experiments must initiate learning processes and promote institutional changes, such as the creation of networks, norms, new procedures and practices (Kemp, Rotmans, & Loorbach, 2010). So this is applicable for any industry that is in transition.

So, to help companies choose between the strategic options, Wernerfelt and Karnani (1987) make use of different propositions. The first proposition is between the big/small first mover advantages and big/small economies of scale. A big first mover advantage occurs when the firm invests in a technology before uncertainty is resolved, leading to many first mover advantages. The decision maker in these situations is not risk-averse and has the skills to influence how the uncertainty is resolved. In addition, when there are large economies of scale, i.e. when the returns of the company are greater than scale characterising the investment under consideration, the greater the call for the focus strategy, as Table 1 shows.

Table 1. General principles (Wernerfelt & Karnani, 1987)

	Big first mover advantages	Small first mover advantages
Big economies of scale	Focus	Wait
Small economies of scale	Flexibility	Wait

Determining the strategy also depends on the competition. The more competitors there are, the more it pays to be the first to respond to new opportunities than to wait, because the latter option causes delays. In addition to competition, the size of the firm is also important, as generally larger firms have more resources and can lead more than smaller firms (Wernerfelt & Karnani, 1987). These two variables form the following proposition, which can be seen in Table 2.

Table 2. Typical situations (Wernerfelt & Karnani, 1987)

	More competition	Less competition
Small firm	Focus	Wait
Big firm	Flexibility	Wait

The strategic options mentioned by Wernerfelt and Karnani (1987) correspond to the four manufacturing strategies Ward and Duray (2000). When analysing the environment correctly and subsequently choosing the right competitive strategy, the manufacturing strategy/strategic option should be chosen to ultimately achieve a positive business performance. Therefore, the propositions of Wernerfelt and Karnani (1987) are a good tool to help with this. Every company that experiences uncertainty can make use of them. Note, however, that the propositions are only a tool to outline a direction, the implementation of the propositions does not provide full assurance of success. Finally, Vecchiato and Roveda (2010) state that the required resources also play a role in determining and implementing the strategic choices, this part is further discussed in section 2.3.

As discussed, the strategic options focus and flexibility give many advantages, although there are also disadvantages. This is certainly noticeable for relatively small companies, think of the amount of resources that a company must deploy and the risk that the company runs. Especially for small companies, cooperating can be a solution. That way, the resources invested are shared and the companies run less risk (Wernerfelt & Karnani, 1987). More on this in the next paragraph.

2.1.4 Cooperation

Cooperation is a strategy in which partners work together to achieve a common goal (Wernerfelt & Karnani, 1987). Lendel, Soviar, and Vodák (2015) state that a cooperation strategy requires the formulation of objectives and parameters for cooperative activities in companies. The ultimate goal is to create value for the company. As Wernerfelt and Karnani (1987) found, it is attractive for small companies to have cooperation as a strategy, because it spreads the investment of resources and the risk. According to Todeva and Knoke (2005), these are just a few of the reasons for choosing this strategy, as there are so many strategic motives for engaging in cooperation. In order to achieve their goal, the companies must build up a long-term cooperative relationship.

In order to create the cooperation strategy, three steps must be taken. According to Lendel et al. (2015), the first step is the preparatory part, but in theory this is combined with step two: analytical part. In these phases, analyses are made of the current situations of the company. Then the basic requirements of the cooperative management model are set up, and once the cooperation has started, the trends of the cooperation are supposed to be analysed and evaluated. All activities that occur should be in line with the corporate strategy. When the analysis is finished, the vision and objectives of the cooperative management are supposed to be clear. The employee behaviour with the cooperation should be as agreed in the vision, for which the cooperative management is responsible. The third part is the application part, in which the focus is on the integration of the environment and the integration of the internal processes in combination with the cooperation, however the parties nevertheless work independently of each other (Todeva & Knoke, 2005). The company must ensure that a model is created that describes the cooperative processes, what information should be where, and that the processes can be optimised. Figure 2 shows what this process looks like (Lendel, Vodák, & Soviar, 2015).

As Wernerfelt and Karnani (1987) describe, in a cooperation it is important to achieve the goals that have been set, i.e. both business goals and partners' objectives. For this to happen, the cooperative strategy must be in line with these goals. This should be looked at regularly, because if the strategy is no longer up-to-date, the cooperation strategy should be changed or a totally new cooperation strategy should be developed. The adjusted strategies should also be evaluated regularly. In addition to continuing to evaluate the cooperation strategy, maintaining a relationship with the current or potential partner should not

be forgotten. The cooperation activities between the partners must continue with a view to achieving the cooperative objectives (Lendel et al., 2015). Lendel et al. (2015) state that the following four attributes lead to effective cooperation activities, namely innovation, trust, information background, and finally organisational factors.

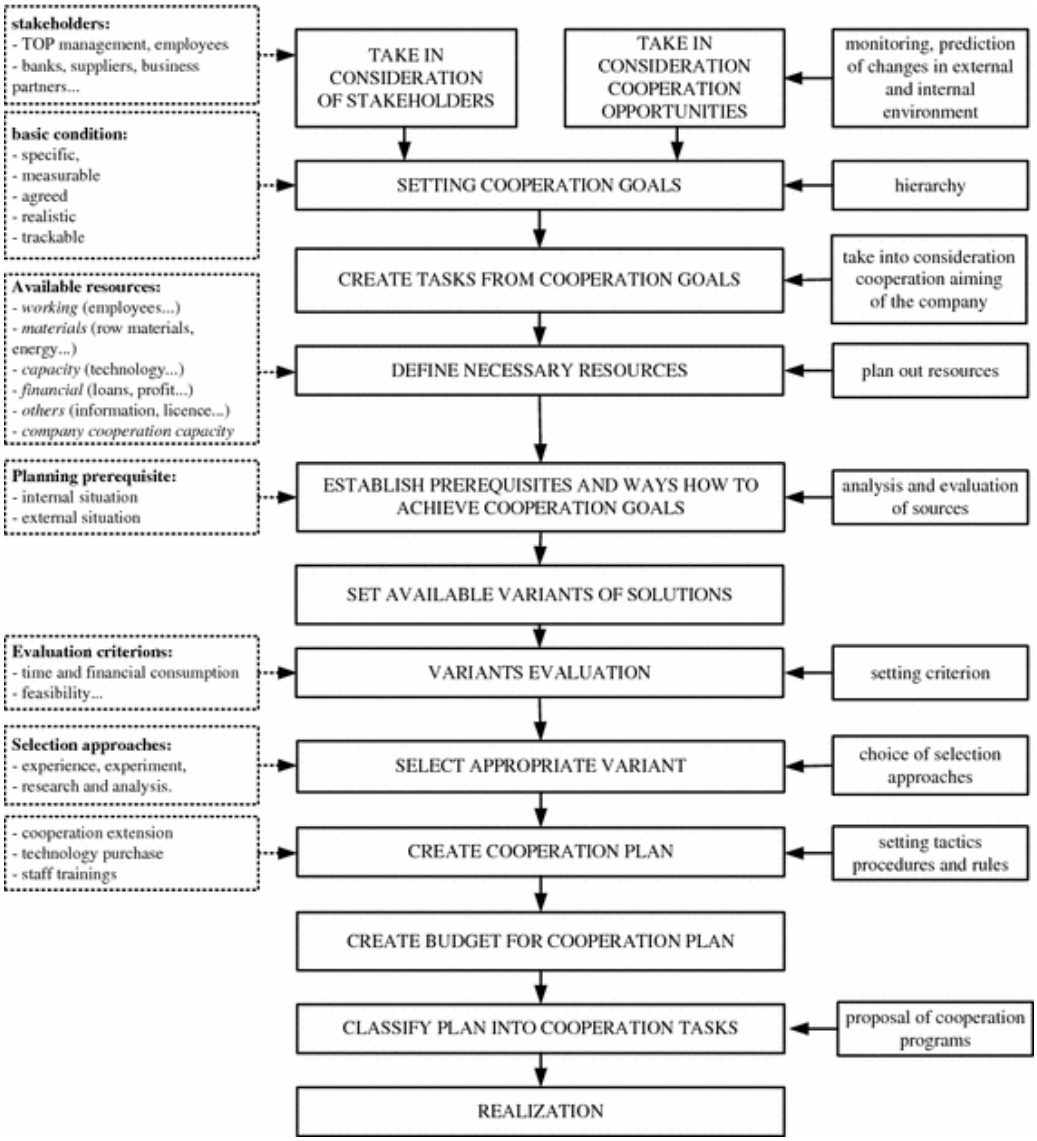

Figure 2. Planning of cooperation activities in a company (Lendel et al., 2015).

2.2 Future business model gas stations

2.2.1 Business model

This section is introduced with the definition of the business model. DaSilva and Trkman (2014) have researched the term business model and found out that the business model was first named in the mid-20th century. At the time, it meant a reflection of reality in a model. The term was rarely used for decades,

until the information and communication technologies (ICT) developed in the 1990s and Internet companies became more and more important. In the following years, the term was used more often in surveys and in even more sectors. As a result, there are many definitions, but after researching the business model, the authors conclude that the definition of the business model has to do with the resource-based view (RBV) in combination with transaction cost economics (TCE). Value is generated for the company and its customers by combining the resources with the transactions, because resources create transactions and that generates value. To create value, the coordination of governance structures should focus on efficiency through vertical integration, markets or contracts. On the other hand, governance structure costs also come into play and are directly related to a firm's assets, for the higher the specificity of an asset, the higher the governance cost will be. Looking at the RBV, a company's resources consist of assets, capabilities, organisational processes, company attributes, information and knowledge, all of which are developed and controlled by the company. In particular, strategic resources are seen as elements that allow a company to differentiate itself and thus compete with other strategies (Lazzari, Sarate, & Gonçalves, 2013).

2.2.2 Value

In the previous paragraph, it was noted that the business model ensures that the company adds value for the company and its customers (DaSilva & Trkman, 2014). The definition of value varies across papers. For example, Chesbrough and Rosenbloom (2002) state that adding value refers to realising economic value, where Magretta (2002) notes that value involves the delivery of customer value and Teece (2010) identifies value as supporting the value proposition for the customer. These approaches to value are mainly economic concepts, but Den Ouden (2012) states that not only economic concepts add value, but also eco-footprint and meaningful life, for example. This observation results in a new term: sustainable value. This means that not only the economic value is considered, but also the environmental and social value (Ueda, Takenaka, Váncza, & Monostori, 2009). In the short term, sustainable objectives are not achievable, but in the long term they are. Moreover, these objectives are not achieved just like that, they require a plan. For this, the social, environmental, and financial performances need to be aligned (Ortiz-de-Mandojana & Bansal, 2015) as can be seen in figure 3 (Evans et al., 2017)

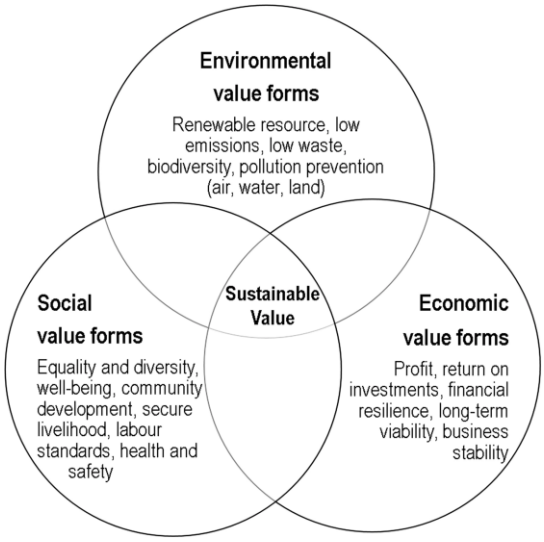

Figure 3. Sustainable value (Evans et al., 2017).

2.2.3 Business modelling methods and tools

It can therefore be concluded that the business model must lead to sustainable value. Evans et al. (2017) indicates that there are two business modelling methods and tools, namely those of Osterwalder and Pigneur (2010) and of Johnson, Christensen, and Kagermann (2008). The former has designed the Business Model Canvas consists of 9 building blocks as can be seen in figure 4. The right side of the canvas consists of choosing, delivering and capturing value and the left side consists of internal and external processes and logistics. The business model of Johson et al. (2008), on the other hand, consists of four aspects (see figure 5), of which the first, according to the authors, is the most important: customer value proposition. Here, the goal is to add value for the customer in order to get the job done. The second aspect is the profit formula, in which the company describes how it adds value for the company itself when it does so for the customer. The next part of the business model is the key resources that consist of the assets needed to deliver the value proposition to the target group, so it is all about the elements that actually add value to the company or to the customer. The last part of the business model is the key processes that consist of operational and managerial processes that ensure that value continues to be added. Also part of this are the rules, metrics, and norms of the company.

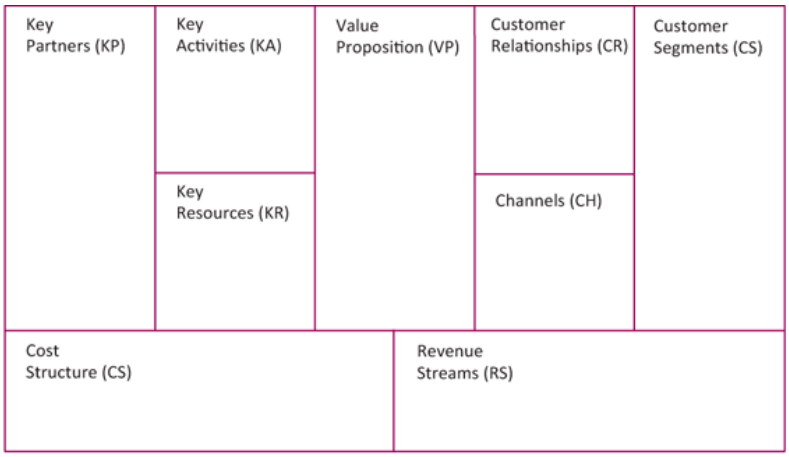

Figure 4. Business model generation (Osterwalder & Pigneur, 2010).

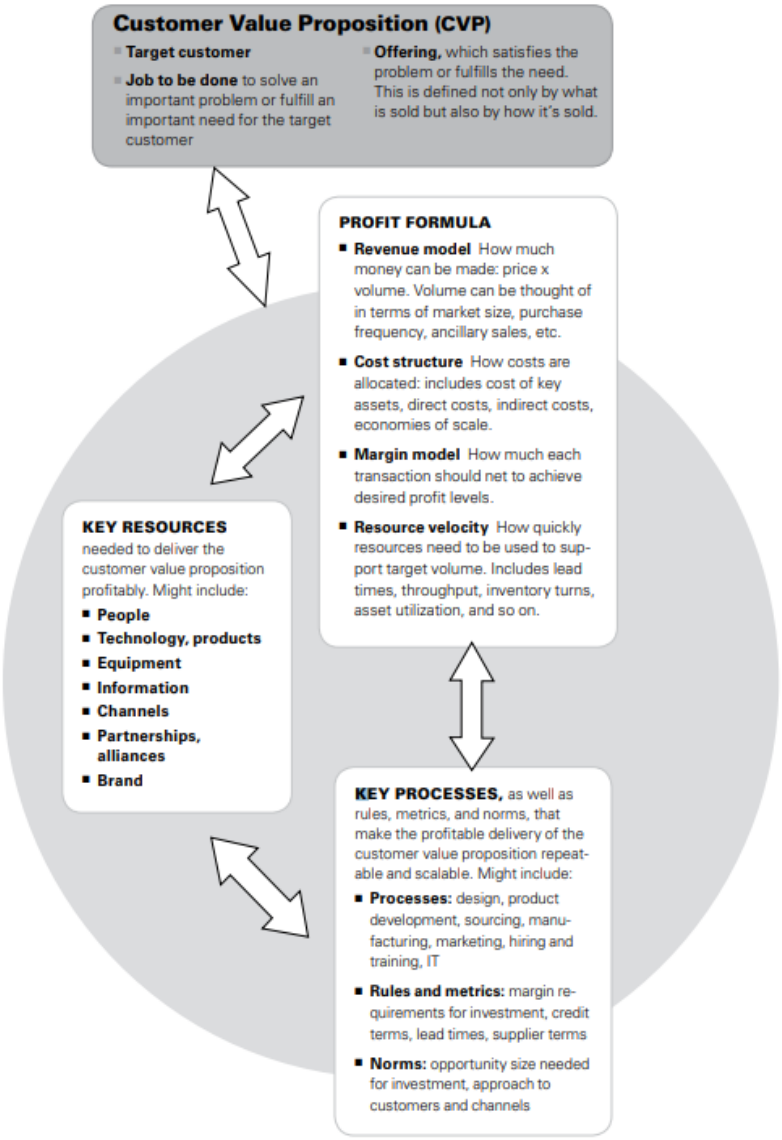

Figure 5. The elements of a successful business model (Johson et al., 2008).

2.3 Turning current business model into future business model

2.3.1 Dynamic capabilities

While sections 2.1 and 2.2 mainly looked at how a company should act and how it should be organised, this section looks at what it takes to replace the current business model with the business model for the future. To start, Teece (2018) states that the different elements of a company's strategy must match and be aligned with each other, as well as the strategy and the business model. The reason for this is that proper alignment ensures the satisfaction of customers' needs, which results in profit for the company. Good business models can be applied to different segments, but companies themselves know which market segment is the most important to target. Finally, it is important to realise that the business model needs to

change continuously, because the competition can take over (parts of) the business model and develop it themselves.

Business models, dynamic capabilities, and strategies are all independent of each other initially. Business models and strategies have been discussed in earlier sections, but dynamic capabilities have not. Dynamic capabilities are the abilities of a company to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect the abilities of a firm to create new and innovative forms of competitive advantage given path dependencies and market positions (Teece, Pisano, & Shuen, 1997). In the dynamic capabilities framework, which can be seen in figure 6, the dynamic capabilities are central. Teece (2018) states an organisation is transformed when the dynamic capabilities and strategy are combined, because then a well thought-out business model is created. In the best case, this leads to a profit that is equal to maintaining or even improving the capabilities and resources. However, in today's dynamic markets, competitive advantage relies on the ability to continuously build organisational capabilities that form the basis of the products and services offered by the company. In order to remain competitive, it is not enough to have strong resources and organisational capabilities. The company must also possess strong dynamic capabilities for developing and renewing its resources and organisational capabilities (Teece et al., 1997)

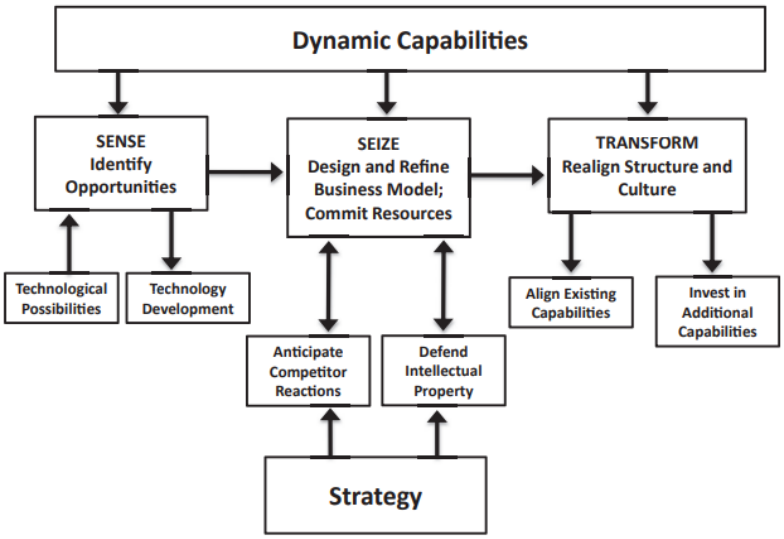

Figure 6: Simplified schema of dynamic capabilities, business models, and strategy (Teece, 2018).

For the innovation of the business model, it is important to have dynamic capabilities. First of all, the initial thought must be to improve the business model, for which the customer's needs must be known, where technology, such as the Internet, plays an important role. However, it is difficult to incorporate the technology in the renewed business model, because it is more context-dependent. Moreover, technology provides an enormous amount of data, which continuously provides new insights. This capability is called sense. As discussed earlier, the dynamic capabilities are also important on the renewed business model, because companies must be able to recognise and adopt opportunities on the current business model, and this is the second dynamic capability, namely seize. Finally, the business model also changes due to decisive choices within the company, such as entering new markets in order to remain competitive (Teece, 2007) and this capability is called transform (Teece, 2018).

In addition to the important role that the dynamic capabilities have on business model innovation, the organisational design is important for both the business model and the dynamic capabilities. For instance, business model innovation needs a creative organisation in different phases, which reacts quickly during implementation. In general, it is typical that management is shallow and has decentralised authority, but with the right balance between delegation and control. Dynamic capabilities, on the other hand, are influenced by the incentive system and values. These forms of organisational design can create strong dynamic capabilities with a good business model that is complementary. Teece (2018) adds once the company has developed a good business model due to its strong dynamic capabilities, it can turn this into an asset by turning it into intellectual property. This is costly and the rights are relatively short, but ideas from the business model cannot be easily copied by others.

DaSilva and Trkman (2014) state that the strategy is determined for the long term. The strategy is also about building dynamic capabilities, referring to the fact of responding as effectively as possible to the future and contingencies. In other words, the long-term strategy creates dynamic capabilities, which falls under a medium-term perspective, which in turn influences the business model. The business model is seen from a present or short-term perspective. This is also concluded by Teece (2018). The dynamic capabilities can also limit the business model when there are upcoming or existing contingencies. This theory leads to figure 7 in which the framework is made clear. When a company has the ambition to develop dynamic capabilities, it first has to distance itself from the original business model. New strategic decisions need to be made, through which the dynamic capabilities are developed and these developments affect the business model.

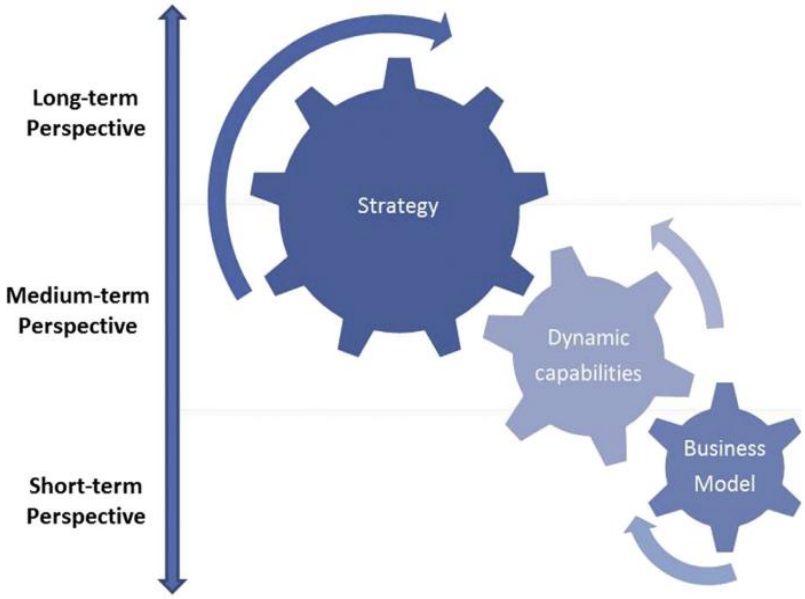

Figure 7: Generic framework (DaSilva and Trkman, 2014).

2.3.2 Business model innovation

In order to innovate the business model, a creative and responsive organisation is required. Moreover, implementing an innovation is easier when management is structured shallowly and decentralised, in order to find the right balance between delegation and control (Teece, 2018). Inigo,

Albareda, and Ritala (2017) investigated that there are two possibilities that make the business model more sustainable and lead to long-term competitive advantage, namely evolutionary and radical Business Model Innovation for Sustainability (BMIS). According to Geissdoerfer, Vladimirova, and Evans (2018), a business model becomes a sustainable one when the company adds sustainable value, when multiple stakeholders are proactively involved, and when the business model is focused on the long term. The difference between evolutionary and radical BMIS is the way innovation changes for the value creation of the mechanisms social, environmental, and economic for the company and its stakeholders. The evolutionary approach is about the BMIS that can expect one or a few changes to the business model, in other words, the current business model is fine-tuned. It responds to the changing environment and the gradual incorporation of sustainability objectives in the market. The focus should be on integrating improvements and reducing risk and costs. The companies that use this method are often well-established large companies whose structure and business model are already geared to the future. On the other hand, the radical approach deals with a completely new value proposition, value creation, and capture system in the company. The reason for this is to add new sustainability challenges or to solve a problem in a radical way. A company can choose this approach when it wants to distance itself from unsustainable effects in the market, get ahead of the competition by distinguishing itself in terms of its business model or tapping into new markets (Inigo et al., 2017). As Teece et al. (1997), Teece (2007), Teece (2018) and DaSilva and Trkman (2014) observe, dynamic capabilities are indispensable when changing the business model. Inigo et al. (2017) concur with this, however, it is important which approach the company uses, as this requires the dynamic capabilities to be applied in a different way. The following paragraphs discuss the three dynamic capabilities for the evolutionary and radical BMIS.

This paragraph discusses the sensing, seizing, and reconfiguring capabilities (another name for transform capabilities) for the evolutionary BMIS. Inigo et al. (2017) state that in this approach, the three capabilities are known for taking a gradual and increasingly systematic look at the company's strategy for sustainable development. The first capability for evolution is sensing, which involves the gradual integration of stakeholders and the triple bottom-line objectives of the business model, attracting the necessary technologies and techniques for sustainability that must be aligned with the BMIS. The triple bottom-line objectives consist of the co-creation of profit, social, and environmental benefits (Geissdoerfer et al., 2018). Therefore, it is important to respond to the external environment of the company, such as social and environmental regulations. The trick is to respond quickly to developments and to incorporate them into the business model after the opportunities have been monitored. Companies must comply with regulations and be open to external stakeholders who express concerns or ideas about sustainability. This can be done through networking via sustainability associations, for example, because they discuss sustainability trends that may affect the company and that it can integrate into the BMIS. The next capability is seizing, where the knowledge and resources gathered by the sensing capability are put into action. Here, clean techniques and sustainability-oriented methodologies are integrated. The business model should have evolved gradually to fit the business activities, internal processes and customer segments. In order to design new sustainable products, services and processes, the knowledge must be disseminated. In order to be successful with BMIS in the long term, it is important to find a partner that matches the company, in order to fill the knowledge gaps. The last dynamic capability for the evolutionary approach is reconfiguring capabilities, which consists of spreading the sustainability mindset through the company. Every person involved within the company needs to act according to this mindset. The next capability for the evaluation of the BMIS is decentralising the knowledge and innovation and applying sustainability teams because of the cross-cutting nature of the sustainability issues. The sustainability objectives can be achieved by

organising horizontal forms within the company, which are based on trust and commitment to the company objectives, resulting in cooperation and coordination.

This paragraph discusses the dynamic capabilities for the radical BMIS. In this approach, the business model is systematically transformed in such a way that the organisational structure and value proposition are changed. These changes have consequences for the company, network, and environment. The dynamic capabilities are aimed at creating progress and radical transformation and dealing with economic, social, and environmental values that are also sustainable. As is well known, the sensing capabilities are the first capabilities to be addressed for the radical approach. For this, sustainable opportunities and threats need to be detected, which can be done by holding open dialogues with stakeholders involved in the social and environmental aspect. The focus should be on systems-based sustainability challenges and trends and collective solutions. This is not only about the stakeholders' needs, but also about proactively identifying the industry's greatest challenges and responding to them through radical BMIS. Companies adopting the radical approach must seek out new sustainable technologies to transform the market towards an environment of sustainable change. In addition to being beneficial for sustainability, new sustainable technologies also provide the company with a competitive advantage. Secondly, the dynamic capabilities consist of seizing, which consists of a socio-technical system-based approach adopted for sustainability-oriented innovation. Since the implications are company-wide, a systematic approach is desirable to adopt these innovations. For the renewed business model to succeed, the focus of the BMIS must be on the sustainable developments and customer goals. These three must be aligned with each other in order to meet all needs. To bring together knowledge in the social, environmental, and economic fields, inter-partner learning and co-creation is the solution. This integration of partnerships goes further in a radical approach than in an evolutionary approach, because it is not just about covering a lack of skill or knowledge, but offers the opportunity for learning co-creation and sharing responsibilities between partners. The last dynamic capability is reconfiguring capability, whereby all layers of the company take into account the sustainability goals, but also take responsibility for the collective decision-making and governance towards BMIS. Moreover, creative and disruptive sustainability-oriented innovation teams should be promoted to generate new spin-offs, encouraging out-of-the-box thinking. Finally, a crucial point for the radical approach towards BMIS is to integrate sustainability-oriented innovation and value chain management. Because the radical BMIS causes rapid changes, a broad base of support is recommended by reaching a collective decision, so that these changes will be accepted (Inigo et al., 2017). The theory of the evolutionary and radical approach on the BMIS provides guidance for managers and entrepreneurs to encourage business model transformation, in order to make the social and environmental aspects work together leading to value creation.

3. Research method and design

The methodology chapter describes how the research questions will be answered. The central research question is: *"What are the effects on the business development of gas stations in the changing fuel market?"* and is answered by answering three sub-questions. As discussed in chapter 2, sub-questions 1 and 3 will be answered by secondary data derived from the systematic literature review. Sub-question 2 is answered by conducting semi-structured interviews, the methodology of which can be found in this chapter.

3.1 Research objective

As mentioned before, gas stations are in the middle of an energy transition. This transition creates uncertainty in term of the changing type of fuel for the future and income, as several studies have been done on the alternative energy sources, but a definitive solution is not forthcoming. The purpose of this research is to provide gas station entrepreneurs with more certainty about what the future will look like as to the changing type of fuel and income for the industry, what effect this will have on the current business model, and how the gas station entrepreneur can respond to the renewed business model.

The insights enable the gas station owner to weigh up the results and anticipate the future. The information about the new business model, the changing current business model, and how the entrepreneur can deal with this is essential, because every gas station entrepreneur notices the consequences of this in the current business. The entrepreneur can interpret the results in their own way and respond to this.

Finally, in the introduction and in the literature review, different alternative energy sources were introduced, as well as the different strategies, the business model and tools to innovate the business model. These have a role in formulating the method.

3.2 Research approach

Investigations can be carried out in various ways. Sreejesh, Mohapatra, and Anusree (2013) distinguish between three types of research designs. The first is exploratory research design where the necessary information is collected to develop a good basis for conducting detailed research later. There are three reasons why an exploratory research design is carried out and these are to analyse a new problem situation, to evaluate alternatives, and to discover new ideas. The second research design is descriptive research design. Here, research is conducted on a sample of individuals by means of a survey and observations in order to ultimately make statements about a pre-established representative population. The last research design is causal research design in which the relationship between the cause and effect between variables is investigated. The exploratory research design best corresponds to the purpose of this research and that means using qualitative data (Sreejesh et al., 2013). Garbarino & Holland (2009), on the other hand, distinguish between qualitative and quantitative data. Qualitative data consists of non-numerical information, whereas quantitative data consists of numerical information. Sreejesh et al. (2013) describe that the qualitative research method can be subdivided into depth interviews, focus groups, and projective techniques. As discussed in the introduction to this chapter, the data for this research comes from semi-structured interviews and this one falls into the category of depth interviews. Therefore, it can be concluded

that exploratory research is carried out, within which the qualitative research method is chosen to carry out semi-structured interviews.

3.3 Interview

To answer sub-question 2, the data collection method is qualitative study interviews. Oates (2005) defines interviews as specific conversations that are led by a researcher involving an agenda and it has some unspoken assumptions. One form of qualitative study interviews are the semi-structured interviews. In these, the interviewer asks questions that have been prepared in advance in a conversational format and is allowed to ask more questions. Besides, the interviewer receives more and detailed information from the respondent. The right of the interviewer in this form is also to deviate from the order or content of the questions, if the conversation requires this (Dearnley, 2005). In addition, Segal, Coolidge, O'Riley, and Heinz (2006) report that the pre-prepared questions increase reliability because the variability between different interviews is reduced. Furthermore, a semi-structured interview increases validity, because the criteria are handled systematically and completely during the interviews. For this research, semi-structured interviews with outside experts are also used, discussing the future business model of gas stations, viewed from different perspectives. The purpose of the semi-structured interviews in this research is to find out what the future business model of a gas station will look like.

3.4 Data collection

To answer sub-question two, primary data is collected through several interviews. As mentioned in section 2.2, there are many business models. The aim of the company is to create value for its customers, and in doing so, various activities must be aligned with each other. During the set-up of the semi-structured interview, the choice was made to ask what sustainable value the new business model adds, given the fact that it is increasingly about sustainability. The business model used during the interviews is the business model of Johnson et al. (2008). This choice was made because it consists of only four aspects and that creates an overview. Moreover, this model is also considered to be complete. The business model of Osterwalder and Pigneur (2010) consists of nine building blocks, to discuss these all with the respondents was considered chaotic and too time-consuming. The four aspects of the model of Johnson et al. (2008) consist of the following four aspects: customer value proposition, profit formula, key resources, and finally key processes. Finally, the strategies of Wernerfelt and Karnani (1987) and Ward & Duray (2000) are discussed during the interviews.

As already decided, semi-structured interviews are conducted because it leaves room for the interviewer to continue asking questions about the respondent's answers. In order to conduct good qualitative research, Interpretative Phenomenological Analysis (IPA) is used. Alase (2017) states IPA is an approach that is intended to make a person tell valuable things about certain phenomena in a certain context. The respondent determines the setting for the interview, as the respondent needs to be at ease, in order to ensure reliability. Given the current situation where COVID-19 plays a major role, the respondent may also indicate that they would prefer to do the interview via online tools. Before start, respondents are asked for written permission to conduct interviews and record the audio, after which the recordings are transcribed in detail. During the interviews no hypotheses will be tested, only the different views will be discussed.

Each interview will approximately take about 45-60 minutes. This whole interview guide for the semi-structured interview can be found in Appendix A.

There is no clear guideline as to how many interviews should be conducted for a qualitative study. While Morse (2000) indicates that the number of interviews to be conducted depends on various factors, the IPA prescribes between two and twenty-five interviews (Alase, 2017). Although these researchers provide guidelines on the number of respondents, Eisenhardt (2021) has examined that these guidelines need not be applicable to every study. The Eisenhardt Method focuses on multi-case theory building with the aim of creating a strong theory about significant phenomena under investigation. The goal of this method is to successfully conduct a study that is balanced, accurate, generalizable, logically coherent and surprising. In order to prevent new insights from being presented during the conducting of the semi-structured interviews, resulting in saturation, it was decided, in consultation with the client, to carry out a reliable study in which various angles were approached to answer the question. It was decided to conduct six interviews, contacting companies involved in the energy transition of gas stations and the government. A prerequisite for the interviews is that the respondents are familiar with the energy transition and what consequences this will have for gas stations. This will ensure that different perspectives are taken into account in order to get the best possible picture of the future business model for gas stations. Unfortunately, the Ministry of Economic Affairs & Climate had insufficient capacity to participate in the study in the end, so another worthy respondent was sought from a different perspective, namely a Professor of Energy Technology. The interview respondents who participated in the interviews are:

Table 3. List of respondents

Respondent's number	Explanation
Respondent 1	Public affairs manager of the Dutch association speaking on behalf of refineries and gas
Respondent 2	Director of a Dutch organisation for the energy industry
Respondent 3	Secretariat of the interest group for Dutch gas stations
Respondent 4	Owner of an independent consultancy that deals with the energy transition
Respondent 5	CEO Branch Netherlands & Retail Operations Director of a large gas station chain
Respondent 6	Professor of Energy Technology

3.5 Data analysis

After transcribing the audio of the interviews with Amberscript software, codes are generated from the data. However, before generating codes all interviews are listened to and read back to ensure that transcriptions do not contain errors to ensure reliability. Once that is satisfied, the data can be analysed via the programme ATLAS.ti where it is possible to code and analyse the interviews. Generating codes from the data is the bottom-up approach, because the codes are not generated from the theories, but from the data (Alase, 2017). Another name for the bottom-up approach is inductive coding (Garbarino & Holland, 2009), since codes will be developed by using phrases and terms used by the respondents in the interviews themselves. Williams and Moser (2019) add that deductive research, on the other hand, focuses on the casualty and testing of the theory.

Because qualitative data is analysed, in the form of interviews, it is important that validity and reliability can be ensured by establishing procedures and applying them rigorously and consistently. The first step after data collection and analysis is open coding. As partially discussed in the previous paragraph, open coding consists of identifying different concepts and themes that are meant to be categorised. In this step, broad initial themes are used (Williams & Moser, 2019). Elliott (2018) adds that only useful pieces of text should be used. Superfluous words may be left out.

The next step is to see if there are any relationships between the different codes. Alase (2017) reports that patterns should be looked for so that codes match. This step is the second level of coding and is called axial coding and goes beyond open coding. Indeed, during axial coding one goes on to refine, align, and categorise the themes. This initiates the preparation for the selective coding (Williams & Moser, 2019).

With selective coding, the third level of coding has been set in motion. Categories that were selected and integrated during axial coding are now transformed into cohesive and meaning-filled expressions. As Williams and Moser (2019) point out, selective coding can be seen as the continuation of axial coding, but on a higher level of abstraction. This is the beginning of the story to be told, also called theory development. Based on the themes created in the selective coding, one can construct a meaning and this completes the process of qualitative research. IPA indicates to use statements from the transcripts in order to understand the phenomenon (Alase, 2017). Furthermore, during the research everything will be done to protect the rights, dignities, and privacies of the research participants, this also applies during the data analysis. Appendix B shows the coding scheme of the interviews including all code groups and codes. After the interviews were transcribed and coding was performed, it was possible to analyse the findings and draw a conclusion.

3.6 Validity

The use of the IPA provides a more reliable examination. The validity of the research, on the other hand, has not yet been defined. This is about the extent to which what needs to be investigated is actually investigated (Andrade, 2018). Besides the fact that a researcher is dependent on the extent to which the respondent is willing to provide the correct information, Yardley (2000) mentions four criteria are important in this respect, namely sensitivity to context, commitment and rigour, transparency and coherence, and finally impact and importance. The respondents who are thought to be interesting for the research have been selected in consultation with the client and will be asked to participate in the interview. Thus,

sensitivity to the context has been met. The second criteria are also met, as the IPA guidelines are consulted. In this chapter, the research method and design are described in detail and each choice can be justified, which means that the third criteria transparency and coherence have been taken into account. Finally, the interviews can be scaled under impact and importance, as the results of the interview contribute to the research. Through the results it is possible to determine the business model of gas stations for the future. Andrade (2018), on the other hand, distinguishes between two types of validity, namely internal-, and external validity. Internal validity tests whether the study design, conduct, and analysis answer the research question without bias. The fact that predesigned interview questions are asked in the same order and that the questions are based on the literature review significantly reduces the likelihood of internal validity. External validity, on the other hand, tests whether the results of the research can be generalised to other contexts (Andrade, 2018). The respondents who are asked to participate in the interviews are representative of the target group relevant to the study, but for other studies this target group is not relevant at all, hence external validity is fulfilled.

4. Results

This chapter deals with the results found as a result of the data analysis. Sub-questions 1 and 3 arise from the systematic literature review and sub-question 2 is answered following the semi-structured interviews. As discussed in the previous chapter, the IPA approach of Alase (2017) was applied here, in order to ensure a good qualitative research in which reliability and validity are highly valued. The research method and design can also be found in chapter 3, where in this chapter the results are thus discussed that answer the sub-question and help answer the central research question.

4.1 Future business model gas stations

The fuel market for the transport sector is preparing for a transition. Although there are now more sustainable alternative energy sources on the market, it is uncertain what the future will hold for gas stations in terms of the changing type of fuel that will be offered and where the income will come from. Moreover, it is still unclear how the current business model differs from that of the future. Kolkman Brandstoffen also experiences this problem and commissioned semi-structured interviews with experts from various perspectives to get a good idea of what the business model of gas stations will look like. This means that sub-question (SQ2) reads: *'What will the future business model of gas stations look like?''*. All aspects of the business model of Johnson et al. (2008) are covered. Firstly, the customer value proposition is discussed. In this section, an estimate is made of the customer of the future for gas stations, and then the section is closed with what sustainable value the gas station of the future will actually add. The second aspect is the profit formula, which discusses the possible solutions that both manned and unmanned gas stations can offer to help gas stations increase their turnover and the challenges that the market will face in the coming years. Subsequently, the third and fourth aspects will be discussed: the key resources and key processes, which will elaborate on what resources and processes the gas stations will need to actually transfer the sustainable value to the customer. Fifth, the strategy that gas stations can adopt in the coming years is discussed, as well as the dynamic capabilities. Finally, the chapter concludes with a conclusion.

4.1.1 Customer value proposition

A successful company is one that adds value for the customer in order to solve the customer's fundamental problem. This requires a good understanding of the customer's problem and an idea of how to solve it. Then this idea can be implemented. A company creates the most value when the problem is solved perfectly. The first question that arises is who will the customer of the gas station actually be in the future? This is immediately a very essential question and all respondents indicated that this would be the motorist. The Professor of Energy Technology could not elaborate on this matter, the expertise was on the technology, i.e. the supply of the energy sources, hence the lack of input from one respondent. According to the other five respondents, the customer of the gas station in the future can be divided into two groups: the private driver and the business driver (for example, a sales representative and a truck driver). Business drivers often manage their own car fleets. It is expected that most developments will take place among private vehicle owners. Owning a car will become less important, so fewer people will own a car. In the future, the next generation will attach less value to owning a car. Nowadays, more and more cars are leased, but there are

high expectations for shared cars. With shared cars, people share cars with each other. CEO Branch Netherlands & Retail Operations Director of a large gas station chain expressed himself as follows: ‘’the consumer does not pay for owning a car, but for using a car’’ (respondent 5, p. 1). In addition, public transport is expected to play a greater role in mobility. Future generations will look more at costs, speed and convenience, and public transport is increasingly responding to this. These developments stem from local government policies to keep cars out of cities. These developments affect the vehicle fleet in the Netherlands, and therefore have consequences for gas stations. However, it is questionable whether the concepts mentioned will succeed due to the Corona situation, as people have started to avoid large groups and the idea of sharing has suddenly acquired a negative meaning. For the business customer, on the other hand, less drastic developments are expected, but changes will come quickly. Companies will have to comply with the CO_2 requirements arising from government policy, so the entire vehicle chain will have to meet the requirements. Many companies will switch to alternative energy sources for passenger cars, where it is more difficult for commercial transport such as trucks. The search for the most suitable energy source is still in full swing. In other words, both business and private road users could be potential customers of the gas station in the future.

The energy sources for vehicles are going to change, so the gas station has to take into account that soon not every car driver will be a potential customer, all respondents said. This is currently the case, because a combustion engine needs to be filled up at the gas station. A vehicle with an alternative energy source, such as an electric car, can be charged at home, at work or at the shop. For this, the gas station is dependent on developments in the market, although the gas station itself can also respond to them.

In addition to the motorist who adds energy to the vehicle in any way, there is also the customer who only enters the shop for a related product, so they come for convenience or for certain services. This group is called the non-tanker. The respondents all agreed that the gas stations prefer a customer who is the tanker but who also buys related items from the shop or uses the services offered, because they bring money into the shop. These different segments are found at manned gas stations, whereas at unmanned gas stations only the tankers are customers. In any case, it is advisable to look for a specific target group that a gas station can serve, in which technology plays an important role, because technology can make customer loyalty stronger. A more important role for technology in the gas station industry is what the director of a Dutch organisation for the energy industry is advocating (respondent 2, p. 4).

4.1.1.1 Sustainable value

Adding value for the company and its customers does not only consist of economic value. Nowadays, value is about more, namely a combination of economic, environmental and social value. In the future, gas stations will add value to the economy, because they provide a large part of the mobility. In this way, society is kept running and the economy is supported, because economic activities can be developed. The CEO Branch Netherlands & Retail Operations Director of a large gas station chain stated: "The Ministry of Economic Affairs and Climate designated gas stations as vital/crucial during the Corona situation. As a result, gas stations add a lot of value to the economy" (respondent 5, p. 3). In addition, gas stations facilitate business activity by offering greener options and moving away from fossil options. Besides, there are oil traders and gas stations that relieve customers of the burden of mapping out their CO_2 emissions and give advice on how to reduce them. These support services also add sustainable value to the economy. Sustainability in a general sense adds value to the economy, so don't just think about offering the alternative fuels, but also about making buildings more sustainable. Increasing sustainability not only adds

value to the economy, but also to the environment. Sustainable solutions in terms of mobility reduce emissions many times over and therefore significantly improve air quality. That is what all respondents saw as the most important development in terms of adding sustainable value to the environment. This is the conclusion of the owner of an independent consultancy that deals with the energy transition: ‘’In this way, gas stations contribute to preventing further climate change’’ (respondent 4, p. 3). Furthermore, when the gas station generates its own energy and offers it in a sustainable way or offers alternative energy sources, it has a role to play in preventing peak times as far as the electricity grid is concerned. This creates a more even demand for electricity. ‘’Industry and data centres use a lot of electricity. If they use a lot of green power, it is difficult for the surrounding area to expand’’ according to a secretariat of the Interest group for Dutch gas stations (respondent 3, p. 2). The gas station also offers a service-oriented role to the surrounding area, both now and in the future. In the area of peripheral issues, gas stations also do their bit for the environment by adding a deposit on plastic bottles and observing the age limit for the sale of tobacco. Finally, social values are also added by gas stations in the future, provided that gas stations manage to make it a point that customers can also refuel and meet each other. In addition to providing mobility, the gas station should offer the right services, but according to the respondents that depends on the location of the gas station. It is good to give something back to the environment, for example by offering local products. Another way to add value on a social level is to offer workplaces for people distant from the labour market, provided that the gas station offers an opportunity in or around the area. In this way the gas station is practising CSR, and this is a good way for the gas station to stand out from the crowd. This idea was suggested by the public affairs manager of the Dutch association speaking on behalf of refineries and gas (respondent 1, p. 3) and by the director of a Dutch organisation for the energy industry (respondent 2, p. 3). Finally, what happens in the surrounding area in terms of sustainability depends on the location, therefore in the field of sustainability the gas station can respond to what is going on in the region.

4.1.2 Profit formula

Now that the value of the gas station of the future is known, it is important to indicate how the company adds value for both itself and the customer. This means how the company can generate profit. It will first be discussed where the turnover and costs come from, before talking about margins or turnover of resources. It is certain that the current business model of gas stations will not work in the future as all respondents predicted. For example, there are currently refuellers, some of whom will not come to refuel in the future because they can load at home or at work. After all, charging at these places is easier for the motorist and is cheaper than at a gas station, which is why charging at home can also be seen as a competitor by gas stations. In addition, cars with combustion engines are becoming more and more economical, so total sales of fuels will continue to decline. In addition, the industry has to deal with politicians; if they decide to ban fuels, even though the economy is dependent on oil, the gas station will be left behind. At the moment, they want to agree that from 2030 onwards, no cars will be manufactured with an internal combustion engine, the interviews revealed. The question is whether all cars will then have a battery or whether alternatives will become available. The gas station entrepreneurs are really dependent on political choices, because they can also decide that the emission must eventually reach 0. That means that there will be alternatives that will fall by the wayside, it is not yet clear. For gas stations, it remains an interesting question whether gas stations will continue to offer liquid and gaseous fuels or not. Some municipalities are already saying that certain fossil fuel engines are no longer allowed in the city centres of certain cities and this is expected to happen more often. In addition, it is expected that mobility will change in the coming

years and that people will leave their cars at home and use electric bicycles or public transport more often. Expectations are that for the coming generations, owning a car will have less value than with the current generations, because it is expected that people would rather pay for use than for ownership. Therefore, there are high expectations for leasing cars and shared cars. These developments mean that the vehicle fleet will eventually shrink, resulting in less traffic to gas stations. The director of a Dutch organisation for the energy industry stated: ‘’this development could lead to gas stations deciding to go unmanned, to rent out the gas station or even to sell it (respondent 2, p. 3). In addition to all the uncertainties in the area of mobility, there are also uncertainties regarding the shop located at gas stations. An important source of income for gas stations is tobacco sales. Respondents said the plan is that gas stations will be allowed to sell tobacco in the Netherlands until 2030, after which it will be banned. By then, gas stations will be missing out on a lot of convenience customers, because there are smokers who make an impulse buy when they buy tobacco. After the ban, a different public will undoubtedly come in, but the gas station will have to take advantage of this. There should be room for example for the sale of sandwiches or drinks.

4.1.2.1 Solutions manned gas stations

Because of all the uncertainties that gas stations are facing, it is suggested by the respondents to already think about where gas station owners will get their income from in the future. A distinction is made here between manned and unmanned gas stations. A solution that manned gas stations offer is having a retail presence. A gas station can distinguish itself by its shop, service and location. With a manned station the variable costs are not that high, therefore it is important to have throughput of customers and that determines the profitability. The throughput and degree of profitability are determined by various factors. The first factor is the shop. The shop and forecourt must be nice, cosy, warm, clean and tidy. The customer must have the feeling of being welcome. Staff play a very important role in this, because they help create the experience and relaxation and the staff are the persons the customer wants to talk to. Investing in the staff is very important. When the gas station has charging stations and the customer uses them, the customer has a few minutes to refuel. The shop should have something to offer the customer and the customer should be enticed by impulse buying, for example. Various studies have already shown that manned stations have a right to exist when convenience is in order. Therefore, the product assortment may need to be adjusted. The new product range should fit in with the type of customer that the gas station receives. Something recognisable and appropriate for the region could be a good formula. A wide range of local products helps here. As long as the station is distinctive, there are plenty of opportunities. For example, there are currently developments between large parties who work together through partnerships and launch their brands and concepts. Marketing plays a big role, because it makes people more inclined to come to that gas station. People with an electric car can also charge at home or at work. By making good use of marketing, drivers may be tempted to visit the gas station. The director of a Dutch organisation for the energy industry mentioned: ‘’By making good use of technology, the gas station entrepreneur, in combination with good marketing, can ensure that at certain times of the day, certain promotions apply to appropriate products, enticing a motorist to make a purchase’’ (respondent 2, p. 4). The creation of a meeting place in the form of meeting rooms, drinking a cup of coffee or collecting food is probably also an idea. Gas stations will remain a social place. However, it is important to check whether the shop is large enough and the quality is good enough to meet the requirements of the future shop, otherwise the shop will require investment. The consumer of the future expects service in the broadest sense of the word, so be prepared for that.

The trick is to offer services that suit the shop and the customer demand. All respondents stated that the car wash will always be in demand as an important service. Vehicles keep getting dirty and people want to keep washing their cars, also in the future. Developments in the car wash market are also extremely fast. Nowadays, it is difficult for a roll-over to compete with car washes that contain a chain and whereby vehicles are driven to the front, because the capacity is much greater. Wash bays are also popular. The director of a Dutch organisation for the energy industry stated: ‘’local authorities are advising against washing cars on the street, as this causes the oil and waste residues to enter the sewers’’ (respondent 2, p. 3). A secretariat of the Interest group for Dutch gas stations added: ‘’professional car wash companies separate this better and may be able to recycle it sustainably and use organic shampoos’’ (respondent 3, p. 3). Another service that can be offered at manned gas stations in the future is a multifunctional centre (respondent 4, p. 2). At the moment, all kinds of municipalities are establishing environmental zones in some cities, in which only zero-emission vehicles are allowed and vehicles with combustion engines are prohibited. Gas stations are usually located on the outskirts of the city. With the increasing popularity of webshops, distributors are becoming increasingly important. There are more and more ideas to turn these gas stations into multifunctional centres, so that distributors do not have to enter the centre and that all kinds of activities can be carried out at the gas stations. This opportunity requires flexibility on the part of the gas station, but it does offer a certain service.

Besides shops and services, location is the most important factor for the business model of gas stations in the future according to all respondents. Strategically located locations with a network that is easy to reach are important and have proven their right to exist. Depending on the location, the gas station entrepreneur decides which investments will be made and which will not. Here the service area must be considered. By talking to customers, the entrepreneur finds out what the wishes and needs of the customer are. This can be anticipated and any necessary adjustments made. A concept can be very successful in one place, but totally disappointing in another. That depends very much on the location. Besides location, space is very important, because space determines what adjustments or investments can be made to the shop or forecourt. In other words, the degree to which the entrepreneur is successful with his vision and management of the gas station depends very much on the location and space.

4.1.2.2 Solutions unmanned gas stations

Unmanned gas stations, on the other hand, do not have a shop with staff. In the Netherlands, more than half of the gas stations are unmanned. This means that entrepreneurs of unmanned gas stations cannot focus on the shop and to a lesser extent on service, but as stated by the respondents before, location and space do play a very important role. The variable costs are therefore relatively low for the unmanned gas station entrepreneurs, because there are (practically) no personnel costs. The location largely determines whether people come to the unmanned gas station or not. The solution that unmanned gas stations offer is speed, price and no hassle. When using an unmanned gas station, it is only a matter of filling up the vehicle's energy source, which results in a relatively short visit with little fuss. Moreover, unmanned gas stations are known by customers as cheap, so the CEO Branch Netherlands & Retail Operations Director of a large gas station chain stated: ‘’gas station entrepreneurs should make sure that this perception of the customer becomes reality. If the customer's perception is not met, the gas station will lose the customer’’ (respondent 5, p. 5). Suppose the entrepreneur wants to introduce a new service at the unmanned gas station, there has to be some certainty whether it will work or not. The same as for manned gas stations, the gas station entrepreneur has to listen to the wishes and needs of the customer.

4.1.2.3 Energy sources on offer

The electric car will be the winner of the energy transition in mobility. By 2030, cars with combustion engines will no longer be bought and the new fleet will consist mainly of electric cars. The expectation is that by 2030 there will be at least one million electric cars on the road (out of nine to ten million), although external factors could mean many more (or fewer). Current forecasts are already being adjusted upwards, partly due to the falling purchase price. The business sector in particular will accelerate the transition to electric cars, especially passenger cars, because companies will have to meet more and more CO_2 requirements from the government. The expectation, however, is that electric cars will not have taken over the market for the next ten years.

When people in the Netherlands talk about electric driving, everyone thinks of battery-electric driving. This observation is incorrect, concludes the Professor of Energy Technology: "Hydrogen-electric is also electric driving, as it were, because the consumer fills up with hydrogen, but that is converted into electricity in the car" (respondent 6, p. 1). In the world, the idea of electric cars is also different from that in the Netherlands. In the rest of the world and among car manufacturers, it is also hydrogen-electric. In contrast, the Dutch climate is ideal for the battery-electric car, given the cultural and geographical structure of the country. This section presents the results on battery-electric. Not all people who drive battery-electric and want to charge can do so at home. Not everyone has their own driveway with a charging station, so they are forced to charge on the street. All respondents will see the same problems arise when the demand for battery-electric goes up, namely the problem will be that there is limited space for charging, where demand may be greater. Moreover, the electricity grid has to be able to cope with the demand for electricity. The limited possibilities for charging create space for gas stations to install a charging station, especially if the gas station spares the electricity grid peak times by offering charging. The gas station will often receive customers who are on the road, so a fast charger is suggested by the respondents, the faster the customer can get back on the road. The customer, on the other hand, tries to avoid charging on the road, as this can easily take more than ten minutes, depending on the capacity of the charging station. The battery-electric driver prefers to charge at home or at work. There will be customers who long for the convenience that the shop has to offer during the loading process, and for this group the convenience and retail should be in order. A good waiting or work area is then important. However, there will also be a group of customers who do not want the shop. For this group, which is generally more price-conscious, there are also fallback options to unmanned gas stations, should the gas station operator decide to install fast chargers here. In both cases, the location must be suitable to make the installation of fast chargers a success. In the eyes of the battery-electric driver, the gas station must be a logical place to install a fast charger. For some gas stations it will be interesting to place slow chargers, such as a 50kW charger, but that really depends on the location. It is difficult to compete with a normal charger compared to a fast charger. The placing of fast chargers at gas stations is more common than slow chargers, but it is a serious investment, but these soon deliver 175kW/350kW. In some cases, the fast charger delivers over 100 times more power than a home charger. The new battery-electric cars can handle this power. The customer will pay more for using a fast charger than a slow one, which means that the customer must be willing to pay more for it. In the customer's perception, the higher price must be justified, as the CEO Branch Netherlands & Retail Operations Director of a large gas station chain has already stated (respondent 5, p. 5). These choices really depend on the market and the catchment area where the station in question is located. In addition, gas station owners can decide to generate their own energy and to offer this via the charging stations. For example, by installing

solar panels on the awning of the gas station and making a direct connection to the charging station, the gas station produces and sells green energy. In this way, gas stations supply green energy, which the majority of charging stations in the Netherlands do not. These are dependent on energy generated from gas or coal, which therefore emits CO_2 in the chain. The Professor of Energy Technology stated that: In the Netherlands, 6-7% of the electricity is green. When you [the battery-electric motorist] start charging, it really doesn't come from the solar panels, it just comes from the coal plant" (respondent 6, p. 1). By generating and supplying electricity to the gas station itself, the gas station can distinguish itself in a positive way.

Although the popularity of battery-electric driving is increasing, the vast majority of energy comes from fossil fuels. In the coming years, fossil fuels will continue to be offered by both manned and unmanned gas stations. As mentioned before, from 2030 onwards it is no longer possible to buy a new car with an internal combustion engine, but until then it is still possible. The total vehicle fleet in the Netherlands is expected to increase by about one million until 2030, with the number of cars with combustion engines, including hybrid cars, remaining somewhat the same. An average car has a life of fifteen years, so there will still be a need for fuel until 2045. After that, there will still be a need for fuel on a small scale. In the coming years, bio products, namely the sustainable variants of fossil fuels, and climate-neutral renewable fuels can also be used.

For heavy road transport, the situation is more complex. A battery-electric truck is unlikely for now, since the owner of an independent consultancy that deals with the energy transition explained: ‘’For long distances, the power and action radius are currently too low’’ (respondent 4, p. 3). At present, battery-electric trucks are only suitable for short distances. Although the governments also want to get the heavier road traffic zero-emission, the market is not yet ready. As a result, fossil fuels, especially diesel, will continue to be mainly demanded by heavier road traffic in the coming years. As an interim solution, HVO and LNG will offer a solution for the combustion engine, provided they meet the quality requirements. This will increase the portfolio of alternatives, but that does not make it easy for the gas station entrepreneur. HVO is a renewable fuel and is similar to diesel, so it can be sold unmanned. Recently produced diesel engines are prepared for the EN15940 standardisation, so that HVO20 can be tanked in current diesel engines. For HVO100 it depends on the truck manufacturer. Offering HVO is therefore a big advantage, as it does not require a new truck. The driver can immediately switch from diesel to HVO, which immediately reduces the emission of harmful waste products. On the other hand, HVO is more expensive than diesel, so the customer has to see the added value of the product. If HVO is offered at manned gas stations, the staff can point out the advantages to the driver, whereas this is more difficult at unmanned gas stations. LNG, on the other hand, is a "more clean" fossil fuel. Although LNG is a fossil fuel, CO_2 emissions are drastically reduced when a transporter purchases an LNG truck. To fill up with LNG, however, a new truck must be purchased, because LNG cannot be used in a diesel tank. LNG can only be refuelled at a manned gas station, but the driver must then have received safety training. Besides HVO, LNG also will play a role in the future. Certainly when consideration is given to a renewable variant of LNG, namely bio-LNG. A relatively unknown renewable is methanol, but this needs more research. This means that gas stations will continue to offer liquid (or gaseous) fuels. HVO and (bio-)LNG could well serve as an interim solution, or maybe as a full-fledged end product, unless governments start steering more towards 0 emissions, so steering towards electric or hydrogen. The opinions of the respondents on the interim solutions are therefore divided. For example, respondents from the gas station sector considered HVO and LNG to be an excellent interim solution and therefore believe that they have a role to play in the years to come. However, the respondents are aware that there are still harmful emissions. The Professor of Energy Technology is not so sure: "You [everyone can] see the whole trend towards faster electrification. The tricky thing with these interim

solutions is that they may emit less CO_2, but they do emit nitrogen and particulates. You [the government] want to get rid of those too. You can't solve that [the emission of harmful waste from internal combustion engines] by sticking to an internal combustion engine. I have a feeling that the interim solutions are not really taking off, because the developments towards electric driving are going faster, so both towards the battery and hydrogen" (respondent 6, p. 4). This feeling is partly due to the rapid development of electric driving, both towards the battery and hydrogen. Both options will become cheaper through mass production.

However, before battery-electricity will play a major role in heavier traffic, it needs to be developed considerably. As mentioned earlier in this section, the Professor of Energy Technology stated that the Netherlands is relatively more focused on battery-electric than hydrogen-electric, but the Netherlands must realise that the Netherlands is not the world. Car-producing countries such as Germany and Asia are fully committed to hydrogen-electricity and it is these countries that determine the type of cars that will be produced (respondent 6, p. 2). In principle, hydrogen-electric has everything it takes to become a fully-fledged end product, particularly for heavy road transport, but the car market may follow. To fill up with hydrogen, a special hydrogen vehicle has to be purchased. Convenience will play an increasingly important role in the future, which is why expectations of hydrogen are high, because filling up with hydrogen is comparable to filling up with a fossil fuel tank. Electric charging, on the other hand, takes longer. In addition, hydrogen-electric is ideally suited to vehicles with more power and the range is longer. At the moment there are few hydrogen installations in the Netherlands, but it is gaining momentum, partly due to the delivery of hydrogen on site (respondent 6, p. 2). In order to claim a place as a gas station, the entrepreneur must be there on time to stay ahead of the competition. Moreover, not every transport company is waiting for its own hydrogen installation, so placing an installation at a central location such as a gas station offers the solution. In order to use hydrogen, but also LNG, the gas station needs to have the permits arranged. If the gas station meets all requirements regarding hydrogen, hydrogen can also be offered at unmanned gas stations. A secretariat of the Interest group for Dutch gas stations and the Professor of Energy Technology further suggested that combining hydrogen and a fossil fuel might have a future as an interim solution in the transition. This is called dual fuel. It requires the dealer to make adjustments to the engine management, but the vehicle uses mainly hydrogen, so the owner does not have to buy a new vehicle. This hybrid solution is a good interim step, before the vehicle has to be purchased completely on hydrogen-electric (respondent 3, p. 3; respondent 6, p. 4). Whatever direction the transition for heavier road transport will take, there will still be a role for gas stations.

4.1.2.4 Challenges

There are still challenges to be solved before the alternative energy sources are fully present in the market. First, for each respondent, it came down to the following: the chicken and egg story. As long as there is no demand for the alternative, it will not be offered (to any great extent). Conversely, when the supply of the alternative is moderate, the fleet that needs the alternative as a source of energy will also remain limited. There must therefore be a market for both aspects. If there is a demand for vehicles with alternative energy sources, the vehicles will automatically become cheaper through mass production. Demand has to be created. Gas stations therefore have a role to play here. They used to be intermediate suppliers of fuels, but nowadays energy can be generated by the user. Anticipating the future is a challenge in itself. When the awning of the gas station and other business areas are packed with solar panels and the power generated is used to charge battery-electric cars, there is a nice supply of electricity. So gas stations

become producers of electricity. That requires specific knowledge and capital. In addition to the role of the gas station, vehicles with alternative fuels will be further developed so that they become even more usable.

Although battery-electric driving sounds positive, the interviews also revealed some disadvantages of battery-electric driving. A big problem is the electricity grid. If everyone starts driving battery-electric, a lot of adjustments will have to be made before the grid can cope with the total demand for electricity. The Professor of Energy Technology spoke of the following situation: "if everyone is going to charge an electric car at home, you [the grid operator] need to increase the power grid by a factor of 2 or 3, everywhere" (respondent 6, p. 3). This turns out to be quite a challenge, so other options are suggested by the Professor of Energy Technology, which can be read later in this section. Importing electricity is not an option either: "Green electricity will have to be produced in the Netherlands. It cannot be obtained from elsewhere, it is expensive to transport. There are cables here and there, but laying new ones is out of the question. There is a small connection with Germany, but that exchange is nothing". Besides the fact that electricity can hardly be imported, it will also be a challenge to produce enough green electricity at all, as the Netherlands has a relatively unfavourable climate for this (respondent 6, p. 4). The next challenge is to achieve all-green electricity. As discussed in the previous paragraph, 6-7% of the electricity used to charge battery-electric vehicles in the Netherlands is green electricity. The remaining consumption comes from the coal plant, according to the Professor of Energy Technology. This means that the battery-electric driver is working green at the back of the chain, but not at the front when producing the energy (respondent 6, p. 2). Besides, for heavy transport battery-electric driving still seems a long way off. Perhaps battery-electric vehicles will come onto the market in the next few years, but that will only be for short distances. That depends on developments, as all respondents agreed. The owner of an independent consultancy that deals with the energy transition described the situation before: ‘’For long distances, the power and action radius are currently too low’’ (respondent 4, p. 3). Moreover, a current diesel truck cannot be converted to an electric one, forcing the owner to buy a new battery-electric one, but a diesel truck that has not yet been written off is not easily disposed of either. For gas stations, the biggest disadvantage of battery-electric driving is the time it takes to recharge the battery. This is due to the fact that with a fuel pump the power is about ten times that of a fast charger (respondent 6, p. 3). With a fast charger this can take between ten and twenty minutes for cars and as much as half an hour for trucks. Because of the charging time, people prefer to charge at home or at work and a truck driver similarly often has no time to wait before the truck's battery is fully charged. Finally, it should not be forgotten that battery-electric vehicles have been on the market for a relatively short time. The owner of an independent consultancy that deals with the energy transition wondered: ‘’Are we sure that there are no teething problems with electric vehicles?’’ (respondent 4, p. 5).

Finally, there are challenges in the development of hydrogen. Besides the fact that hydrogen is a potential end product as an energy source for vehicles, hydrogen is being used in many more places, such as industry and the heating of houses and buildings. The demand for green hydrogen will increase enormously in the future, which makes the public affairs manager of the Dutch association speaking on behalf of refineries and gas and the CEO Branch Netherlands & Retail Operations Director of a large gas station chain wonder whether this widely applicable energy source will be used on a large scale in mobility (respondent 1, p. 4; respondent 5, p. 3). The Professor of Energy Technology was amazed by statements such as these: "These people are not energy experts then. The electricity infrastructure is not heavy enough to accommodate all the charging points and fast chargers in the neighbourhood and gas stations. If everyone is going to charge an electric car at home, you [the grid operator] have to increase the weight of the electricity grid by a factor of 2 or 3, everywhere. If a gas station decides to install a fast charger, it will soon be 350kW/400kW, and that is still 10 times less capacity than the petrol and diesel pump. That is why

charging is so slow. The same goes for hydrogen, which can reach 3000kW. That's why you [a hydrogen-fuelled customer] can fill up quickly. If a gas station offers gas, for example CNG, that gas comes via the gas pipeline. The same applies to hydrogen. The gas pipelines can be reused because they are there anyway. It has sufficient capacity. The infrastructure is there, the capacity is there, but now we have to replace natural gas with hydrogen. That way you [a hydrogen supplier] can serve everyone. So it's not the infrastructure that's the problem, but electricity, which needs to be massively upgraded because it's far too small. If you [everyone can] look at the gas pipeline that enters houses, that's 30kW, so that's ten times bigger. So this transition now has to be done by everyone via electricity? No, you [the Netherlands] have the gas network, which is ten times bigger. This is also true in general, the transport capacity of the gas network is 350 gigawatts, that of the electricity network is only 20. When people say that hydrogen is not feasible because of the infrastructure in the Netherlands, they have never had lessons in energy. They only look at the car, which is just nonsense" (respondent 6, p. 3). However, the hydrogen on offer today consists only of a small proportion of green hydrogen, and that is the hydrogen people crave. Unlike blue and grey hydrogen, green hydrogen is produced using sustainable electricity. The supply of green hydrogen is currently limited and needs to be increased in order to lower the price and make hydrogen-electric powered vehicles more interesting. The Professor of Energy Technology continued: "Hydrogen can be transported from the Sahara and the Middle East through the pipelines that are already there. Those are the natural gas pipelines, they are in the direction of Germany and the Netherlands. The same idea applies to the natural gas pipeline from Russia. You [the supplier] can reuse those pipelines with hydrogen, there is already enough capacity. In the Sahara you can [there is a possibility] generate cheap electricity from sun and wind. This is also possible from Iceland and Norway, because there is a lot of hydropower there. There hydrogen is produced with sustainable electricity and transported in this direction. So you [the Netherlands] import hydrogen; you [the Netherlands] can't do that with electricity. The capacity would be extremely expensive and you [the Netherlands] don't have that. You [the Netherlands] don't have any capacity in the electricity grid if you [all motorists] want to do it all electrically. So you [the Netherlands] import hydrogen through the gas grid, you [the Netherlands] have enough capacity in the grid and you [the Netherlands] can import it. People choose the cheap option" (respondent 6, p. 3). The EU has launched large-scale projects to get hydrogen going in 2020 and developments are moving faster than expected. It is good that this kind of project is being tackled on a large scale, because Europe has a relatively poor climate when it comes to generating sustainable energy, as Europe is densely populated and the extreme weather conditions for generating energy are lacking on a large scale (respondent 6, p. 4).

4.1.2.5 Solutions outside the gas station forecourt

In the previous sections, solutions for manned and unmanned gas stations emerged in particular. The gas station entrepreneur can also look beyond the forecourt. The following suggestions came out of the interviews of the director of a Dutch organisation for the energy industry and the CEO Branch Netherlands & Retail Operations Director of a large gas station chain. For example, an entrepreneur can talk to the municipality or province to find out where they need fast chargers. Perhaps the gas station operator can do something for the local authority. The entrepreneur needs a certain idea, plan or vision and needs contact with the local government. Furthermore, as discussed earlier in the Results chapter, gas stations offer opportunities to generate their own electricity by means of solar panels. The gas station then becomes a producer of electricity. Producing electricity does not have to happen only on the forecourt of gas stations but can also be done on the roofs of farmers, for example. The entrepreneur then acts as an intermediary,

supplies the solar panels, and has the directing role. This requires an active role, a role that an entrepreneur at a gas station is not used to, because normally the customers or other stakeholders come to the gas station. This gives entrepreneurship a whole new dimension. That means that the gas station entrepreneur must look beyond the forecourt, both physically and in his mind. As an entrepreneur, it is important to be able to add and deliver value, and try to make connections as to how that might be possible (respondent 2, p. 3; respondent 5, p. 3). In the area of supplying renewable energy, the Professor of Energy Technology has another alternative, namely supplying hydrogen on site. At the moment there is too little infrastructure in the Netherlands to set up hydrogen properly, so companies can provide refuelling services on location. This service is just to get the hydrogen use going, in the long run this would not be a service that would be profitable, because the hydrogen infrastructure would be more developed (respondent 6, p. 2).

Another opportunity the director of a Dutch organisation for the energy industry and the CEO Branch Netherlands & Retail Operations Director of a large gas station suggested is to unburden the customer with regard to mapping the CO_2 footprint. In large companies, the government asks for this. CO_2 emissions must be reduced. The companies must be able to demonstrate that this is the case; they must be transparent about this, but they are struggling with this issue. This obligation does not yet apply to the gas station owner or fuel trader, but it does offer opportunities. Moreover, more services can be linked to this by, for example, offering even more support. In order to realise this, the gas station entrepreneur can enter into partnerships with other companies whereby the own company provides the support (respondent 2, p. 2; respondent 5, p. 4).

4.1.3 Key resources

Key resources are assets that provide the value proposition for the targeted customer. Key elements are those that create value for both the customer and the company, and the way the elements are connected. Examples of key resources are people, technology, products, facilities, equipment, channels, and finally brands. In addition, every company has generic resources that do not provide competitive differentiation. The respondents all agreed, all key resources are important when adding the customer value proposition. It is clear that some key resources are more important than others, but ultimately all resources are important in order to achieve a working business model. For the gas station, people are the most important key resource, because they provide the atmosphere in the form of hospitality and cheerfulness, which is why the shop assistant must fit in with the company. If the customer needs a chat, the shop assistant is the person to talk to. People are also important resources, because they need to know about the technologies. The staff is expected to be knowledgeable about the technologies surrounding the various energy sources, which may require training. In this way, people can inform and relieve customers, but can also operate them safely. At the gas station, many services should also be offered to meet customer demand. For the shop the location is a very important asset, because a strategically good location largely determines whether a customer comes or not. Although the following important resource is not mentioned in the theory, money is mentioned by the respondents. Money ensures that the company can make investments in the shop or the raising of energy resources. For example, the costs of an LNG or hydrogen installation are relatively pricey compared to offering HVO. In the case of HVO, the diesel tank must be free, must be cleaned, and can then be filled with HVO. When liquid fuels are offered, the operating costs are relatively low. The only major expense items that occur annually are the costs of checking the liquid-proof floor and underground tanks, provided that all the other equipment, such as the pumps and payment terminals, is in good working order and the gas station can guarantee to deliver the energy. With LNG or hydrogen, there is no need for

underground tanks, so a whole installation has to be built. These different technologies are therefore also important, as are the permits and regulations, which means that the fixed costs at purchase are high. This must be financed by the gas station operator. If the gas station decides to go electric, there is a relatively large difference in price between a charging station and a quick charger. For fast chargers there is talk of serious sums, but this is an investment in the future. When a charge post will be bought, there will be a need to obtain information from all sides, including the electricity supplier and whether the fast charger can be connected to the electricity grid. The provision of information is also important in terms of safety and maintenance. Another resource that is becoming increasingly important is technology, said the director of a Dutch organisation for the energy industry and the owner of an independent consultancy that deals with the energy transition. ICT and data are becoming increasingly important, also for gas stations. The fuel cards that customers have offer many insights and it is possible to link many additional services to them. The aim is to strengthen customer loyalty (respondent 2, p. 4; respondent 4, p. 4).

4.1.4 Key processes

In addition to key resources, key processes are essential in successfully continuing to add value for the customer. A distinction is made between operational and managerial processes and the company's rules, metrics and standards are taken into account. Examples include training, development, manufacturing, budgeting, planning, sales, and services. Respondents agreed that operational processes are important to keep operations running. In the eyes of the customer, the operations must be in order, so the gas station must meet all the requirements, such as the payment of the cash machine, providing the correct information about the various energy sources, guaranteeing security of supply and providing a neat and clean forecourt and shop where the customer feels welcome. This means that every conceivable process has an important value. From a managerial point of view, it is important to think about the ways in which the customer can be relieved and can make money. The question of what is important to the customer and how customer loyalty can be strengthened also plays a role. In the customer's perception, the entrepreneur must matter and be relevant. The customer must believe that the company is distinctive, there is value to be derived from this. During the energy transition, planning is essential, because when will the gas station offer which alternative? These questions need to be answered and ultimately this results in managerial processes that make this possible. These processes must ultimately be implemented in the operational processes, and this involves many processes. To conclude, the owner of an independent consultancy that deals with the energy transition would like to see this question phrased and answered differently: "I would like to turn the question around, what does the customer need and what does the customer see as added value, then that will determine which processes you [the gas station entrepreneur] will give priority to compared to other processes. It really depends on the target group which parameter is important. The customer is central in the design of the system" (respondent 4, p. 5).

4.1.5 Strategy

When making investments in uncertain times, three strategies were drawn up, namely focusing on one technology, flexibility and waiting. All respondents agreed that there is not one right choice for gas stations to make when it comes to investing in alternative energy sources. All respondents came up with the same answer, what are the wishes and needs of the customer, what is going on in the region and respond

to this. Talk to the customers. The transporter has to buy another truck after the depreciation of a truck. The transporter also has to decide whether and which alternative fuel to use to replace the truck, and each transporter makes his own decision. As a gas station operator, it is advisable to think along with the transporter and to enter into a partnership. By starting the conversation, the best possible picture is presented and that can be used for the new business model of the gas station. The entrepreneur must offer the customer something that meets his needs and satisfy them more. The trick is to make the customer feel dependent on the business and to keep the customers satisfied, so keep talking to the customer. When the demand for a product really starts to increase, it is wise to respond, provided that this will be profitable for the gas station. The Professor of Energy Technology distinguished between the business customer and the public gas station: "It depends on the customer, but that is mainly up to the business customer. Maybe you [the gas station entrepreneur] can look at what the customer does and see what you [the gas station entrepreneur] can do to keep the customer. So get in touch with the customer and be proactive, but for the public gas station you [the gas station entrepreneur] have to wait and see" (respondent 6, p. 5). The respondent adds that the gas station should not wait too long, because then it will be played out of the market. Suppose that the demand at the gas station for LNG or hydrogen slowly starts to increase, the size of the investment must be taken into account. The entrepreneur must be convinced that the installation of the new energy source is worth investing in. Due to economies of scale, installations for LNG and hydrogen become cheaper every year. Therefore, the entrepreneur can wait until the tipping point, when the costs and the expected revenues are at an acceptable level, and then start the investment. The risk of failure of the investment must be small. In other words, when focusing on one technology, the other alternative energy sources are not offered, but then the gas station can be successful with that one technology. With flexibility, all options are kept open, allowing the environment to be listened to. No respondents suggested the option of waiting, because then the gas station would be too late with everything and would not have claimed its place, with the risk of being played out of the market. Targeting what is going on in the region and among customers is most effective.

Another strategy that has been discussed is to distinguish a gas station from its competitors. According to the theory, this can be done on the basis of the following four strategies, namely quality, low cost, flexibility, and delivery. All respondents agreed, the location is the most important. For gas stations, location is the most important factor for success. Shop and service should not be forgotten either, because these factors create the experience. All respondents waved away the suggestions based on theory and the general opinion was that the vision of the company should be followed and that the operational management should be set up accordingly. What value a company wants to add and what distinguishes a gas station really depends on various factors that play a role in the environment. As already mentioned in this chapter, it is important for gas stations to take into account that in the future not only other gas stations will be competitors, but also the charging stations at home and at work.

Finally, it is also wise to get in touch with the (local) government. Firstly, municipalities often have the wrong image of gas stations. They think that gas stations only sell petrol and diesel. This is generally true, but gas stations are also becoming more sustainable. Gas stations want to be part of the transition. The public affairs manager of the Dutch association speaking on behalf of refineries and gas made this clear with the following example: ‘’when companies have to fill up with heavy transport vehicles on behalf of the municipality, e.g. rubbish trucks,, the municipality calls on the gas station to make plans to switch to HVO, for example’’ (respondent 1, p. 5). Perhaps the gas station can mean something to the municipality, because the municipality also wants to participate in the transition. Gas stations have already experienced a transition, so this transition is also possible. Good contacts are important for this, all respondents

concluded. It is also possible for the municipality to ask a gas station operator to install charging stations in public areas on its behalf. The municipality must know that the gas station has added value to offer. The gas station, on the other hand, must ensure that it recognises the interests of the municipality and that it then looks at the partial interests. The same applies to installing an installation for LNG or hydrogen, for example. Perhaps the municipality is prepared to facilitate the realisation of this, for example by offering help with the permits and regulations. As far as municipal support is concerned, the municipality may never favour anyone; this will always be done via public tendering.

4.1.6 Dynamic capabilities

In the previous sections, general developments have been discussed leading to a general business model for gas stations, although it has always been noted that the business model for each gas station company may differ. Therefore, the future business model of gas stations depends on the strategy of the company, but also on the dynamic capabilities, it emerged from the literature review. Based on the empirical research, it can be concluded that the dynamic capabilities return in the design and implementation of the new business model for gas stations. Sense is the first dynamic capability and it revolves around the identification of opportunities. The approach of the capability is to improve the current business model, whereby it is important that customer needs are known. Data plays an important role here. In practice, according to the respondents, for gas station entrepreneurs it comes down to the following: what solutions can manned and unmanned gas stations offer and can the gas station entrepreneur offer the customer solutions that take place outside the gas station forecourt in the area of mobility in order to meet the needs of the customer. To answer these questions, data is required and that comes particularly from technology and ICT, which makes this a very important resource for developing and integrating the business model (respondent 2, p. 4; respondent 4, p. 4). When the data is applied to designing and refining the new business model, the second dynamic capability comes into play, namely seize. In addition, resources are deployed. The respondents all agreed that all resources are important, but some resources are more important than others. People are the important resources, because they execute the business model. The staff partly determines the atmosphere and hospitality in the shop, but they also have knowledge of the technology and the safety of the various energy sources. The location remains an important resource, because a strategically good location ensures that the customer will visit the gas station or not. Another important resource is money, because money ensures that the company can make investments in the shop or the growing number of energy sources. To retain the customer by strengthening customer loyalty, technology and ICT is important because it provides data, which may make it possible to offer extra services to the customer because the insights show this (respondent 2, p. 4; respondent 4, p. 4). Finally, the organisation is transformed, whereby the structure and culture of the organisation are realigned. Organisational changes may take place. The data from the interviews showed that it is advisable for gas stations to remain close to their own values and norms and thus try to fulfil the wishes and needs of the customer as well as possible. Whether there is evolutionary or radical Business Model Innovation for Sustainability (BMIS) is the choice of the entrepreneur. The wishes and needs of the customer and the developments in the service area will play a role and this will differ for every company. Nevertheless, this results in the company adding sustainable value.

4.1.7 Conclusion

SQ2 read: *"What will the future busienss model of gas stations look like?"* and this question has been answered in this chapter by conducting semi-structured interviews with six respondents who are all active in the mobility market and it has been achieved to look at this issue from different perspectives. All aspects of the business model of Johson et al. (2008) have been used. The customer remains the motorist, although people with battery-electric vehicles can charge elsewhere. The supply of energy sources will increase in the coming years, but apart from electric charging, all motorists will be dependent on the gas station. The shop will become more important than ever before for the manned gas station. The supply will have to consist of products and services that are in demand by the customer and the service area. At unmanned gas stations no products can be sold, but it may be possible to offer services. For both gas stations, location is the most important in terms of chances of success. Ultimately, the gas station adds sustainable value in the form of economic, environmental, and socal value for the customer. In the coming decades, the supply will consist of fossil fuels, but the change will be towards electric driving, with a distinction being made between battery-electric and hydrogen-electric. Further developments are needed for heavier traffic, but hydrogen-electricity will eventually be the future there. Until then, intermediate solutions such as HVO and (bio-)LNG may offer solutions. For passenger vehicles, developments are faster, where both electric options are already more in the market. Before the whole country can drive electric, however, major challenges need to be completed in terms of infrastructure. In order for gas station operators not to depend solely on their own forecourt, it is advisable to look beyond the gas station forecourt for solutions to mobility problems. In this way the income is generated by selling various energy sources, shop and services, and offering solutions to mobility problems outside the forecourt of the gas station. In order to add sustainable value, key resources are important. While all resources matter, people, location, money, and technology are the most important. In terms of processes, operational processes are the most important, although all processes matter too. To ultimately arrive at a good business model, a good strategy is also important. For this, it is necessary to talk to the customer about their wishes and needs. The entrepreneur can respond to this. Waiting until there is certainty is not advisable, because then the gas station is too late and its place in the market has not been claimed. It is also advisable to get in touch with the (local) government to see what the gas station can do for them or vice versa in the field of sustainable mobility. If the gas station wants to stand out from the competition, it is advisable to stay close to its own vision and adjust its operations accordingly. Besides a good strategy, the dynamic capabilities are essential for the design and implementation of the new business model for gas stations. These consist of sense, seize, and transform and are all important and when applied will eventually lead to a well thought-out business model that can be implemented via Business Model Innovation for Sustainability (BMIS). This approach ensures that sustainable value is added by the company. If a gas station company uses its own strategy and dynamic capabilities, this results in a business model that directly connects to the wishes and needs of the customer and the service area.

5. Conclusion

Due to climate change, society is looking for sustainable solutions, also in the fuel market for the mobility sector. Although alternative energy sources are already on offer, it is still unclear how gas stations should deal with them. Moreover, it is still uncertain what the future of the business model of gas stations will look like and to what extent it will affect the current business model. Since Kolkman Brandstoffen also experiences the uncertainties regarding the changes in the types of fuels and income, the following central research question was formulated on behalf of Kolkman Brandstoffen:

CRQ: *''What are the effects on the business development of gas stations in the changing fuel market?''*

To answer the central research question, three sub-questions are formulated in Chapter 1. In this chapter, the sub-questions are all answered and their main findings are discussed. The first sub-question is about how gas station operators should deal with the alternative energy sources that are currently emerging. So the first sub-question reads as follows:

SQ1: *''How should gas station entrepreneurs deal with the alternative energy sources that are currently on the rise?''*

The systematic literature review shows that competition in markets is quite normal. However, the power of substitutes is the most threatening force in the gas station market, so the literature review prescribes to develop an appropriate strategy for the company to respond to the competitive environment. First of all, the company should choose a competitive strategy with which to differentiate itself, consisting of the cost and differentiation strategy. Next, it is the turn of the manufacturing strategy, i.e. a choice has to be made what the operations strategy will be. The literature review shows that this consists of quality, flexibility, delivery, and finally low cost. When correctly implemented, these strategies have a significant effect on the performance, consisting of market share and sales growth, related to the business unit's perceived position in relation to competitors. In addition, the literature review describes that during uncertain times it is advisable to engage in strategic foresight, because strategic foresight ensures that policy makers anticipate the evolution of changes and improve long-term strategic thinking. As can be seen in all energy transitions, long-term thinking must be linked to short-term action by carrying out a scenario analysis, and this is certainly the feeling in uncertain times. When investments are expected during uncertain times, there are three strategies: focus (focus the resources on one technology), flexibility (spread the resources over different technologies), and wait (wait until the uncertainty is gone and then invest the resources in the desired technology). For small companies, cooperating with another company can also be a solution. What the business model will look like in the future of the gas station is answered by the next sub-question:

SQ2: *''What will the future business model of gas stations look like?''*

The semi-structured interviews showed that the future customer of the gas station could be the motorist. Motorists with a battery-electric car would be able to charge in several places, including at home if they have a charger at home. Motorists with vehicles that run on other energy sources are future potential customers for gas stations. The gas station will continue to provide mobility for them. In addition to

mobility, manned gas stations offer certain products or services requested by the customer. The shop and the services offered play a very important role. At unmanned gas stations, no other products will be sold and the services will be present to a lesser extent. The location for both stations determines whether the station will be successful or not in the future. The gas station of the future will at least offer the customer sustainable value in economic, environmental, and social terms. Furthermore, it turned out that there will still be a demand for fossil fuels in the coming decades. However, mobility will change more to electric, where a distinction can be made between battery-electric and hydrogen-electric. For passenger cars, both options will eventually be common, whereas for heavier transport it will probably be hydrogen-electric. Hydrogen-electric is still available on a small scale, but until it becomes widely available, demand will grow for intermediate solutions such as HVO and (bio-)LNG. Both electric vehicles and their infrastructure will require considerable development. In addition to offering energy sources at the gas station, the interviews revealed that it is advisable for gas station operators to also go out and offer solutions to mobility problems outside their own forecourt. The turnover for gas stations will come from the sale of the different energy sources, from the shop and services offered, and from offering mobility solutions outside the own forecourt. In order to be able to offer sustainable added value, key resources are important. All respondents indicated that all resources are important, but people, location, money, and technology are the most important. The business model is completed by processes and the processes ensure that sustainable value can continue to be added for the customer. Again, all processes play a role, but the most important processes are the operational processes, because they ensure that things continue to run. Figures 8 and 9 contain illustrations of what the manned gas station and the unmanned gas station of the future will look like. Finally, in terms of strategy, the respondents indicated that gas station operators should enter into a dialogue with the customer about wishes and needs. The gas station entrepreneur can respond to this. What gas stations should not do is wait with making investments until there is certainty, because then the gas station is too late and they have lost their place in the market. The respondents added that they should get in touch with the (local) government. Perhaps the gas station can do something for the (local) government or vice versa with regard to making mobility more sustainable. When it came to differentiating from the competition, the respondents said that gas stations should stay close to their own vision and that operational management should be geared to this. In addition to a good strategy, dynamic capabilities are important for designing and implementing the new gas station business model. These consist of sense, seize, and transform and are all important and when applied it will lead to a well thought out business model that can be implemented through Business Model Innovation for Sustainability (BMIS). Adding sustainable value is the result when this approach is used. By using a proprietary strategy and dynamic capabilities, it results in a business model that directly aligns with the wants and needs of the customer and the service area. To apply this business model, the last sub-question reads:

SQ3: *''What do gas station entrepreneurs have to do to turn the current business model into the business model of the future?''*

Although sub-question 2 broadly shows the business model of the gas station in the future, many things are context-dependent, because a concept, service, product, or offering a certain energy source may work for gas station X, but not for gas station Y. This can have various cases. The systematic literature review shows that when dynamic capabilities and the strategy are combined, a well-considered business model emerges. In the best case scenario, this model leads to profits that are equal or even better than the capabilities and the resources. It is important to not only have strong resources and organisational

capabilities, but also strong dynamic capabilities to keep developing and renewing the resources and organisational capabilities to keep the competitive edge. Dynamic capabilities are therefore important for business model innovation, but organisational design is also important for both the business model and the dynamic capabilities. The organisation must be set up in such a way that there is room for innovations. To innovate the existing business model, first of all new strategic decisions need to be taken, as a result of which the dynamic capabilities will be developed, resulting in developments in the business model. In order to set up the business model in a sustainable way and to gain competitive advantage in the long run, there are two ways to achieve this goal, namely the evolutionary and radical way.

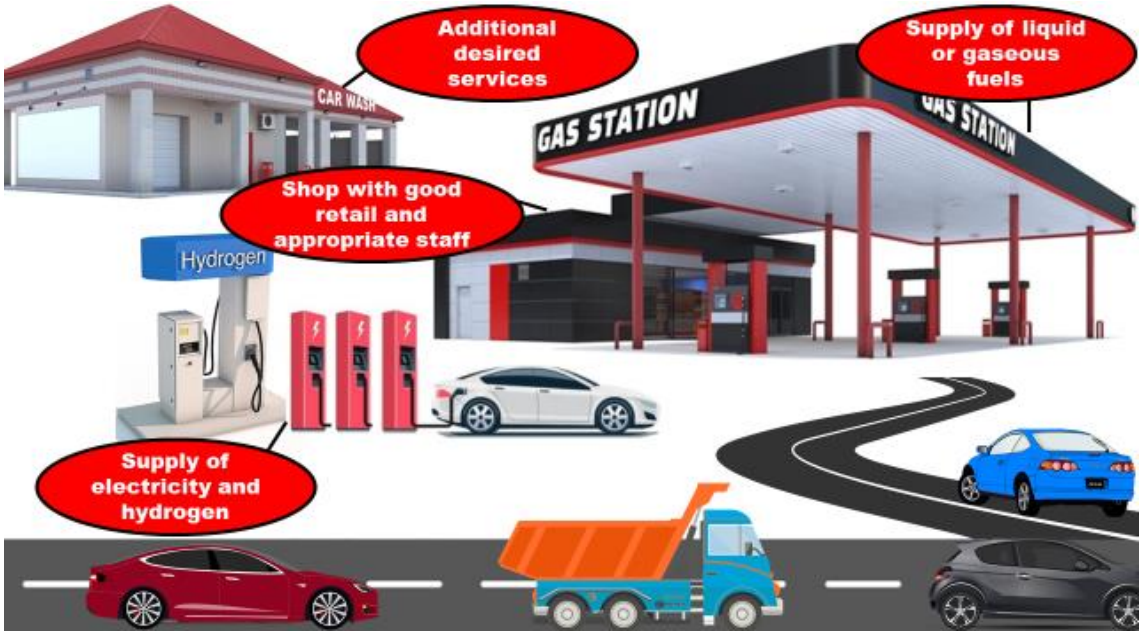

Figure 8. The manned gas station of the future.

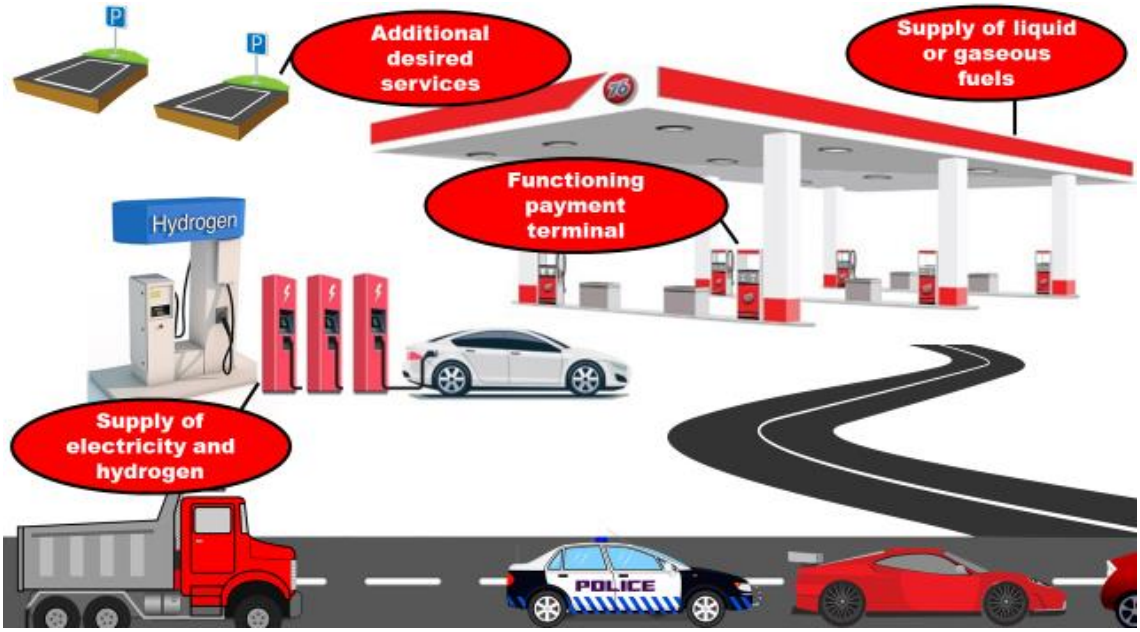

Figure 9. The unmanned gas station of the future.

6. Discussion and contribution to literature

This chapter reflects on the results and the approach chosen, after which the implications are discussed. The results are of great value to gas station entrepreneurs. This sector is relatively conservative, but this research offers handles to make the change to a progressive way of working. The systematic literature review was carried out very carefully, so that sub-questions 1 and 3 could be answered as accurately as possible. During the literature review, the focus was mainly on the gas station industry, where in hindsight it might have been better to examine the situation more from a contextual point of view. It might have been better to compare the transition of gas stations with similar transitions in terms of raw materials, i.e. by using theoretical concepts from other studies, because during transitions other industries experience the same problems. However, the concepts used for these sub-questions actually add value, because the literature review looked at how representative the information is and only representative data was used. Semi-structured interviews were conducted for sub-question 2. In order to carry out the qualitative research properly, Interpretative Phenomenological Analysis (IPA) was used in order to guarantee the validity and reliability of the data. During the semi-structured interviews, the respondents were asked about the business model of gas stations in the future. In doing so, Evans et al. (2017) prescribed two business modelling methods and tools, namely those of Osterwalder and Pigneur (2010) and of Johnson et al. (2008). The business model developed by Osterwalder and Pigneur (2010), describes the business model of a company in much more detail, however, this also means that instead of four aspects, nine aspects need to be addressed. The most appropriate model would be Triple Layer Business Model Canvas, but this is even less comprehensible than the business model of Osterwalder and Pigneur (2010), because the TLBMC consists of 27 building blocks. In order not to let the interviews become too chaotic, but to ensure structure, it was decided to use the business model of Johson et al. (2008). Ultimately, the business model of Johson et al. (2008) also gives a representative picture of the business model of gas stations in the future. Now that a representative picture has emerged of the future business model of gas stations, there is a need to look at what the gas station entrepreneur needs to do to turn around the current business model to the renewed business model of the future. This is where Teece's (2018) diagram fits in, as this research highlights the importance of the right strategy and the presence of dynamic capabilities to start the journey of changing the business model.

6.1 Practical implications

After studying this research, gas station entrepreneurs know what the business model of gas stations will look like in the future. In order to take full advantage of the business model, the strategy, dynamic capabilities, and business model should be aligned. A well-considered business model comes from the combination of dynamic capabilities and the strategy. Strong dynamic capabilities are important because they ensure that the resources and organisational capabilities are developed and renewed to maintain the competitive advantage. Organisational design is equally important for both the business model and the dynamic capabilities, because the company must be set up in such a way as to have room for making innovations. In order to change the existing business model, new strategic choices need to be made, as a result of which the dynamic capabilities develop, which results in developments of the business model.

What emerged from the interviews were the developments that gas stations are experiencing in the coming years, this is valuable information for gas station operators. The customer is changing, both the

private driver and the business driver, but also the energy sources that vehicles use to provide their mobility. For example, the sale of vehicles with an internal combustion engine will be banned by 2030. Developments are also expected in the field of non-fuel, for example, it is expected that tobacco sales in shops will be banned by 2030. Gas station owners will have to think about what they want to do with their shop. The customer's expectations are therefore constantly changing, so the gas station must continue to matter. This has consequences for the (sustainable) value that is expected from the gas station. Gas station owners will have to think about how to keep the manned and unmanned gas stations profitable. This can be done by offering products or services, but also by looking at the energy sources that can be profitable. Another way to generate revenue is to maintain an active role. Instead of only generating turnover from the gas station's own forecourt, one can look at solutions that customers encounter in terms of mobility problems outside the gas station forecourt. In addition, for a good business model it is important to look at the key resources and processes and that the gas station entrepreneur continues to invest in them. As already mentioned, the combination between the strategy, dynamic capabilities, and business model is important, which is why it is recommended to maintain an active role. It is important for the strategy that long-term thinking is matched with short-term action by carrying out a scenario analysis. Besides, the entrepreneur must know what is going on in the environment, with the (business) customers, and with the (local) government respond to developments.

Finally, this research can add a lot to branches that are dealing with energy transition and therefore experience the same problems, because the results of this research are not only applicable for gas stations, but context independent.

6.2 Theoretical implications

This study has also contributed to the theoretical implications. First, there is a lot of literature available on business models, but when it comes to the business model of the future, in combination with dynamic capabilities and scenario development, almost no literature can be found. The purpose of this research was to combine dynamic capabilities, business modelling, and scenario development for the gas station of the future and to actually visualise the future business model of gas stations by interviewing experts from different perspectives. Since limited research had been done on this in the conservative sector, this research is one of the first contributions to the existing literature.

This research actually adds a lot of value, because it lets the following aspects merge into thus a conservative sector. Porter (2008) writes about the different competitive forces in the market, but only competitive strategies are offered as solutions. Additionally, Ward & Duray (2000) go a step further by describing the environment and based on that the strategies are devised that results in performance. Adding the paper of Wernerfelt & Karnani (1987) provides more depth, as they identify strategies related to making investments in uncertain times, where Kemp, Rotmans, and Loorbach (2007) mention that it is important for the strategy that long-term thinking is matched witch short-term action by carrying out a scenario analysis. As a solution, they offer cooperation, which Lendel et al. (2015) has researched. By then using Johnson et al.'s (2008) business model and combining it with Evans et al.'s (2007) model of sustainable value, the research design takes more shape. Finally, by adding the dynamic capabilities, combined with the strategy and business model of Teece (2018), the components from the theory are complete. Adding DaSilva and Trkman's (2014) generic framework makes the relationships between the components clear. Finally, the theory of Inigo et al. (2017) is added to the literature, as this paper addresses the two approaches

of business model innovation. Through the interviews, developments in the gas station industry became visible for the coming decades, allowing a representative general business model to be put together. The results of the interviews, in combination with the collected literature, provide an addition to the already existing literature.

7. Limitations and future research

Every research study has its methodological limitations, although this one can certainly be of interest nonetheless. Nevertheless, the limitations are listed and this chapter concludes with possible studies that could be conducted in the future.

7.1 Limitations

Although this research can certainly be of importance in the future, limitations are also recognised for this research. Firstly, a limitation may be the limited sample size. Although the choice of six respondents was a conscious and well-founded choice, a larger sample size would have given a more reliable picture of what the industry expects from the future business model of gas stations. In this way, the results would have contained even more insights and would have been more accurate. Secondly, it might have been interesting to use focus groups during qualitative research. This involves bringing a group of people together to discuss a particular topic. A focus group falls under an interview, where the researcher asks questions to the group and thus helps the discussion. The ultimate goal is to collect data (Gundumogula, 2020). Furthermore, the plan was to conduct the interviews with respondents who work in the industry, but that the subject would be illuminated from different perspectives. For this purpose, the idea was to try to arrange an interview with a civil servant from the Ministry of Economic Affairs and Climate, as the Dutch government has an important role in the energy transition. Several attempts were made to schedule an interview, but no one from the Ministry was able to participate. As a result, insights from an important stakeholder in the energy transition are missed. Requesting another Ministry to conduct an interview was not relevant. This problem was eventually solved by interviewing a Professor of Energy Technology. In the end, the result of this research is worth it.

7.2 Future research

Based on the results of this study, follow-up studies are already conceivable. Many investments that gas stations will have to make in the future depend on the environment and the wishes and needs of the customers. It would be valuable to conduct research into this. As the respondents in chapter 4 already made the distinction, the customer can be divided into the private driver and the business customer, where the business customer can be subdivided into the transport company, the construction industry, farmers, et cetera. It would be very valuable to know what is going on with which target group in order to eventually investigate whether it would be profitable to respond to the demand of the target group. Furthermore, chapter 4 consisted of the situation of the manned gas station. It would be very valuable to investigate which products and services different groups of manned gas stations should offer. A distinction can be made here between manned gas stations on motorways or provincial roads, in a town or village, or on an industrial estate. Another potential research topic would be to follow up on this research, namely to follow up on companies that use the results of this research in adapting their business model in order to ultimately analyse what challenges they experience in practice. Finally, it would be interesting to investigate whether leadership or other factors influence business modelling and the degree of its successful implementation.

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Appendix A: Interview guide for semi-structured interviews

Dutch script for the interview:
Allereerst, dank voor uw medewerking aan het interview voor het onderzoek dat ik uitvoer namens Kolkman Brandstoffen bv. Voor mijn Master Business Administration dat ik volg aan de University of Twente schrijf ik een thesis over de toekomst van het business model van tankstations en wat ondernemers moeten doen om dit veranderende business model te implementeren. Het doel van dit interview is het in kaart brengen van het business model van tankstations voor in de toekomst. Met deze tijd wordt gedoeld op de periode tot na de fossiele brandstoffen.

Het interview zal ongeveer 45 tot 60 minuten duren. Om de anonimiteit te waarborgen zullen uw naam en bedrijfsnaam weggelaten worden. Daarnaast wordt er vertrouwelijk met de gegeven informatie omgegaan. Als u er mee akkoord gaat wordt uw bedrijfsnaam weergegeven als respondent X.
Tijdens het interview is het mogelijk om vragen te stellen, bijvoorbeeld wanneer iets niet duidelijk is. Dit is een semigestructureerd interview en dat betekent dat er ruimte is voor verdere vragen wanneer meer informatie nodig is.
Ten slotte, het interview kan door u op elk moment gestopt worden.

Gaat u ermee akkoord dat het interview opgenomen wordt?

Ja / Nee

Heeft u nog vragen over het interview of over het verloop of de inhoud van het interview?

[Vragen bespreken]

Volgens de literatuur heeft de term business model vele definities. De definitie die tijdens dit onderzoek wordt gehanteerd is een combinatie van resource-based view (RBV) en transaction cost economics (TCE). Hierbij worden verschillende elementen van een organisatie in kaart gebracht. Het doel van het business model is het beschrijven van waarde voor klanten en het bedrijf door aan te geven hoe de waarde gecreëerd gaat worden. Het business model heeft ook vele vormen. Het model dat het best bij de definitie past is het business model van Johson et al. (2008). Deze bestaat uit profit formula, key resources en key processes en heeft direct invloed op de customer value proposition. Deze onderdelen wil ik graag met u bespreken, waar ik graag wil eindigen met de strategie.

Customer Value Proposition

1. Wie is de klant voor een tankstation in de toekomst?
    a. Kan ‘’de klant’’ opgedeeld worden in verschillende klantsegmenten?
2. Welk probleem dient een tankstation voor de klant op te lossen?
    a. Verschilt het probleem voor ieder klantsegment?
3. Hoe wordt het probleem van de klant opgelost?
    a. Verschilt de oplossing van het probleem van ieder klantsegment?

   b. Verschilt de oplossing die een bemand tankstation aanbiedt van de oplossing van een onbemand tankstation?
      i. Kan er binnen de categorie bemande tankstations onderscheid worden gemaakt tussen tankstations langs de snelweg, in een stad of dorp of die op een industrieterrein?
4. Wanneer is de klant tevreden (Job to be Done)?
5. Welke waarde voegt het tankstation toe voor de klant?
   a. Worden verschillende waardes van het tankstation verwacht namens de verschillende klantsegmenten?
   b. Worden verschillende waardes toegevoegd door bemande tankstations en onbemande tankstations?
      i. Kan er binnen de categorie bemande tankstations onderscheid worden gemaakt tussen tankstations langs de snelweg, in een stad of dorp of die op een industrieterrein?
6. Evans et al. (2017) stellen dat de kunst van tegenwoordig is om het business model zo in te richten, dat het bedrijf sustainable value kan toevoegen, bestaande uit waarde voor de economie, omgeving en voor de sociale aspecten.
   a. Op welke manier voegt het business model van tankstations voor de toekomst waarde toe aan de economie?
   b. Op welke manier voegt het business model van tankstations voor de toekomst waarde toe aan de omgeving?
   c. Op welke manier voegt het business model van tankstations voor de toekomst waarde toe aan de sociale aspecten?

Profit formula

1. Uit welke alternatieve energiebronnen verwacht u dat tankstations in de toekomst hun omzet zullen behalen?
   a. Verschillen de verwachte alternatieve energiebronnen tussen personenverkeer en vrachtverkeer?
   b. Verschilt de verwachte inkomstenbron tussen bemande tankstations en onbemande tankstations?
      i. Kan er binnen de categorie bemande tankstations onderscheid worden gemaakt tussen tankstations langs de snelweg, in een stad of dorp of die op een industrieterrein?
   c. Hebben deze verwachte energiebronnen toekomst voor lange termijn of is dit enkel een ‘’tussenstap’’? Wat is volgens u de slagingskans van de verwachte alternatieve energiebronnen?
   d. Waar liggen de uitdagingen voordat de verwachte alternatieve energiebron op de markt is?
   e. Is de energiebron makkelijk schaalbaar wanneer de vraag stijgt?
   f. Wat zijn de belangrijkste voorwaarden voor het aanbieden van de alternatieve energiebron?
   g. Zijn marktinvloeden, zoals druk van concurrenten en klanten, van invloed op het aanbieden van de alternatieve energiebron?
2. Bij het aanbieden van deze alternatieve energiebron(nen), welke directe kosten kan de tankstation ondernemer verwachten?

3. Welke indirecte kosten kan de tankstation ondernemer verwachten?
4. Is het voor een tankstation ondernemer langs de snelweg rendabel om deze alternatieve energiebron(nen) aan te bieden?
    a. Verwacht u dat de tankstation ondernemer de inkomsten ook uit andere bronnen moet halen (zoals meer inzetten op de horeca, extra services, etc.)?
5. Is het voor een tankstation ondernemer in een stad of dorp rendabel om deze alternatieve energiebron(nen) aan te bieden?
    a. Verwacht u dat de tankstation ondernemer de inkomsten ook uit andere bronnen moet halen (zoals meer inzetten op de horeca, extra services, etc.)?
6. Is het voor een tankstation ondernemer gevestigd op een industrieterrein rendabel om deze alternatieve energiebron(nen) aan te bieden?
    a. Verwacht u dat de tankstation ondernemer de inkomsten ook uit andere bronnen moet halen (zoals meer inzetten op de horeca, extra services, etc.)?
7. Hoeveel risico neemt de tankstation ondernemer bij het investeren in de alternatieve energiebronnen?
    a. Verschilt het risico bij bemande tankstations en onbemande tankstations?
        i. Kan er binnen de categorie bemande tankstations onderscheid worden gemaakt tussen tankstations langs de snelweg, in een stad of dorp of die op een industrieterrein?

Key resources

Resources zijn hulpmiddelen die een persoon of organisatie kan aanspreken om waarde aan de klant toe te voegen. Dit zijn bezittingen (zoals mensen, technologieën, producten, faciliteiten, apparatuur, informatie, kanalen, samenwerkingen en merken).

1. Welke resources zijn volgen u onmisbaar voor tankstations in het vervangen van het huidige business voor het business model voor in de toekomst?
    a. Verschillen de resources bij bemande tankstations en onbemande tankstations?
    b. Verschillen de resources bij grote tankstation maatschappijen of familiebedrijven?
2. Op welke manier voegen deze resources waarde toe voor de klant?
3. Op welke manier moeten tankstation ondernemers hier in investeren?

Key processes

1. Welke processen mogen niet ontbreken bij het in stand houden van de customer value proposition voor het nieuwe business model (ontwerp, productontwikkeling, inkoop, productie, marketing, aanwerving en opleiding, IT)?
    a. Verschillen de processen bij bemande tankstations en onbemande tankstations?
    b. Verschillen de processen bij grote tankstation maatschappijen of familiebedrijven?

Strategie

Wernerfelt & Karnani (1987) stellen dat er drie strategieën zijn met betrekking tot het doen van investeringen tijdens onzekere tijden, namelijk focussen op één technologie, flexibiliteit (de resources verdelen/spreiden over meerdere technologieën) en wachten (op zekerheid).

1. Welke strategie raadt u voor onbemande tankstations aan?
2. Welke strategie raadt u voor tankstations langs de snel- of provinciale weg aan?

3. Welke strategie raadt u voor tankstations in een stad of dorp aan?
4. Welke strategie raadt u voor tankstations op een industrieterrein aan?
5. Welke strategie raadt u voor grote tankstation maatschappijen aan?
6. Welke strategie raadt u voor familiebedrijven aan?

Ward & Duray (2000) benoemen vier strategieën waar een bedrijf op kan concurreren, namelijk kwaliteit, lage kosten, flexibiliteit en levering.

7. Welke strategie raadt u voor onbemande tankstations aan?
8. Welke strategie raadt u voor tankstations langs de snel- of provinciale weg aan?
9. Welke strategie raadt u voor tankstations in een stad of dorp aan?
10. Welke strategie raadt u voor tankstations op een industrieterrein aan?
11. Welke strategie raadt u voor grote tankstation maatschappijen aan?
12. Welke strategie raadt u voor familiebedrijven aan?
13. Op welke manier kan je als tankstation jezelf onderscheiden ten opzichte van de concurrentie?

Appendix B: Coding Scheme

Code	Comment	Code Group 1	Code Group 2	Code Group 3	Code Group 4	Code Group 5	Code Group 6	Code Group 7	Code Group 8	Code Group 9	Code Group 10
Bio products as a source of energy		Alternative energy sources									
Challenges before the expected alternative energy sources are on the market			Challenges								
Conditions for offering alternative energy sources			Challenges								
Contact with the government									Strategies		
Customer of the future gas station				Customer of the future							
Customer wants and needs				Customer of the future							
Different customer segments				Customer of the future							
Disadvantages of electric driving			Challenges								
Electric charging at gas stations					Function of the future manned gas station						
Electric charging at unmanned gas stations						Function of the future unmanned gas station					
Electric driving		Alternative energy sources									
Fixed costs								Resources			
Fuels as a source of energy		Alternative energy sources									
Future energy sources for heavy road transport		Alternative energy sources									
HVO as a source of energy		Alternative energy sources									
Hydrogen as a source of energy		Alternative energy sources									
Importance of location					Function of the future manned gas station						
Importance of technology								Resources			
Importance of the car wash					Function of the future manned gas station						
Importance of the shop					Function of the future manned gas station						
LNG as a source of energy		Alternative energy sources									
Opportunities outside the forecourt					Function of the future manned gas station						
Processes							Processes				
Renewable fuels as a source of energy		Alternative energy sources									
Resources								Resources			
Solution manned gas stations					Function of the future manned gas station						
Solution unmanned gas stations						Function of the future unmanned gas station					
Strategy									Strategies		
Supply of energy sources unmanned gas stations						Function of the future unmanned gas station					
Sustainable value to the economy										Sustainable value	
Sustainable value to the environment										Sustainable value	
Sustainable value to the social aspects										Sustainable value	
Uncertainty of current business model											Uncertainties
Uncertainty of future business model for gas stations											Uncertainties