TOWARDS THE FUTURE
IN URBAN PUBLIC TRANSPORTATION

- Exploring Business Models for Innovation & New Business Entry

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ABSTRACT

This Master’s thesis explores the importance of creating a new form of business model that incorporates a more substantial focus on innovation business strategy, geared towards the public transportation industry. It specifically explores how multinational companies (MNCs) in urban public transportation can use their internally developed technologies to enter new businesses beyond their current core. Due to the complexity of this topic, the thesis covers three major issues. First, it is important to determine the values that the technology offers to the new business and which strategy should be used to delivered these values. Second, it is necessary to create an appropriate business model to successfully commercialize the innovation. Third, it is essential to find suitable ways to integrate this business model into the company organizational structures. To provide new approaches and perspectives, this research project uses a single case study, a leading public transportation MNC and one of its innovative technologies to enter a new business. For confidentiality, names, empirical data, analysis and recommendations for the company have been excluded from this publication.

Findings reveal that Blue Ocean Strategy and its fundamental value innovation theory can be used in coordination with a traditional business model approach and corporate venturing theory to provide a more complete picture of the stages of business strategy in entering a new business in public transportation, with a more distinct focus on the innovation aspect. Given the findings, an MNCs should first determine the new value that their technology brings to various external stakeholders and find a way to communicate and market it in an untraditional way, focusing on emotional as well as functional appeal. MNCs should then consider various positions they can take in a new business, in determining the ideal commercialization strategy to pursue. MNCs should bear in mind that value is enhanced through collaborations both inside and outside the industry. This strategy can be chosen based on a variety of factors, such as monetary and strategic aims. Lastly, MNCs should consider how to enhance value through the appropriate organizational integration strategy for the new business. The proposed business model incorporates the interrelationship between the Blue Ocean theory, with business model and corporate venturing strategies, to create a business model approach that provides a better understanding of the decision-making processes, risks, and value, of an internally developed innovation, and the impact on an MNC’s core business.

Key words: public transportation, innovation, technology, business model, value innovation, commercialization strategies, organizational integration, corporate venturing.
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Enging Chan  Christopher Niesner  Yen Vuong
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<tr>
<td>AC</td>
<td>Alternating Current</td>
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<tr>
<td>ATD</td>
<td>Advanced Technology Development</td>
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<td>CE</td>
<td>Corporate Entrepreneurship</td>
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<tr>
<td>CO2</td>
<td>Carbon Dioxide</td>
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<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
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<td>CV</td>
<td>Corporate Venturing</td>
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<td>DC</td>
<td>Direct Current</td>
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<tr>
<td>DOE</td>
<td>(US) Department of Energy</td>
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<tr>
<td>EV</td>
<td>Electric Vehicle</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>HP</td>
<td>Horse Power</td>
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<td>HR</td>
<td>Human Resources</td>
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<tr>
<td>ICE</td>
<td>Internal Combustion Engine</td>
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<td>IEA</td>
<td>International Energy Association</td>
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<tr>
<td>IPR</td>
<td>Intellectual Property Rights</td>
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<tr>
<td>KW</td>
<td>Kilowatt</td>
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<tr>
<td>NGOs</td>
<td>Non-Governmental Organizations</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
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<tr>
<td>PT</td>
<td>Public Transportation</td>
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<tr>
<td>R&amp;C</td>
<td>Resources &amp; Capabilities</td>
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<tr>
<td>JV</td>
<td>Joint Venture</td>
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<td>R&amp;D</td>
<td>Research &amp; Development</td>
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* Innovation and Technology are used interchangeably in this thesis
1 INTRODUCTION

The year is 1899. The place is New York City. Instead of streets filled with bright yellow taxis spouting exhaust fumes clouding the tops of the city’s sky scrapers, the view is something quite different altogether. Instead, the streets are silent in comparison to the modern urban picture, with small electric vehicles picking up and dropping off passengers across the city. These are the electrically propelled taxis that constituted approximately 90 percent of New York City’s taxi transportation, at the peak of electric vehicle use in history. And how has the development of public transportation improved in over a century to take society to today’s day and age of advanced technology?

Fast forwarding more than one century later, the year is 2009. Typical urban life in developed countries is filled with exhaust pollution, urban congestion, and rising fuel prices that make transportation nearly unaffordable for some citizens. Looking at the providers of such urban public transportation, society finds that their focus is on minimizing such problems among others, and the method of choice is often power by electricity. What this is really, is a trend toward achieving innovation through old inventions.

Academic literature has critically distinguished innovation from invention and indicated that innovation is the next higher step in the process of bringing invention to life. For instance, Grant (2008) discusses the nature of invention as the creation of new products and processes, while innovation is viewed as the initial commercialization of invention by producing and marketing the new product or service or by using a new method of production. In other words, invention will never get known without wide commercialization through the innovation process. This explains why many inventions have emerged and disappeared in a short period of time upon arrival. However, the revival of old inventions in the new era is increasingly stronger, introducing creative ideas that were once thought infeasible, yet reveal surprising effects. Like other industries, public transportation has over time experienced changes and witnessed breakthrough innovations being born to upgrade human life, many of which have the roots from very old inventions. This leads to the purpose of this thesis.

1.1 Purpose of the Thesis

The purpose of this thesis is to determine how companies in public transportation can use internally generated innovation to enter a new business area beyond their core business. While the strength of an innovation is important, a large determinant of success lies in the
strength of the business model adopted for the innovation. Furthermore, the question remains, that is how the business model communicates to society the value of the innovation to transform the demands and needs that exist today into those that match the future. Moreover, companies are finding opportunities to look beyond traditional borders of their core business to gain further growth and meet mobility needs at a higher level than previously provided. While a company’s technology can be applied to strengthen the core business, application in other areas can provide unexpected and even greater opportunities for growth, and allow such companies to be distinguished from strong competitors in a changing environment.

In researching this topic, it is important to focus on how a company can create value for key stakeholders with their innovation in the new business, in order to create a sustainable business model that will ensure both profit and alignment to long term strategic goals of the company, and lastly, how to integrate this business model into the existing organization.

1.2 Research Problem

Given the purpose of the thesis, the main research question can be summarized and identified as follows:

**Main Research Question:**

*How can a multinational company in urban public transportation use an internally generated breakthrough technology to enter a new business beyond its current core?*

To answer this main research question, three sub questions will be analyzed in detail:

**Sub-question 1:**

*How can a multinational company in urban public transportation create value for relevant stakeholders through using breakthrough technology in a new business area beyond its current core?*

**Sub-question 2:**

*How can a multinational company in urban public transportation secure scalability in its new business model to extend business beyond its current core?*
Sub-question 3:  
*How can a multinational company in urban public transportation position its new business with respect to the existing organization?*

1.3 Delimitations

- The focus of this thesis will be on the public transportation industry, with consideration given to macro-economic trends and events.
- Companies in this respect are multinational and multidivisional corporations, where new business entry and exploitation of innovation technology largely differs from that of small and start-up companies.
- Internally developed technology for these purposes are limited to those developed within a company for their core business, and used now to enter new businesses beyond the core (new applications after original development).
- Application of theories and development of generalizations will be based on a single study.
- Due to time limitations and preference from the case company, the focus of the empirical study will be mainly on one specified business, with no analysis on how a company chooses a new business to enter.
- Due to time limitations, the analysis, findings, and recommendations will be provided only for sub-topics chosen by the case company, and omission of other relevant issues to this topic, such as geographic location issues.
- Limitations of research include the confidentiality issue with potential partners and customers, inhibiting ability to conduct primary research interviews.

1.4 Research Background

Mobility is vital to all aspects of society. It is important in everyday life, in some way, shape, or form, in all corners of the world. While some societies are more advanced than others in mobility, it meets the same basic needs of providing people with a way to move from place to place and allow them to achieve their daily tasks and goals. Throughout history,
the demands for mobility have changed considerably, as old forms die, and new forms emerge as “improvements” to meeting the changing needs and demands of people in their everyday lives. When looking at the roots of mobility, one can begin to understand that the best ideas are not those that have risen to captivate the world, rather the ideas that have reached this success were backed by strong and persuasive business models by companies who provided mobility and offered it in a way that was unmatched by others at that point in time. This leads to the importance of this research topic. Given the wide changes MNCs in public transportation are faced with each day in today’s society, searching for new solutions and competing for the best solution for mobility, a new type of business model is needed to connect more clearly than existing theory provides, the impact of innovation and its value into the business model. While there are many theories that discuss implementation of innovation, as MNCs nowadays are finding value in an emerging theory, Blue Ocean Strategy, it is believed that this theory should be incorporated in a new form of business model that meets the challenges of today’s public transportation industry. To provide a background to some of the topics of this thesis, the following story will show how an old and high potential innovation within transportation failed due to lack of a feasible business model, demonstrating how this failed innovation can be resurrected to transform mobility today.

1.4.1 Towards the Future by Looking into the Past - The Revival of the Old

A surprising truth is that around the year 1900, 90 percent of all taxis in New York City were electrically propelled. The development of electric vehicles (EVs), in particular automobiles which used batteries as electric energy sources, took place at the same time as the invention of the internal combustion engine (ICE) by Gottlieb Daimler and independently Carl Benz. Between 1832 and 1839, Robert Anderson developed in Scotland the first vehicle with a battery as the energy source for electrical compulsion. In 1839, Robert Anderson developed in Scotland the first vehicle with a battery as the energy source for electrical compulsion. In 1842, Thomas Davenport and Robert Davidson invented the first EVs that were developed for a more convenient use on roads. Nevertheless, the commercialization of these EVs for use in urban transportation was not feasible at that time, due to extremely limited capacity of the non-rechargeable battery cells (DOE, 2009).

In 1865, battery storage problems were improved through storage changes made by Gaston Plante, which built the basis for the introduction of the first rechargeable battery invented by Camille Faure in 1881. These radical improvements opened the desired doors for the spread of EVs. In the same year, Gustave Trouvé demonstrated the first three-wheeled
electric automobile at the International Exhibition of Electricity in Paris 1881, which worked with a rechargeable lead-acid battery. This officially first declared electric powered automobile could reach a top speed of 12 kilometer per hour and following developments of it could reach ranges up to 48 kilometer per hour (Wakefield, 1998).

**Thomas Edison and Nikola Tesla**

Research for electric currents and their potential use in society enforced developments in the EV sector. Among many other scientists, the American inventor Thomas Edison conducted extensive research in the field of electricity, in particular, batteries (Rogers, 2007). He also contributed to the development of EVs themselves. In 1889, Edison presented his own version of an electric runabout, from which he produced only a couple of exemplars (Kharmas, 2009), as shown in Figure 1.1. Edison’s main work contributed to the general supply of electricity and its infrastructural necessities, contributing to the eventual widespread use of EVs for the next 20 to 30 years (Wakefield, 1998, 7).

Besides Edison, the Croatian scientist Nikola Tesla was also one of the leading scientists and inventors in the field of electrical power. Tesla held an outstanding number of electricity-related patents, but especially in the context of EVs, Tesla essentially contributed by discovering and demonstrating the first methods of contact power transmission through electromagnetic induction. Based on Faraday’s discovery that a changing current within a wire would create a voltage in another nearby circuit, in 1888, together with George Westinghouse, Tesla developed the first alternating current induction motor (Wakefield, 1998). This invention and his general findings were used to build the basis for this widely used mode of electrical power and power supply, especially for the increasing number of EVs. Edison’s and Tesla’s relation was characterized by a high degree of competition and their different opinions towards the more beneficial type of electric current resulted in negative impacts on the EV developments (Tesla’s AC vs. Edison’s DC).
The Rise of Electric Vehicles

At the beginning of the 1890s, the American market took notice of the potential of EVs. Andrew L. Riker and William Morrison developed the former three-wheeled exotic vehicle to a six-passenger wagon with 2.5 hp, equipped with four wheels for a more convenient road use. Many innovations followed and interest in EVs increased greatly in the late 1890s and early 1900s. In 1897, the first commercial production of electric cars for taxi fleet of New York City got established by the Electric Carriage and Wagon Company, founded by Pedro Salom and Henry G. Morris. In 1899, 90 percent of the cabs in New York City were electric Hansom cabs. Together with the Electric Carriage and Wagon Company, other manufacturers set foot in this new market, such as the American Electric Vehicle Company, Waverley Co., Baker Motor Vehicle Co. or General Electric (Kharmas, 2009; Laminie and Lowry, 2003).

The years 1899 and 1900 were the high point of electric cars in the United States of America (USA), as they outsold all other types of cars and were produced in amounts twice as much as automobiles with internal combustion engines. The reasons for the success of electric cars, which were mostly used for city transport, were obvious. In comparison to the gasoline driven competition, EVs operated in a rather clean, quiet and simple way. For instance, driving with electric cars did not require the changing of gears, which represented the most difficult part in handling a gasoline car. Furthermore, EVs did not require the manual effort to start, as with the hand crank on gasoline vehicles. Even though battery-driven vehicles could only operate in a limited range, they were still regarded as the ideal city transportation vehicle, since only the roads within an urban area were in good condition, causing most travel to be local commuting (DOE, 2009; Hughes, 1996).

Hybrid Vehicles and Ferdinand Porsche

Since each propulsion type denoted several drawbacks, first attempts to combine these different modes into one vehicle, resulted in the first hybrid petrol electric vehicles. One of the first pioneers in this area was Ferdinand Porsche, who worked together with Jakob Lohnner, head of a coaches manufacturing firm for the Austrian-Hungarian court, on the
production of a silent electric carriage (Wakefield, 1998). In the Universal Exposition in Paris in 1900, Lohner-Porsche successfully introduced their first petrol-electric automobile to the public, specifically constructed for this event. Based on Mercedes’ gasoline car technology, the established Lohner-Porsche group essentially contributed to the uprising of the hybrid vehicle area, competing with other manufacturers as Krieger, Jenatzy and later Mercedes-Mixe (Wakefield, 1998). Together they presented their hybrid EV inventions as part of the Auto-Mixe series during the Paris Automobile Show in 1906. Lohner-Porsche’s vehicle consisted of a small gasoline tank and a 154-kilogram storage battery under the driver’s seat, which was charged from a generator (Wakefield, 1998).

Europe and Berlin

The clear benefits of EVs at this time resulted in growing popularity, also in other parts of the world such as Europe. In April 1899, Camille Jénatzy’s “La Jamais Contente”, a one-seated electric racing car, achieved as first car ever a speed over 100 kilometer per hour and spread the breaking reputation of electric cars all over the continent. In France, companies as Mildé et Cie and La société de la voiture Bouquet, Garcin et Schivre started a production range of EVs from cars to buses. The latter company produced an automobile, which won the record of the longest driving distance of 262 kilometers without additional battery charge in between. In London, Carl Oppermann Electric Carriage Co. Ltd. produced electric cars with their own batteries and the company W. C. Bersey developed the so-called electric “Bersey-Taxis”, which were designed in a way that immediately replaced the used battery pack with a newly charged one. In 1908, most taxi cabs were still horse-drawn carriages; despite that, more than 200 electric cabs were already in use. Berlin especially can be viewed as a European pioneer in applying modes of electric transportation.
While the first electricity driven vehicle was found in Berlin in 1882, the city was, together with Paris, one of the first European metropolises to introduce trolley buses and trams. Around 1900, the German electricity company Pflüger & Co. produced a small amount of EVs in Berlin and between 1898 and 1902, Kühlstein Wagenbau produced EVs in Berlin and was then acquired by the general electricity company Allgemeine Elektrizitäts Gesellschaft (AEG), followed by the Neue Automobil-Gesellschaft (1908-1915) and Nationale Automobil-Gesellschaft (NAG) (1915-1934), which manufactured different EVs. However, batteries as sources for electric compulsion gained more and more reputation in the capital city of Germany and led to the use of EVs for different purposes (Kharmas, 2009).

**Reasons for Decline of Electric Vehicles**

The peak times of EV use finally ended between the 1910s and 1920s, as a result of several developments and changes that occurred during this time, mainly technological, economic, environmental and personal factors. From a technological perspective, ICE vehicles experienced a series of effective improvements and developments, such as increased speed and power, and elimination of the hand crank to start the engine of gasoline cars, which used to make usage inconvenient and difficult. Another major reason was also the declining technological progress in the EV industry itself, particularly due to the disadvantages of batteries as energy source. Usual lead-acid batteries at that time had to be replaced every two years, making the maintenance of EVs rather expensive. Additionally, this kind of batteries was prone to leak as a result of the corrosive sulfuric acid that could create noxious and explosive fumes. Furthermore, these batteries were quite sensitive to temperature and put an additional weight of 50 kilograms per hp to the vehicle. In the end, electric cars could not really exceed the average speed of 30 kilometers per hour and ranges of 30-100 kilometers, which made gasoline cars superior with the time. Thomas Edison had started since 1900 with experimenting and developing a new combined form of nickel-alkaline batteries, which were non-corrosive, more safe and lighter. However, after several reported problems with the new batteries, Edison had to pull them back from the market and could release an improved version after 1910. By that time, the EVs were already outperformed by the gasoline cars and the new battery technology could not stop their decline (Hughes, 1996).

On one hand, EV manufacturers were apparently not ambitious or aware enough to strongly foster technological developments in EVs and batteries, and on the other hand, these entrepreneurs were not foresighted enough to see changes in the environment, for example, EVs were designed for urban and short-distanced commuting. However, since cities and
regions became increasingly linked through a better road system (especially in the USA), the need and desire for long-distance travel by car rapidly increased. The limited range, the low speed and the lack of recharge stations made EVs unable to cope with this new trend. EV supporters believed that an increase of recharge stations would go hand in hand with an increase in the number of EVs. However, reality showed that the market could not create a necessary balance between the purchased number of EVs and the needed number of recharge stations. Additionally, the lack of efficient cooperation within the EV industry and electricity suppliers resulted in difficulties of installing a network of sufficient and compatible recharge stations. As mentioned earlier, the “competition” between AC and DC for example, prevented the establishment of a common standard (Anderson, 2005).

Moreover, in order to fulfill the need of more recharge facilities, manufacturers needed to see the potential of this market. Unfortunately, the economic perspective proved that the EV market was shrinking due to increasing price advantages of gasoline vehicles. On one hand, the discovery of oil in the USA extremely lowered the petroleum price, and on the other hand, the initiation of mass production, as Henry Ford demonstrated, enabled the production and selling of gasoline vehicles at a much lower price. For instance, in the USA in 1912, an average gasoline car could be sold for US$650, while an electric car cost about US$1,750 (DOE, 2009). Due to the battery maintenance requirements, the costs of an EV were also higher and made it more of a vehicle for upper classes, while an ICE vehicle became affordable products for the average consumer.

The last deciding factor for the decline of the EV was the change in consumer’s perception. Before the rise of the gasoline engine, the EV was a preferred mode of transportation because of its clean and silent operation. An EV was described by the Electrical World in 1911 as “a vehicle of convenience, not ordinarily adapted to covering very long distances or running at a very high speed, but immensely handy and workable within its limitations” (Anderson, 2005, 8). EV manufacturers apparently did not see the necessity to adapt the image of their products to the changing environment and people’s needs, such as long distance traveling, the desire for more freedom in an increasingly automobile dominated society, or the need for speed in a busier world. Consequently, the gentle EV ended up competing with the gasoline vehicles and was forced to move into a rather small niche market. The general public changed preference to ICE vehicles because of the technological and economic reasons, as well as of personal attitudes towards the gasoline engine, where sputter, smoke and roar became a symbol of power, prestige and progress (Hughes, 1996).
INTRODUCTION

The Revival

EVs vanished into thin air until the 1960s, where first attempts appeared to revive them. Environmental and political factors represent the main drivers for investigation into alternative fuel transportation, in order to reduce the dependency on fossil fuels and the increasing problem of environmentally harmful emissions. Combined with a rising number of political regulations which increasingly restrict the use of ICE vehicles (Dyerson and Pilkington, 2005), the development of cleaner transportation begins to be an important necessity. Especially, urbanization and the interrelated change of infrastructure and life afford new and more efficient possibilities of commuting and traveling. Furthermore, the issue of oil dependency represents a driving force, especially for extremely oil dependent industrial nations. On one hand, oil resources are limited, and on the other hand, political issues drive nations to find solutions to becoming independent from oil (Laminie and Lowry, 2003, 5).

The economic factor can be seen as a result of the external influences which foster the EV development. For example, the rising oil prices due to political as well as resource limitation reasons, the rising costs of environmental protection in order to compensate the hazardous pollutants of ICE vehicles or harming economic effects of the current world crisis on the automobile industry play major roles. As a result, the economic potential of the EV represents a possible solution to problems.

Especially the technological milestones which were accomplished in the battery technology of different industries, as well as the improvements in the entire transportation and car industry enforce further R&D in the EV industry (Magnusson et al., 2003). Close collaborations between different industries, as well as increasing competition lead to the creation of technological synergies and the creation of cross-industrial strategic partnerships to foster and drive the development of EVs. A good example may be the partnership between the American battery EV producer Tesla Motors and the British sports car manufacturer Lotus, which produce and sell together the all-electric sports car Tesla Roadster (Tesla Motors, 2009c).
The last critical factor contributing to the revival of EVs is again the personal attitude of society and the change of lifestyle. As impacts of urbanization and environmental threats become increasingly obvious and gradually influence people’s lifestyle, a change of the EV image takes place in society. As ICE vehicles stood a century ago for a fast forward moving world, the EV represents the same progress now, yet in a different way. EVs are still regarded as clean and quiet, but now technologically advanced to the gasoline car as well. The vision of a better and healthier life dominates people’s mind and makes it possible to revive the invention of transportation through electric propulsion, which was buried a century ago.

1.4.2 A Snapshot of Public Transportation Today

Since new opportunities through electric propulsion have widely been recognized and a new way of thinking has emerged, increasing focus has been placed on EVs and alternative options to address current issues in public transportation (PT). The following description summarizes the current issues and trends seen today.

**Economic Factor**

The current economic crisis, originated from the USA, has created a domino effect towards countries worldwide. In this context, the global transportation industry has seen major negative impacts from the crisis, one of which is the close-down of a number of manufacturing sites of big players in the car industry, resulting in lay-offs and employee dismissal as well as the temporary turmoil of the private transportation industry. This undoubtedly affects the public transport providers, who have more opportunities to provide a transport method that is more cost efficient and environmentally sustainable.

**Energy Factor**

The world’s demand for energy is increasing rapidly, leading to greater competition for finite natural resources. As these resources decline, this challenge has to be urgently tackled, firstly to reduce dependency on imported fuels in the short term and secondly to limit excessive exploitation of exhausting natural resources in the longer term. The International Energy Agency (IEA) forecasts that till 2030, the global primary energy demand will rise by 53 percent and fossil fuels will remain the dominant source of energy worldwide, meeting only 83 percent of energy demand increase (OECD/IEA, 2006). According to the report, over 70 percent of the increase in primary energy demand will come from developing countries, reflecting rapid economic and population growth. Therefore, a well-created balance between
natural resources exploitation and economic development is needed on the road towards economic sustainability. Another feasible solution is the search for fuel substitutes, such as solar and wind energy, with the view to reducing the use of current natural resources and, further, facilitating sustainable development.

Environmental Factor

Many reports have been written within the theme of negative environmental impacts of the transportation industry, such as pollution, high greenhouse gas emission, climate change (global warming), thus highlighting the need of sustainable energy solutions. The growth in mobility and transport over the past 150 years has led to unprecedented levels of carbon dioxide (CO2) which as a result can no longer be ignored and demand immediate attention. According to the IEA, the global CO2 emissions will increase by 55 percent by 2030. Moreover, greenhouse gas emissions from transport are growing faster than that from any other sector, offsetting these efforts and improvements. In Asia, most of this growth stems from the increase in two- or three-wheeled vehicles. The mobility and affordability advantages of these vehicles are diminished by their pollution disadvantages, notably high levels of ‘carbon monoxide and unburnt hydrocarbon emissions’ (Gaurav et al., 1998).

Social Factor

The economic and population growth has to a great extent contributed to the reorganization of urban transportation. The economic development is partly reflected by faster urbanization trend, which in turn leads to an increase in urban population and traffic volume, as well as the resultant land use expansion to meet the traffic demand. In 1995, about 45 percent of the world population lived in urban areas, while for the year 2025 it is estimated that the percentage is going to rise to 60 percent (Gaurav et al., 1998). 90 percent of this growth will occur in the world's developing countries, primarily in Africa and Asia. In addition, the dominance of car use worldwide, even for short distance trips and during congestion periods, clearly shows a high degree of dependency on this mode of transport. Furthermore, due to urban sprawl, i.e. scattered or unstructured urban expansion, Europeans travel further even though they spend limited and almost constant daily time in traveling. This demands ever faster and seamless travel conditions. The usual, easy and cheap response to this short term pressure has often been to increase and expand road capacity to the detriment of other transport modes, without coordinating with land use and pricing policies. This yields in return more urban sprawl hence more difficulties to connect urban expansions to public
transport and an increase in car ownership (European Commission, 2007). Other big challenges related to transportation include traffic congestion, collisions and noise pollution, which altogether threaten the urban quality of life. Although the ongoing quest of sustainable solutions to all of these problems has shown positive signs of success, the future of transportation industry has not yet reached a concrete answer.

**Technological Factor**

Historically, society has turned to technology to provide the answer to all transportation-related problems. In the center of current technological development are three groups of technologies, which are hoped to help gain sustainability, i.e. (1) cleaner technologies, (2) renewable energy technologies and (3) efficient energy conversion technologies. However, this has had little effect and 30 years has been lost without any real progress. Innovative thinking is now required to identify the best emission reduction strategies for transportation and further re-organize the industry efficiently.

**Political Factor**

National governments, urban planners and city authorities have been put under the pressure of dealing with all of the transport-related problems in a sustainable way by, for example, controlling the excessive urban population growth, searching for sustainable solutions to the exhaustion of natural resources and building infrastructure for transportation. Global warming is one of the most urgent issues where energy questions are the subject of considerable international political activity. It is an issue that raises key questions about politically sensitive topics, such as national sovereignty and international equity, thus requiring substantial attention. Moreover, the re-organization of urban transportation systems needs to be made, for instance, forecasts of further increase in car ownership and use have prompted calls for policy makers to encourage car users to switch to other forms of transport.

In this context, public transportation emerges as one of the best solutions to all those problems. The relatively low cost, both in terms of manufacturing and operation, is obvious in comparison with private modes of transport, such as cars and motorbikes. Public transportation has the potential to provide low-cost mobility to citizens, to facilitate a healthy environment and strong metropolitan areas by reducing traffic congestion and pollution, and to support pedestrian-oriented communities. However, the lack of mobility and convenience makes public transportation less attractive as urban modes of transport than private vehicles. In order to tackle this problem, substantial research, mostly in the field of energy, has been
conducted; many organizations, transportation plans, transportation projects have been established. At the same time, many public transportation companies have put a great deal of effort into the search for viable and sustainable solutions to the transportation problems that society is facing today. Specifically, companies within the industry are looking towards old ideas and finding ways to revive them, using modern technologies.

1.4.3 Predicting the Future of Public Transportation

Given today’s major issues in public transportation, and considering the changes that have taken place in the past century, several questions can be raised, in respect to the future developments: How can new innovations break this habit and succeed in transforming public transportation? How can a company succeed in capturing the enthusiasm of the widespread public to support a new innovation in this industry that will revolutionize it the way the EVs did in the late 1800s and the way ICE did in the early part of the last century? How can a company predict what is needed and demanded? While the trends described above certainly exist today, will they continue or will there be trend-breakers and anti-trends to come?

As one can see, making a clear prediction of the future is impossible due to the endless questions that go hand in hand. Nevertheless, the presented history of the EV illustrates very well the potential of electric propulsion. As a matter of fact, other factors dominated people’s thoughts and actions over 100 years ago, causing the decline of EVs and the electric energy supply for private and public transportation purposes. However, times and factors have changed now. Suddenly, a new range of potential opportunities for EVs and electric energy propulsion in transportation exist, which can provide completely new forms of (urban) mobility. In this sense, the last part of this chapter will introduce the case company of this thesis and its breakthrough innovation that has similar potential to revolutionize future in urban public transportation, as did those of the past.
1.5 Research Model

Figure 1.6: Research Model

Main Research Question
How can a multinational company in urban public transportation use an internally generated breakthrough technology to enter a new business beyond its current core?

Sub-question 1:
How can a multinational company in urban public transportation create value for relevant stakeholders through using breakthrough technology in a new business area beyond its current core?

<table>
<thead>
<tr>
<th>Stakeholder Theory &amp; Value</th>
<th>Value Innovation</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Case Study</td>
</tr>
</tbody>
</table>

Sub-question 2:
How can a multinational company in urban public transportation secure scalability in its new business model to extend business beyond its current core?

Strategies for New Business Entry and Innovation Exploitation

<table>
<thead>
<tr>
<th>Industry Factors</th>
<th>Growth Potential</th>
<th>Innovation Characteristics</th>
<th>Resources &amp; Capabilities</th>
<th>Financial Profitability</th>
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</tbody>
</table>

| Case Study       |

Sub-question 3:
How can a multinational company in urban public transportation position its new business with respect to the existing organization?

<table>
<thead>
<tr>
<th>Organizational Adaptation</th>
<th>Structural Integration</th>
<th>Implementation Hurdles</th>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Case Study       |

Findings & Recommendations

Source: Own
1.6 Outline of the Thesis

Figure 1.7: Thesis Outline

CHAPTER 1: INTRODUCTION
- Introduction
- Purpose of Thesis & Research Problems
- Delimitations
- Research Background
- Research Model

CHAPTER 2: METHODOLOGY
- Research Approach
- Research Strategy
- Research Design: Case Study
- Data Collection & Analysis
- Quality of Research
- Ethics in Research

CHAPTER 3: THEORETICAL FRAMEWORK
- Value Innovation
- Business Models & Commercialization of Innovation
- Corporate Venturing Theory

CHAPTER 6: CONCLUSIONS & RECOMMENDATIONS

Source: Own
2 METHODOLOGY

The aim of this chapter is to introduce the methods and approaches applied to conduct research of the topic under study, serving as guidelines and directions throughout the thesis to ensure consistency and credibility. The methodology elaborates on a collection of theories, concepts and ideas, and illustrates a comparative study of different approaches. In particular, different possible choices of methods in academic research are outlined to discuss their benefits and weaknesses, from which the most suitable ones are chosen with reasons for choice explained. To begin with, research methods, research strategies and research designs are presented, followed by description of strategies for data selection, collection and analysis. A discussion regarding reliability and validity is also incorporated to give the reader a possibility to critically evaluate the trustworthiness of the study later.

2.1 Research Approach

2.1.1 Reasoning Procedures

Generally, the choice of the research approach to be used to conduct the thesis depends on the topic and the purpose of the thesis writing. Three most common research approaches include deduction, induction and abduction. The deductive approach allows propositions from pre-existing theoretical framework to be situation-specific by developing and testing them in the empirical world, while the inductive approach, in contrast, results in generalization of data collected in the particular case(s), conditioned by real-life context, into theories and models extensively applicable for further studies. More commonly, however, because of the blurred boundary between theories and empirical observations and the intertwined nature of the different activities in the research work, the conduct of case studies is rather difficult, thus requiring an integrated approach for maximal efficiency (Dubois and Gadde, 2002). In that sense, the abductive approach, which is seen as a cross between deductive and inductive approach (Dubois and Gadde, 2002), proves most efficient. This particular method enables knowledge expansion and drives the research process forward by constantly moving back and forth between theoretical models and empirical fieldwork, testing theories with empirical phenomena and vice versa to see if they are compatible and understandable. Through the continuous interplay between theory and empirical observations, established theoretical models would be combined with new concepts derived from the confrontation with reality.
Our research certainly requires a combination of approaches, leading to the abductive approach being chosen to facilitate the writing of the thesis: we use relevant grounded theories, such as stakeholder theory, classic theories about business models, corporate venturing, etc., as a starting point and check their validity with the present real-life situation, which can be seen as a deductive approach; at the same time, we employ the inductive approach to finally generalize the industry and company data into new theoretical findings and models extensible to later research. Moreover, according to Dubois and Gadde (2002), the abductive approach is fruitful if the researcher’s objective is to discover new things, which coincides with the purpose of the thesis—exploring new opportunities for the case company in a new business beyond its current core. The interplay between theory and empirical observations, which Dubois and Gadde (2002) term “systematic combining”, is also flexibly applied, so that the theories are continuously refined and developed in relation to the real case.

2.1.2 Scientific Approaches

According to Yin (2003, 3), no matter what strategy to be adopted, three different scientific approaches for conducting research can be found suitable, namely exploratory, descriptive and explanatory. In this thesis, we combine all three approaches throughout. In particular, as its name already suggests, the exploratory approach helps us identify and define the right problems to be studied through exploration of related theoretical topics combined with in-depth interviews with the company’s managers. The descriptive approach is used to describe our observations from field studies and interviews. At last, we use the explanatory approach to relate the presented theories and empirical findings together, a strategic action towards analysis of results and conclusions.

2.1.3 Research Method

Another aspect of the research approach is the research method, which Merriam (1998) categorizes into qualitative and quantitative research. In contrast to quantitative research, which examines the topic in separate divisions most in forms of numbers and quantities and concludes with statistical analyses, qualitative research focuses more on meaning of the data in context and investigates the phenomenon as a whole in which different components are closely attached. Merriam describes the design of qualitative research as flexible, evolving, and emergent, and the findings comprehensive and holistic. Therefore, qualitative research is appropriate for explorative researchers. We base our analyses mainly on interviews,
observations, and documents as methods of data collection, activities which are central to qualitative research.

### 2.2 Research Strategy

Yin (2003) suggests that the research strategy choice should be based on the types of research questions, the degree of control over actual events, and the focus on contemporary or historical phenomena. These three conditions are the fundamentals that help differentiate the five most common ways of conducting social science research from one another, including (1) experiment, (2) survey, (3) archival analysis, (4) history and (5) case study, since each strategy corresponds with a particular situation of the three conditions, as illustrated in the table below. Among these five strategies, case studies are the preferred strategy when “how” or “why” questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context (Yin, 2003).

**Table 2.1: Relevant Situations for Different Research Strategies**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of Research Question</th>
<th>Requires Control of Behavioral Events?</th>
<th>Focuses on Contemporary Events?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experiment</strong></td>
<td>How, why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Survey</strong></td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Archival analysis</strong></td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td><strong>History</strong></td>
<td>How, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Case study</strong></td>
<td>How, why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Yin (2003)

Throughout the thesis writing, we conduct our research using a case study strategy as a preferred most practical approach to pursue over others. All of our research questions are formed starting with “how” with an aim to discover and describe the processes and directions that the case company can employ in its strategy towards new entry into a new business. Lastly, there is no wonder that the ability to control the major factors in this situation is impossible.
2.3 Research Design (Case Study Design)

Every type of empirical study has an implicit, if not explicit, research design (Yin, 1994). In the most elementary sense, the research design is the logical sequence that connects the empirical data to be collected to a study’s initial research questions and, ultimately, to its conclusions. A research design has been further defined by Nachmias and Nachmias (1992) as a plan that guides the process of collecting, analyzing and interpreting empirical observations in correspondence with the questions being studied (Nachmias and Nachmias, 1992, cited in Yin, 2003). Therefore, the main purpose of the research design is to help to avoid the situation in which the evidence expands too far from what is needed to address the initial research questions. In other words, it helps to create continuous consistency throughout the research process. Yin further describes five components of a case study design:

1. The study’s questions;
2. The propositions;
3. The unit(s) of analysis;
4. The logic linking the data to the propositions; and
5. The criteria for interpreting the findings

With the above background about general characteristics of research designs, the crucial decision of a specific design for case studies must be made. Depending on the topic, the researcher can now decide on the number of units of analysis needed, i.e. whether a single case study is sufficient or multiple case studies are required to properly address the research questions, which then leads to the choice of a particular design among four different design situations, namely (1) single-case (holistic) designs, (2) single-case (embedded) designs, (3) multiple-case (holistic) designs and (4) multiple-case (embedded) designs. Yin (2003) first distinguishes between the single-case and the multiple-case design, in which a single case study becomes ideal given five rationales as follows.

1. A critical case, where the case represents a critical test of well-formulated theories;
2. An extreme or unique case, where the case indicates a rare or unique circumstance;
3. A representative or typical case, where the case is typical of many other cases;
4. A revelatory case, where the researcher has opportunities to explore what was previously inaccessible to scientific investigation; and
5. A longitudinal case, where the same case could be investigated at two or more different points of time.
The second distinction that Yin makes is between a holistic and embedded case study design. The embedded design is preferred when a single case study involves more than one unit of analysis. Yet, if only one unit of analysis is examined, the preferred option is the holistic design case study (Yin, 2003).

As a rule, many companies have been generating and using breakthrough technologies to expand their business, and the pursuit of desired success in use of those innovations as a result seems to be typical among those companies. Therefore, the best representation for the thesis would be a typical case, using the case company as the single case study applicable to other firms, although further investigation is needed to confirm if findings and recommendations can also be further extended. Moreover, this thesis is going to utilize a single-case embedded design since the success of penetrating into new business segments is affected by various factors, such as market opportunities, market size, demands, partnerships, the technology, etc.

2.4 Data Collection

Data collection is one of the most significant factors that decide the success of a scientific research; therefore, how to gather necessary data effectively most often lies in the core of the researcher’s attention.

2.4.1 Data Selection and Data Collection Techniques

According to Merriam (1998), ‘collecting’ data always involves the decision of what information will be needed to address the problem, i.e. data selection, and how best to obtain that information, i.e. the techniques of data collection.

Fisher (2004) identifies five main research methods for gathering data from which the researcher can choose, i.e. interviews, panels, questionnaire, observation and documentary sources. The mentioned techniques of carrying out data collection process also vary in terms of structure – they can be structured or unstructured (open). Together with the decision of which research methods to adopt, the choice between open and pre-structured approaches needs to be made in consideration of a number of factors. For example, Fisher suggests that the open approach be more appropriate if the answers cannot be fully anticipated, new ideas are sought and the number of respondents is not substantial.
In response to the issue of data collection during the research process, Yin (2003) introduces six fundamental sources of data which he calls sources of evidence, i.e. documentation, archival records, interviews, direct observations, participant observation and physical artifacts. All of the sources have their advantages and disadvantages, and in the meantime they are quite complementary which makes their combined usage a strong feature of the case study. Meanwhile, viewing data collection as a process about asking, watching and reviewing, Merriam (1998) seems to already have her own choice of data collection techniques when only discussing interviews, observations and documents as the main techniques of collecting data in qualitative research. In this thesis, considering the strengths and weaknesses of each data collection method as well as the possibility of using it, we conduct our research mainly through interviews, direct observations and documents.

Data sources can also be roughly classified into two forms: primary and secondary data. Primary data are those gathered for the first time and for the specific purpose of use in the study at hand, consisting of, for example, observations, interviews, surveys and questionnaires. Secondary data are those that already exist before the study at the outset, including books, articles, documentaries, journals, previous studies, Internet sources, etc. For this specific study, we collect primary data mainly through conducting numerous interviews, combined with an open approach as a major technique to take. For one reason, interviews are one traditional way of gathering first-hand evidence to be used when the purpose is to obtain in-depth information which cannot be collected through observations (Merriam, 1998). The unstructured approach, used especially during first meetings with the company representatives and administrative institutions, proves efficient in the sense that it facilitates comprehensive understanding of the industry and company current situation in the phase of problem discovery and importantly acquirement of new unfamiliar knowledge, and, as creativity is highly needed in the innovation project, it helps to uncover new opportunities of development for the case company to some extent. However, when we already have better knowledge of the case and the industry, we set up semi-structured interviews, i.e. we prepare the issues needed to explore in the form of questionnaires which are sent to the interviewees in advance and ask the questions in flexible wordings and order during the meetings. At the same time, we keep all questions open-ended and asked to more than one interviewee, so that the most possible data from different viewpoints can be collected. We attempt to create a comfortable discussion-like atmosphere at the end of a long interview, so that more insights can still be gained without the interviewees feeling bored and tired. In addition, direct observations
during the meetings in conjunction with different types of documents such as company confidential reports, internal presentations, official public institutions’ internal databases, etc. are also used for more insights into the topic.

As for secondary data collection, an extensive exploitation of a variety of different sources of information, such as Internet websites, newspaper articles, journals, the company’s public press releases and reports, previous theses among others are used to uncover current trends in the public transportation industry and discover various possibilities of entry into a new business, i.e. market conditions, competition situation and investment climate. As for the theoretical framework, we use a wide extent of literature, such as journals, books and other academic publications, and compare views of various authors to generate our theoretical contribution. We use reliable Internet sources of information and newspaper articles, as they provide the most recent findings and developments in the field under study or those related.

2.4.2 Ways to Record Interview Data

As can be seen throughout this thesis, interviews are the most important method that we use to collect first-hand data and therefore, need to be well organized before, during and after the interview process. In fact, the organization of interview data collected is equally important as the conduct of interviews since it reflects the resultant database of the whole process and the quality of the final paper. As Merriam (1998) discusses, three ways of recording and evaluating interview data include using tape recorders, taking notes during the interview and writing down from memory after the interview. Although taping the interview is the most common way, it is not much used in our thesis because of the high sensitivity of the project information. In addition, using memory as the tool has obvious drawbacks, i.e. information inaccuracy and shortage, thus making itself far from ideal. Therefore, taking written notes is the main method to document the information collected through interviews, in which the informants feel more freedom to express their feelings, thoughts and perspectives, while we can take advantage of quick typing, high-tech computers, and of being a group of three, which increases accuracy of the information.

2.4.3 Three Principles of Data Collection

Regardless of the number of sources of information utilized, the collection of data helps decide the quality of a scientific research following three primary principles as introduced by
Yin (2003). Yin describes these principles as aiming to maximize the benefits of the applied data collection techniques and thus, is considered a benchmark for the data collection process.

**Principle 1: Use Multiple Sources of Evidence**

In consideration of the strengths and weaknesses of each data collection method, Yin (2003) recommends employment of hybrid strategies in which multiple sources of evidence are relevant. This refers to the ideology of triangulation, helping to improve the quality of the study in terms of validity and reliability, which will be further described later in this Chapter. One prevalent advantage of the case study research strategy over others is the freedom of the researchers’ choice of information sources (Merriam, 1998). Meanwhile, the use of multiple sources of evidence in case studies allows the researcher to tackle a broader range of issues, such as behavioral, attitudinal and historical. A case study that follows the principle of triangulation is believed to be more convincing and more accurate, since any findings are based on several sources of information providing the same or similar data about one particular set of facts or findings. With regards to the data collection techniques presented above, it is obvious that the case study under conduct strictly applies this principle, using different sources of data and different techniques to gain access to those data.

**Principle 2: Create a Case Study Database**

The second principle refers to the organization and management of the collected data for the case study, in which Yin (2003) emphasizes the importance of distinguishing the formal assembly of evidence from the final case study reports, i.e. keeping the actual database separated from the researcher’s formal narrative presentation of the data. The reason for this, as Yin explains, is to enable the critical readers and the researchers themselves to return to the raw data at any time of the study process, even after the finished written reports, for independent inspection and direct review especially when doubts of data and insufficiency of information arise. Additionally, the creation of a formal, presentable adequate database in this manner remarkably increases the reliability of the entire case study research and thus should be one priority when collecting data. Being aware of this regularly-seen shortcoming of case study, we attempt to build a reliable database as a well-managed collection of data from which we extract valid conclusions and recommendations based on selected necessary information. Because of the secrecy of this project, interviews could not be taped and instead were typed on the spot, documenting main ideas of the respondents’ answers as much as possible, and then re-organizing the collected data into a structured manuscript. Moreover, we
pay much attention to the concrete and exact sources while presenting them throughout the report and in bibliography at the end, e.g. the active links to Internet search, the full titles of books and articles, the volume and issue number of the journals found, etc. By this, we and the readers can go back to the raw materials whenever needed.

**Principle 3: Maintain a Chain of Evidence**

This principle once again is aimed at an increase in reliability of the case study research, related to the case study protocol and the need to make its outline easy for external readers to follow. As Yin (2003) explains, the evidence collection should be conceptualized through a step-by-step approach and presented in a flow throughout the report. All evidence collected should be organized in a sequence that allows the readers to understand the relations between the empirical data and the initial problems, the drawn conclusions and proposed recommendations. We attempt to create a flow throughout the thesis by connecting different zones of ideas together and afterwards integrating them all into illustrative models. Further, the bibliography is scientifically organized in categories with specific details of each source of information. Also, a case study protocol can be found in Appendix A: Methodology Protocol, which is used as a guideline for carrying out the data collection process as well as helping external readers understand how we compile gathered data into empirical findings.

### 2.4.4 Key Informants

Being the provider of deep insights about a matter under study and suggestions of sources for further supporting evidence, key informants are often important for the success of a case study. With respect to the underlying significance of selecting key informants, sampling is considered a technique for selecting a suitable representative that would provide the best representation for the entire population, which according to Merriam (1998) is a strategy which involves a selection of respondents from whom the researcher can learn the most. To achieve this, our informants consist mainly of high-ranking managers and engineers of the company.

### 2.5 Data Analysis

According to Merriam (1998, 178), “*data analysis is the process of making sense out of the data*” which can be a complex process of consolidating, reducing and interpreting the gathered information through constantly moving back and forth between concrete data and
abstract concepts, inductive and deductive reasoning, between description and interpretation. Moreover, Merriam suggests three basic levels of conducting the analysis for case study research. First, the data needs to be chronologically or topically sorted, organized and presented in a descriptive manner. Second, the analysis moves from the description to the more abstract category construction which is the classification of data into groupings, i.e. categories or themes. These categories are derived from data during looking through documents and interview transcripts while the researchers notice certain patterns usable for the analysis. The final level involves making inferences, developing models or generating a new theory which Yin (2003) ascribes to as “play with the data” until a meaning occurs.

We organize the data through categorization into different topics in accordance with the theoretical framework. The empirical data then involves descriptive presentation of the data in a chosen structure, while we attempt to find certain patterns that can be used for the analysis. In the last step, we build illustrative business models that show the compilation and connection of relevant data gathered for all research questions. We also reflect the theories in the data analysis to ensure that the analysis is valid in both academic context and business case context. Jumping between both sections allows us to formulate adequate meanings when analyzing data and stimulates us to compare methods when drawing conclusions.

2.6 Quality of Research

The overall research quality is dependent on the following important factors, which determine the validity and the reliability of the case study research.

2.6.1 Construct Validity

This type of validity, seen as “especially problematic” in case study research (Yin, 2003), refers to the establishment and development of a correct set of measures and the avoidance of using “subjective” judgments for the concepts investigated in the study. To obtain and even enhance construct validity when doing a case study, three tactics are employed: (1) Use of multiple sources of evidence; (2) Establish a chain of evidence or protocol illustration; and (3) Have key informants and influential figures review the draft case study report. In this thesis, the existing and approved theoretical concepts, such as Kim and Mauborgne’s Blue Ocean strategy and Corporate Venturing theory, are used for the fundamental framework. Empirical data are gathered through various sources throughout the writing process, thus increasing legitimacy. Moreover, up-to-date case study reports are
continuously exchanged to and reviewed by the thesis supervisors and the company board of management to ensure congruence of thesis developments with the initial research purpose.

2.6.2 Internal Validity

Internal validity concerns the level of matching and compatibility of findings in relation to reality. Therefore, the higher the internal validity, the more strategically important the conclusions and recommendations of the study would be for the case company. Two main “threats” to internal validity are uncovered, including the incorrect identification of causal relationships between events and the problem of making improper inferences (Yin, 2003). Since “data do not speak for themselves” (Merriam, 1998, 201), it is important that the researchers play the role of interpreters of the phenomenon studied. To enhance internal validity of this study, multiple sources of information are used to testify the interrelatedness of various elements and events identified during the research work. Information collected during interviews is constantly exchanged with and confirmed by the respondents to ensure accuracy. If interpretations and assumptions of data are required, they are also confirmed by the interviewees and those with deep expertise in the field of interest. Furthermore, internal validity is viewed to be high due to the additional sessions with the company’s managers to gain feedback and approval of the business models developed for the case study. In addition benchmarks of other companies’ business models were studied (presented in Chapter 4) to show the implementation of similar business models to that of the case company, showing that the business model recommended for the case company has seen similar implementations by other successful companies in the past.

2.6.3 External Validity

External validity refers to the extent to which a particular case study’s findings can be applied to other situations beyond the immediate case. Yin (2003) views external validity problem as a major barrier in doing single case studies in that the single case offers a poor basis for generalization. In this thesis, external validity is obtained considering the common future trends in the industry and the leadership position of the case company in its business, which possibly triggers the desire of replication by other companies in the same industry. Moreover, the empirical analyses of the case company’s strategies are backed by long-existing and/or well-approved theories, notably the blue ocean strategy which has been successfully applied in different industries, as well as the business model approach by Afuah and CV theory; therefore, findings of this case study can be extended to other companies.
2.6.4 Reliability

Reliability is the test that aims to assure that the same case study conducted by different investigators following the same procedures would yield the same findings. Reliability concerns the data collection process and in order to guarantee the dependability of the data gathered and used, researchers can use the following techniques: *triangulation*, which here refers to combining multiple methods of data collection and analysis to reach a conclusion; *audit trial*, in which the researchers explain in detail how data are collected, categories derived, and decisions made throughout the inquiries (Merriam, 1998). Yin (2003) highlights triangulation and identifies four types, namely data triangulation, investigator triangulation, theory triangulation and methodological triangulation. In this thesis, reliability is believed to be high thanks to the matching of languages spoken by the interview respondents, written in different sources of information and those by the researchers (native English and German), which eliminates the need of using interpreters and thus, the possibility of errors in translation. Clarification is also made through repetition, in order to ensure that all answers are precisely understood and are consistent. We mainly use data triangulation to ensure accuracy by information on the same questions from interviews with different respondents.

2.7 Ethics in Research

All data provided in the study is accurate and true. Analyses are based on objective information and unbiased judgments. Confidentiality, requested by the case company, is provided in a professional manner. Sensitive data are carefully selected before use.
3 THEORETICAL FRAMEWORK

This chapter is dedicated to presentation of the theoretical concepts relevant for this study, which will serve as a departure point for developing ideas and later as a scientific base for comparing findings from academia and real-life practices. The purpose of this chapter is to provide a link between Blue Ocean theory, business strategy on commercializing innovation, and corporate venturing, to illustrate their connection and show how they can be used in combination to provide a useful model for modern companies to successfully enter new businesses with innovation. Specifically, value innovation, stakeholders and emotional selling are described to show additional values an innovation can generate to various stakeholders, especially customers, when being brought into full play and how to promote those values in order to rise above competition. Then theories about business models, commercialization strategies and profitability are presented, followed by corporate venturing theories, with a view to demonstrating how the innovation can be commercialized and internally positioned to genuinely create value as suggested.

3.1 Overview

In business, a company often seeks new breakthrough innovations in every phase of its business in search for higher profits and reputation, believing that success in commercializing those innovations and appropriately integrating them into the internal organization will create more values for both the company and the customer. Emerging in this situation is the issue of measuring the potential of an innovation. If a firm measures the success of an innovation in terms of how profitable it becomes, then the business model that a company adopts can be viewed as the key to success. Afuah (2004) defines a business model in terms of profitability:

“A business model is a framework for making money. It is the set of activities which a firm performs, how it performs them, and when it performs them so as to offer customers benefits they want and to earn a profit.” (Afuah, 2004, 2)

He further states that the

“cornerstone of many profitable business models is innovation – innovation in delivering superior customer value and positioning the firm so that it can appropriate the value it has created” (Afuah, 2004, 153).
There are two major determinants of profitability, namely industry factors and firm specific factors (Afuah, 2004). *Industry factors* include competitive and cooperative forces within the macro environment, while *firm specific factors* include the firm’s internal resources, activities, and positions. These constitute the main components of a business model, as shown below.

**Figure 3.1: Determinants of Profitability**

![Diagram showing INDUSTRY FACTORS and FIRM SPECIFIC FACTORS leading to PROFITABILITY]

*Source: Afuah (2004, 4)*

According to this view, a business model can be divided into three major aspects, which will drive the structure of the theoretical framework of this thesis. These three aspects include: (1) Creation of value for customers and key stakeholders within the business, (2) The strategy a firm undertakes to deliver the value through creating a strategy for commercializing the innovation to create sustainable profits, and (3) The internal positioning of the innovation in the company to realize the value, which focuses on the firm specific aspects of the business model. These three aspects show the link between the thesis’s sub-questions presented in Chapter 1 and how they combine to provide a framework for the main research question. The theoretical model that guides this chapter is illustrated below.
3.2 Value Innovation and Emotional Selling

3.2.1 Creation of a New Market Space Crossing Business Borders

The first aspect of the business model is value innovation to potential stakeholders, especially customers, through the new business created. Kim and Mauborgne (2005) provide a strategy for identifying what they term new market space in an existing industry, where firms can use technological innovation to create value based on creating new demands in the industry. According to this theory, companies within an industry tend to focus on watching their competitors and trying to provide same or similar products and services in a better way, either through lower prices (achieved by lower costs) or through some form of differentiation, in order to sustain or improve competitive advantages. However, the basic strategy is the same in this situation. All competitors focus on the same factors for success and, therefore, compete in limited market boundaries, which are termed red oceans, for a greater share of existing demand.
Alternatively, as Kim and Mauborgne draw from their years of research on companies of sustained high growth and profits, competitive advantages can also be gained through a value innovation strategy, in which companies break free from the traditional logic of thinking and pursue innovation outside conventional contexts to create new markets, called blue oceans. Value innovation is thus the cornerstone of blue ocean strategy developed by Kim and Mauborgne (2005). It consists of two well-known concepts in business literature: value and innovation, which only together can create lasting business success in a competitive industry. Value innovation emphasizes equal importance on both concepts. Without innovation, value tends to be incremental, providing some advantages but insufficient to allow a company to stand apart in the industry. Innovation without value on the other hand, is often “technologically driven, market pioneering, or futuristic, often shooting beyond what buyers are ready to accept and pay for” (Kim and Mauborgne, 2005, 13). Value innovation combines technological, market pioneering, or futuristic innovation with an ability of a company to market it to the public in a way that creates value in their perspective.

Value innovation is not about striving to outperform the competition, nor is it about segmenting the market and accommodating customers’ individual needs and differences (Kim and Mauborgne, 1999). Rather, it involves focuses on creating a leap in value for customers and the company, and in this way, new uncontested market space within a given business is opened. Business ideas in the blue ocean are ideas that use an innovative way of thinking that allows a company to position itself, not in the traditional boundaries of an industry, but in a new market where industry boundaries are blurred, providing customers with value from across industries. In comparison, the red ocean is “bloody” with rivalry, where companies compete head to head with similar strategies and focus on already identified customer needs. This competition often results in companies placing much effort to gather only a small increase in market share. In general, red ocean strategy is used when companies assume that an industry’s boundaries are predefined and companies are forced to compete within these boundaries. With value innovation, boundaries do not exist, and firms can cross borders between businesses and industries to create higher value.

Kim and Mauborgne (1999) distinguish value innovation with value creation and technology innovation, as shown in Figure 3.3. Value innovation is not the same as value creation. Value creation as a concept of strategy is about creation of value in a broad term, which firstly may not be sufficient for high performance, and secondly fails to specify the direction a company should follow to bring about successful strategic actions. Meanwhile,
value innovation strategy suggests companies anchor innovation with buyer value to create new wealth for both sides. Moreover, the creation of blue oceans is not about technology innovation per se. Companies in blue oceans do not pursue innovation as technology, but as value. Technology innovation is not a prerequisite for value innovation—technology innovation does not necessarily produce value innovation and value innovation can occur with or without new technology. However, technology pioneers can become value innovators and even multiply the gained advantages if they succeed in integrating the value aspect attractive to mass customers into their technology.

**Figure 3.3: Value Innovation vs. Value Creation and Technology Innovation**

![Value Innovation vs. Value Creation and Technology Innovation](image)

*Source: Kim and Mauborgne (1999)*

Value innovation can be compared to the theory by Michael Porter which simplifies competitive positioning as either low cost or differentiation to gain a competitive advantage. With the blue ocean theory of value innovation, both low cost and differentiation can be pursued simultaneously (Kim and Mauborgne, 2005). Furthermore, the concept of value innovation is also found to be consistent with the classic Schumpeterian notion of *creative destruction* in the sense that it is about using innovation to create fundamentally new and superior value, hence making existing things and ways of doing things irrelevant. However, while the entrepreneur is the major input in creating Schumpeterian innovation, knowledge and ideas are the major inputs for value innovation. In other words, the realization of Schumpeterian innovation is subject to the availability of entrepreneurs who are usually in short supply; while, in contrast, whether an executive or a factory worker, anyone can be the owner of innovation and so value innovation can occur more often in any organization and at any time (Kim and Mauborgne, 1999). Challenging this optimism of Kim and Mauborgne about the frequency of value innovation in companies is Hamel (1998), who believes that newcomers are usually the revolutionaries who are reinventing the entire industry model and creating new wealth. Hamel introduces the notion of *strategy innovation*, which he defines as “the capacity to re-conceive the existing industry model in ways that create new value for
customers, wrong-foot competitors and produce new wealth for all stakeholders” (Hamel, 1998, 8). Compared to the concept of value innovation, this notion celebrates the provision of new value and wealth to also competitors and other stakeholders, not just customers, which can be seen as further development of value innovation strategy.

**Conventional Strategic Logic vs. Value Innovation**

Kim and Mauborgne (1997) describe value innovation by illustrating the differences between the new strategic logic that they term *value innovation* and the conventional strategic logic which places emphasis on competitive advantage. The authors discover that the conventional strategic logic and the logic of value innovation differ along the five basic dimensions of strategy, which determine which questions managers ask, what opportunities they see and pursue, and how they understand the risk factor. The five dimensions of strategy being investigated in the study include (1) Industry Assumptions, (2) Strategic Focus, (3) Customers, (4) Assets and Capabilities and (5) Product and Service Offerings. The differences between the two strategic logics are summarized below.

**Table 3.1: Two Strategic Logics: Conventional versus Value Innovation**

<table>
<thead>
<tr>
<th>The Five Dimensions of Strategy</th>
<th>Conventional Logic</th>
<th>Value Innovation Logic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry Assumptions</strong></td>
<td>Industry’s conditions are given.</td>
<td>Industry’s conditions can be shaped.</td>
</tr>
<tr>
<td><strong>Strategic Focus</strong></td>
<td>A company should build competitive advantages. The air is to beat the competition.</td>
<td>Competition is not the benchmark. A company should pursue a quantum leap in value to dominate the market.</td>
</tr>
<tr>
<td><strong>Customers</strong></td>
<td>A company should retain and expand its customer base through further segmentation and customization. It should focus on the differences in what customers value.</td>
<td>A value innovator targets the mass of buyers and willingly lets some existing customers go. It focuses on the key commonalities in what customers value.</td>
</tr>
<tr>
<td><strong>Assets and Capabilities</strong></td>
<td>A company should leverage its existing assets and capabilities.</td>
<td>A company must not be constrained by what it already has. It must ask: What would we do if we were starting anew?</td>
</tr>
<tr>
<td><strong>Product and Service Offerings</strong></td>
<td>An industry’s traditional boundaries determine the products and services a company offers. The goal is to maximize the value of those offerings.</td>
<td>A value innovator thinks in terms of the total solution customers seek, even if that takes the company beyond its industry’s traditional offerings.</td>
</tr>
</tbody>
</table>

(Source: Kim and Mauborgne (1997))
As Kim and Mauborgne discuss, companies pursuing value innovation shape their strategies based on the blockbuster business concepts of their own and have the potential to formulate new rules of competition that never existed before, rather than follow the common predetermined set of rules in the current competition. Value innovators do not compete at the margin for incremental share of market and customers nor use competitors as benchmarks; instead, the logic of value innovation starts with an ambition to dominate the market by offering an unrivaled tremendous leap in value for the mass of customers across borders of different business areas, which in turn brings them the greatest competitive advantages. In order to achieve that, they assess business opportunities without being biased or constrained by their existing resources and capabilities, and look to providing customers with unprecedented products and services beyond their industry boundaries.

3.2.2 The Strategy Canvas Model

The strategy canvas is an analytic tool provided in Blue Ocean Strategy, which is expected to aid companies in building a blue ocean strategy around a business idea. The purpose of the strategy canvas is twofold: it provides insight into the current state of the business/market, and shows then where competition is investing, what factors the industry currently competes on, and how customers receive value from the offerings. Through creating a strategy canvas, the value curve that results shows where the company stands relative to competitors and where the value curves currently exist. In entering a new business with innovation, a company can use its technological innovation to provide new types of value to customers and industry players, in this way, create new factors for competition and thus, new value. With new innovation, the strategy curve of the company relative to the industry competitors can shift, through providing value that crosses industry borders into alternative product offerings, and what is considered value from the perspectives of both current customers and non-customers. Therefore, to achieve both low cost and value, instead of benchmarking competitors, a company can provide value by redefining the industry problem by looking at alternatives in the industry and why non-customers are non-customers.

The result of the strategy canvas can be compared to Grant’s key success factors. Key success factors are those factors within an industry that allow competitors to survive and gain profits (Grant, 2008). However, in the context of blue ocean innovation ideas, a new set of key success factors can be extracted, which rely on success that results from creating value from more than one industry. The company is therefore in a position that can create a brand
new set of factors for success in the future, as it has the ability to change the structure of the business and the factors of competition.

Identification of New Factors of Value Innovation

With a view to reconstructing the customer value elements, Blue Ocean Strategy emphasizes revisiting the value added from various activities in the value chain to discover contribution of each value creation factor to the overall value provided to customers in the current industry. Moreover, since the concept of Blue Ocean is centered on the creation of new value to not only customers but also non-customers across different industries or business segments, as discussed previously, it naturally leads to the need for a company seeking Blue Ocean to look over its current business area into a new field and evaluate the values currently created. The purpose of doing that is to uncover what activities current players in both industries fail to perform well up to customers’ expectations, which would suggest the “space”, or the factors worthy of consideration on the potential value curve, for the company in the future. Kim and Mauborgne (2005) introduce the Four Actions Framework, in which four key questions to challenge an industry’s strategic logic and business model can be presented, i.e. which activities should be eliminated, reduced, raised and created. The four strategic questions are illustrated in Figure 3.4 below.

Figure 3.4: The Four Actions Framework to Construct a New Value Curve

Source: Kim and Mauborgne (2005)
3.2.3 Stakeholder Theories

Blue Ocean Strategy has received worldwide acclaim over recent years, within academia and in business practice. In researching this theory, while insightful and relevant to this thesis, it can at times be considered a simplistic approach to determining what value is, as it implies that value innovation is for stakeholders, however only focuses on the customer. Introducing stakeholder theories to Blue Ocean Strategy provides a more complete picture of how a company can create value in the public transportation industry, where customers are not predefined and can be of various types, for a product that is both private and public.

3.2.4 The Stakeholder Approach to the Firm

One of the classic yet most popular definitions of a stakeholder was initiated by Freeman (1984), in which a stakeholder is defined as “any group that can affect or be affected by the achievement of organizational objectives” (Freeman, 1984, 46). According to Grant (2008), value created by firms involves not only determining how to generate demands from customers and end users and profit creation. Instead, value must be considered in the perspective of various stakeholders, who have an interest in the firm’s business. In this perspective, a firm is viewed as a “coalition of interest groups where top management’s role is to balance these different – and often conflicting – interests”, which is referred to as the stakeholder approach to the firm (Grant, 2008, 35). Johnson and Scholes (1999) consider stakeholders as one of the four major influences on organizational purposes, together with corporate governance, business ethics and cultural contexts. Compared to Grant’s definition, the two authors also highlight the interdependency between the business organizations and their stakeholders, and also shed a new light on the perception of stakeholders when viewing them as “those individuals or groups who depend on the organization to fulfill their own goals, and on whom, in turn, the organization depends” (Johnson and Scholes, 1999, 213). In other words, they further the concept by finding that stakeholders first identify their own goals and then search for companies who can satisfy such goals.

An Overview of Stakeholder Identification

Freeman (1984) has popularized his illustrative model of stakeholder theory, which involves the firm being influenced by seven major stakeholders. These include the traditional stakeholders in business context which are shareholders/financers, customers, suppliers, competitors and employees, with external stakeholders including government and community.
This model, therefore, combines the issues of economic value and social value that firms attempt to pursue. In 2003, Freeman adapted his model to include further external parties.

**Figure 3.5: The Stakeholder Model**

![Stakeholder Model Diagram]

*Source: Fassin, (2009). Adapted version of Freeman’s Stakeholder Model (2003)*

### 3.2.5 The Importance of Understanding Stakeholder Value

Stakeholders have a strong influence on a company’s business performance. Although a company in a Blue Ocean does not compete in the current industry/business segment, hence not compare itself with its competitors, the strategy in either a red or blue ocean is to be adapted to the stakeholders’ needs; in other words, companies use stakeholders as benchmarks, and depending on how values are created towards the stakeholders and how far those values are aligned with their needs, companies can determine their degree of success in the industry. As a result, stakeholders’ values need to be identified before and during companies’ operations. Furthermore, in contrast to the subjective evaluation of business performance based on the corporate strategy, Green and Jack (2004) emphasize the need for a company to adopt a comprehensive stakeholder orientation and focus on broader stakeholder needs as the fundamental perspective on its performance, rather than the traditional view in which measures are derived from strategy.

**Corporate Social Responsibility and Stakeholder Dialogue**

Increasingly, business leaders recognize the importance of corporate social responsibility (CSR) and the link between profitability and social behavior. Porter and
Kramer (2006) emphasize the mutual nature needed for sustained long-term success between businesses and society, in which neither of the both sides can win in the long run without care for the other. To prosper, businesses need to operate within a healthy society. Thus, it is in the best interest of businesses to contribute to the health of the society in which they are located. In turn, a healthy society requires successful businesses. Being aware of this mutuality, needless to say, the business world has nowadays increasingly followed a trend towards embedding CSR into core strategies, which in the past was only viewed as an add-on to business practices.

Important as it is, however, the question of how to successfully integrate CSR into corporate strategies and keep it in balance with other corporate goals is never easy to answer. Crucially for any business organization, whether small or large, stakeholders’ perceptions are likely to have a major impact on the interactions between the firm, those who have an interest in it, and who are affected by it. Therefore, stakeholders’ opinions and objectives should be a matter of significant managerial interest. Through providing a new technological product in a new business, a company’s strategic focus is how it can create value for its relevant stakeholders, thus satisfying their objectives. However, in working towards this goal, the issue now arises in which the firm must weigh economic performance and value with corporate social value and responsibility. Both are interrelated, according to Jansson (2007), and combined to create value for the company in the given business and market where it chooses to operate, leading to greater opportunities for sustainable business. Jansson (2007) describes stakeholders as having a strong position in the eventual success of a firm in a given market or business area, as providing benefits to key issues that are relevant for each identified stakeholder group will assist in leading to sustainable business through achievement of societal value in the eyes of stakeholders.

It should be noted that the public area and large-scale businesses attract critical attention of the media, Governmental and Non-Governmental Organizations (NGOs), putting mounting pressure on companies to respond to the challenge of CSR. O’Riordan and Fairbrass (2008) stress the importance for a company to be engaged in stakeholder dialogue to discover and evaluate stakeholder needs and adapt them into its operation.
3.2.6 Selling Innovation

Emotional versus Functional Product Positioning

When an innovation has been born and stakeholder groups identified, the question now is how to commercialize the innovation successfully, creating value towards those stakeholders. In fact, there are different selling tactics in application with certain levels of success, and while the functional selling method remains prevalent in various industries today, emotional selling is becoming increasingly attractive.

Closely linked to psychology theories, emotional selling in the past decades has risen dramatically, as many traditionally functional-oriented industries began using emotional advertising and appeal to increase demand for products. Marketing using cognition involves selling products based on logical arguments that focus on identifying current problems, and providing solutions to overcome problems and achieve greater benefits. In contrast, emotional or affective marketing goes beyond rational thinking, and focuses on how people can feel when associated with a product. While both are considered important, over recent years, the trend has been that more and more industries are focusing on affect to position products in consumer minds (Mahajan and Wind, 2002). This is supported by Kim and Mauborgne (2005) in Blue Ocean Strategy, where they suggest companies that have innovative products to look beyond the traditional marketing strategy of the industry and find new ways to appeal to the public. According to the Blue Ocean Strategy authors, companies often find new market space if they are willing to challenge the functional-emotional selling orientation of the industry. If the industry has traditionally used a functional positioning, companies should look to affective methods of selling to stimulate new demand by, for example, infusing their commodity products with a new life through addition of a dose of emotion, and vice versa. However, more companies now tend to prefer positioning their products on emotional aspect. Businesses now believe that, if they could add genuine emotion to the product and a strong message to customers, they could dominate their industry and create a powerful market.

Two other advocates of emotional selling are Burlacoff and Coutts (2005), who describe a similar term called conceptual selling and its power of using simple ideas to ignite sales in even toughest industries, such as finance. They describe conceptual selling as selling what a product does instead of what it is. With conceptual selling, the seller creatively emphasizes the product’s benefits using simple stories, pictures, illustrations, anecdotes and metaphors that have emotional appeal. According to Burlacoff and Coutts, selling conceptually has a
great potential to distinguish a seller from its competitors, since customers are able to understand the products and services more easily and will better appreciate not only the products’ value but also the additional value brought to them through emotions and feelings.

3.2.7 Cooperating to Create Value: The Role of Coopetitors

Value Created Across Complementary Products and Service Offerings

Afuah states that a firm does not need to create value alone, and thus can do so through cooperating with other stakeholders inside and outside the industry of the firm. Aside from customers, such stakeholders include complementors of the innovation, suppliers, and rivals, which are identified as a firm’s coopetitors (Afuah, 2004). According to this theory, a firm can view different players as either important allies in creating value, or as potential competitors who threaten the profitability of the firm. Therefore, these players can pose as either opportunities or threats to the firm. Afuah states that the value customers perceive from a product is often a combination of value from multiple sources, not just a firm’s sole product in isolation. Therefore, a firm should then expect to increase its value offering to customers through cooperating with those players who add value in the customers’ perception. Furthermore, a company that works with potential rivals may provide higher value through creation of a standard, as well as pooling of relevant resources capabilities (Afuah, 2004).

This is supported by Blue Ocean thinking. According to Kim and Mauborgne (2005), a blue ocean is not necessarily formed through combining different factors of competition in different industries—it can also be created within the same traditional industry that the company is working in. In most industries, rivals converge within the bounds of their industry’s product and service offerings, and in most cases, the value and market success of a company’s products and services offerings are affected by other products and services provided by its direct or indirect competitors. As Kim and Mauborgne suggest, on the way to the discovery of new success factors, the most potential source for reference can be found in complementary products and services, where untapped value may be hidden, and the key is to define the total solution customers seek when they choose a product or service. A simple way to do so is to think about what happens before, during, and after the company’s product is used. An illustration is made in the bus industry where a bus company created a leap in value for itself and its customers and became successful by realizing the industry characteristics and, more importantly, what its customers care about after the vehicle purchase.
3.3 Commercialization Strategies for Innovation

To determine which collaborations are most value-enhancing, theories involving commercialization strategies for innovation can be used to identify the alternatives available to companies and the benefits and risks of each. Not only is the value enhancement in coordination with partners important, but each commercialization strategy has a direct impact on the financial aspects of the business model adopted for the innovation as well. Four major types of commercialization strategies for innovation are identified in existing literature.

3.3.1 Internal Development

Internal development is also termed organic development by Johnson et al. (2008) and involves using a company’s own resources and capabilities. This is the traditional strategy for commercializing innovation, also known as closed innovation. There are five reasons why many companies choose internal development (Johnson et al., 2008). When the product is highly technical, in the case of innovation, internal development may be the best way to ensure competitiveness and success, as the company can learn and acquire the necessary capabilities to compete in the business or market. Therefore, internal development is most favorable when the resources and capabilities are available internally to the company, and there is desire to build up the company’s resource and capability base (Johnson and Scholes, 1999). In businesses that involve high technical skill in design and manufacturing, internal development is viewed to be advantageous because it allows the company to build its capabilities to be more competitive in the market, and used as a base for future products and market opportunities. However, internal development should not be pursued if management competencies are not present in managing innovation. This is described as fit-led innovation and stretch-led innovation, which involve competencies in the market knowledge and ability to exploit resources and competences to create new market opportunities in the future, respectively. Furthermore, another consideration is the cost, which is ultimately higher with internal development than other strategies, but Johnson and Scholes argue that this disadvantage is offset by the view that the spread of cost within the entire organization is lower, resulting in a more favorable situation.

However, Grant (2008) argues that internal development has the advantage of providing control over the innovation, and potentially achieving high revenues over the lifetime of the innovation. This is comparable to the disadvantages of licensing, where licensing provides revenues that may in the future not equate the potentially increased value of the innovation.
According to Afuah’s account of Roberts and Berry’s model of strategy comparison, the strategy pursued depends on the degree of technical and market familiarity a firm has, which is linked to the capabilities analysis provided by Johnson and Scholes, where capabilities are classified as either technological or market. According to the model, internal development should only be pursued in situations where firms face a familiar or existing market, which means a business environment that a firm is already engaged in or one that they are already familiar with, even if it may be new. In the case of entering new businesses, the firm should therefore only pursue internal development if it believes the market is similar to the existing market or if the firm has had some experience in the market in the past (Afuah, 1998).

3.3.2 External Exploitation: Out-Licensing

The traditional strategy that companies have used is to internally develop and exploit technologies within the organizational boundaries. However, in recent years, there has been a widespread increase in the trend of companies adopting external exploitation strategies, which is often synonymous in literature to what is termed out-licensing (Lichtenthaler, 2008). Lichtenthaler and Ernst (2009) use the term external knowledge exploitation, involving the commercialization of knowledge exclusively or in addition to its application in its own products and services of a firm, also known as knowledge assets and out-licensing.

Out-licensing is argued to be used for greater purposes than only the traditionally thought reasons, which was generally for the purpose of gaining additional revenue through commercializing residual technologies (in which companies merely find another use) (Lichtenthaler et al., 2009). Rather, they state that out-licensing in practice is often used nowadays as part of key corporate strategy for both strategic and monetary reasons. Lichtenthaler (2008) states that out-licensing requires significant managerial skills to create a success, and in the past, a large number of firms have failed to achieve their primary aims of out-licensing, but those which have, such as the successful computer company IBM, have achieved incredible monetary success. This concept is closely linked to Henry Chesbrough’s term open innovation, where companies either exploit or acquire external technologies. In closed innovation, firms opt for developing and commercializing innovation technology within the organization’s boundaries, which is the traditional approach to protect the innovation and avoid potential risks of external exploitation.

The major issue for companies in the licensing decision is the existence of a trade-off between realizing monetary and strategic opportunities and protecting a firm’s core
technologies, termed as the *rent dissipation effect*. Another major issue of out-licensing is determining who the appropriate licensees should be (Lichtenthaler, 2008). The motives for out-licensing are summarized in the table below.

**Table 3.2: Motives for External Technology Exploitation**

<table>
<thead>
<tr>
<th>STRATEGIC</th>
<th>Monetary</th>
</tr>
</thead>
</table>
| Product-Oriented | • Realizing foreign market entry  
• Selling additional products/services  
• Setting industry standards |
| Technology-Oriented | • Guaranteeing freedom to operate  
• Gaining access to knowledge  
• Guaranteeing technological leadership |
| Mixed | • Realizing learning effects  
• Enhancing the firm's reputation  
• Strengthening the firm's networks |

*Source: Lichtenthaler (2008)*

_Monetary motives_ for external technology exploitation generally involve gaining additional revenues that a firm may not have achieved by only focusing on their existing business. _Strategic motives_ can be classified as product-oriented, technology-oriented, or mixed objectives (Lichtenthaler, 2008). In a *product-oriented objective*, firms use external exploitation for either entering foreign geographic markets, which is a traditional argument for licensing, or when the external commercialization assists in enabling a firm to sell its internally commercialized products and services. In this way, it can be viewed as being complementary to existing firm products and services, or, in some cases, when a higher number of users need to adopt a technology before other products or services can be used to a wide extent, can assist with setting standards in an industry. _Technological objectives_ involve strengthening a firm’s technological position by having more freedom to operate or by ensuring a technological leadership position, for example, through licensing to competitors who then use the company’s technologies rather than creating their own competing forms. _Mixed strategic objectives_ include learning effects, through gaining external knowledge through the licensee, strengthening inter-organizational networks or enhancing technological reputation. _Compulsory motives_ for licensing involve situations when firms are required to do so by regulatory reasons; since this is outside the scope of the thesis, it will not be discussed.
The balance of monetary and strategic incentives for out-licensing are summarized in the table below, which compares varying levels of monetary motives with strategic motives.

**Table 3.3: Types of External Technology Exploitation Transactions**

<table>
<thead>
<tr>
<th>Monetary Motives</th>
<th>Strategic Motives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>High</td>
<td>Cash Generation</td>
</tr>
<tr>
<td>Low</td>
<td>Portfolio Optimization</td>
</tr>
</tbody>
</table>

*Source: Lichtenthaler (2008)*

According to this matrix, since firms most commonly decide to exploit technologies externally for combined monetary and strategic reasons, motives for exploiting technologies can be classified as either driven mainly for cash generation, business foundation, portfolio optimization, or opportunity amelioration. When a firm has low strategic motives for exploiting a technology, usually occurring when a technology is not a core technology of the company or the company’s core business is not driven from this technology exploitation, then the firm can achieve high cash revenues through licensing out, if it finds that within the industry or outside the industry, there is substantive value for this technology. This is referred to as *cash generation* in the matrix depicted. On the other extreme, if the firm has high strategic motives but low monetary motives, it may decide to license-out its technology and forego other potential revenues from other strategies to achieve strategic opportunities in the future, such as a technological standard. This is classified as *opportunity amelioration*. If a firm considers the technology to be of minor importance (a residual technology), with low strategic incentives for the technology, licensing revenues as are thought of as residual revenues, referred to as *portfolio optimization*. If a firm has high strategic goals and high monetary goals for technology exploitation, it is referred to as *business foundation*.

Further benefits or reasons for out-licensing identified in literature argue that licensing is attractive when the company is unwilling or unable to invest a large amount of resources into the development and commercialization of the new innovation (Grant, 2008). Licensing, involving lower investment than internal commercialization may be more feasible on a resource and capability perspective, as it also results in less capital cost.
However, literature reveals that there are still various drawbacks to out-licensing, where the benefits of other strategies come into play. One often cited drawback is the trade-off between low cost and low revenues, as licensors only receive royalties on the technology, and are thus unable to pursue further revenues from the business. The drawbacks of out-licensing are also illustrated in traditional licensing evaluations. It involves dependence on the licensee to full-fill contractual obligations, which is often case specific and depends on the companies involved as well as the strength of the patent protection. A company must assess the potential risk of imitation by the licensee or theft of the asset knowledge (Grant, 2008). This view is supported by Lichtenthaler (2008), who argues out-licensing has a risk of transferring proprietary knowledge out to the licensee. He further argues that this may result in a negative competitive positioning for the company, in a situation when a company licenses a technology that initially is viewed to have minimal value but increases in value in the future. In this situation, a firm is in a position where it cannot easily take the technology back in the future.

3.3.3 Acquisitions

Acquisition occurs when the company develops resources and capabilities needed in the new business by taking over another organization. If a firm decides to internally develop an innovation for various reasons, but lacks the resources and capabilities in doing so, an attractive option is acquisition of the needed resources and capabilities of another firm in the business. The advantage over internal development is the speed of market entry or product commercialization, and is advantageous in rapidly changing industries, where internal development is viewed as a slow process (Johnson and Scholes, 1999). On the other hand, in mature static markets, mergers and acquisitions have the benefit of providing a new entrant with a position in the market, which otherwise may be difficult where there are high entry barriers. Other considerations include financial incentives such as cost efficiency evaluation and share value, which changes favorably or unfavorably due to a merger or acquisition. However, most problems arising from mergers and acquisitions are internal organization issues. The most commonly cited problem is cultural fit of the two organizations. This involves the “everyday” aspects of the business of one firm differing from the other firm involved, and is not easily identified until after the acquisition is complete (Johnson et al., 2008). Furthermore, expected synergies that come from acquisitions may not be realized in actuality for various reasons, such as lack of existence, inability to extract the synergy due to difficulty in integration of activities and people.
3.3.4 Joint Ventures and Strategic Alliances

Joint Ventures (JVs) and strategic alliances occur when “two or more organizations share resources and activities to pursue a strategy” (Johnson and Scholes, 1999, 340). Under this broad category, various types of alliances are presented, which include JVs, as well as consortia, which involves two or more organizations in a JV arrangement for the purposes of specific project or venture focus, whereas a JV is when the purpose is broader, and two independent organizations form a new organization jointly owned by the parents. JVs or strategic alliances are favored when companies see the benefits of pooling resources and capabilities, and are viewed as a mid-strategy to internal development and mergers and acquisitions, in the perspective of resource investment. The major reason for pursuing a JV or strategic alliance is when the organization lacks certain resources or capabilities needed in a business, and thus searches for a partner or external party to provide those resources and capabilities. In Afuah’s account of Roberts and Berry’s model of exploitation strategies, it shows that JVs are viewed as being attractive in situations when a company has an existing or familiar technology, as is when created internally, and entering unfamiliar or new markets (2004). In this way, the pooling of market capabilities of a partner or JV company with the technological capabilities of the firm is recommended for successful implementation.

Johnson et al. (2008) identify three major motives for entering such agreements. They state that companies enter alliances often to achieve critical mass, where a partnership with either competitors or providers of complementary products will assist the company in achieving a higher valued customer offering or reduction in costs. Another stated reason is co-specialization, when two companies provide their own specialized capabilities, both of which are needed together. Lastly, a third motive is to provide learning opportunities, where the partnership or alliance provides learning capabilities in the beginning of the business, with an intention in the long term to bring those capabilities in-house.

In choosing partners, three success factors are identified (Johnson et al., 2008). These include strategic purpose, alliance expectations and benefits, and managing alliance relationships. They state that a clear strategic purpose from the beginning of the alliance is necessary in achieving success, as different parties often have varying reasons for entering the alliance. Furthermore, as expectations may differ, a key part of successful alliance is the ability to manage it effectively. They state that generally knowledge based alliances provide higher alliance of expectations and benefits, as the knowledge sharing typically binds the parties together more when dealing with physical products.
Management is a key issue, as management of the assets must be done jointly. Assets must be separable from the organization to share certain key assets and maintain others internally. An advantage is that there is a low risk of asset appropriability. The following table outlines some innovation characteristics of various forms of agreements with external parties.

Table 3.4: Management and Asset Characteristics of Different Forms of Alliance

<table>
<thead>
<tr>
<th>Forms of Alliance</th>
<th>Contractual Relationships</th>
<th>Formalized Ownerships/Relationships</th>
<th>Formal Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influences</td>
<td>Subcontracting, Licenses</td>
<td>Consortia Joint Ventures</td>
<td>Mergers, and Acquisitions</td>
</tr>
<tr>
<td>Asset Management</td>
<td>Can be isolated</td>
<td>Assets need to be jointly managed</td>
<td></td>
</tr>
<tr>
<td>Asset Separability</td>
<td>Assets/skills can be separated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asset Appropriability</td>
<td>Variable risk of assets being appropriated, depending on IP protection</td>
<td>Low risk of assets being appropriated</td>
<td>High risk of asset appropriation</td>
</tr>
</tbody>
</table>


3.3.5 Profitability

One of the main concerns that a company must consider when commercializing its innovation is the amount of profits it can gain from this commercialization, which in turn depends on the appropriateness of the commercialization strategy chosen to adopt among the four above mentioned alternatives.

Profitability through Cooperation

When cooperating with coopetitors, a firm must understand that revenues are shared, and thus, the firm must be aware of the allocation of revenues to make a profit. The realization of profits is largely a determinant of who has bargaining power in the relationship. This is linked to Porter’s Five Forces, where a firm’s profitability is linked to the strength of the bargaining power of buyers, suppliers, rivals, new entrants, and customers.
3.3.6 Assessing Profitability of Strategies

Sensitivity Analysis

A sensitivity analysis allows a manager to consider what-if scenarios of the underlying assumptions of a business strategy that determines the financial risk or return of the strategy. If a manager questions such assumptions, such as expected returns given an expected future situation, sensitivity analysis can show the expected financial results in various scenarios of the assumptions. It shows how sensitive the results of the strategy are to each assumption (Johnson et al., 2008). This is important to consider when dealing with innovation, as the scalability of a business model in the future needs to incorporate some aspects of change that are currently uncertain. Two aspects of change a firm needs to consider is environmental change, which can be estimated through environmental scanning to determine the influencing factors (i.e. technological, economic, social, political, demographic, natural), and timing of change, to adopt the appropriate strategy for a given time (Afuah, 2004).

3.3.7 Strategy for Commercialization of Innovation: A Summary

Table 3.5: Determining an Exploitation Strategy

<table>
<thead>
<tr>
<th>Factors</th>
<th>Internal Development</th>
<th>Acquisition</th>
<th>JV/Alliance</th>
<th>Out-Licensing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resources and Capabilities</strong></td>
<td>Own</td>
<td>Need</td>
<td>Need</td>
<td>Low need for investment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>complementary assets not easily obtained</td>
<td>complementary assets not easily obtained</td>
<td></td>
</tr>
<tr>
<td><strong>Risk of Imitation</strong></td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td><strong>Industry Standard</strong></td>
<td>Not discussed</td>
<td>Not discussed</td>
<td>Not discussed</td>
<td>Increased opportunities</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>Internal</td>
<td>Internal, with potential conflicts</td>
<td>Joint management</td>
<td>Low degree of management needs</td>
</tr>
<tr>
<td><strong>Financial Goals</strong></td>
<td>Traditionally higher profits, but high costs</td>
<td>Traditionally higher profits, but with investment into acquired company</td>
<td>Joint sharing of profits and costs</td>
<td>Low costs, with traditionally limited revenues to royalties</td>
</tr>
<tr>
<td><strong>Strategic Goals</strong></td>
<td>Long term, with desire to have development in-house</td>
<td>Long term, with desire to have development in-house</td>
<td>Minimal desire to have resources and capabilities in-house</td>
<td>Technologically focused strategy</td>
</tr>
</tbody>
</table>

Source: Own, Summary of Various Literature Sources
In choosing an appropriate strategy, factors can be extracted from existing literature to help a company make a choice of which strategy to pursue for their internally developed innovation. Table 3.5 above summarizes main factors found in contrasting literature sources. However, it must be noted that due to the long term focus of a company’s management on their underlying strategic goal for the innovation, this affects to a large part the appropriate strategy, whether a company wants to focus on the market of the new business or on the technology of the innovation. Therefore, the strategic aim of the strategy is a driving factor.

3.4 Integrating a New Business into the Organization

The choice strategy for delivering value to external stakeholders of an innovation is highly dependent upon the structure of the new business relative to the existing core business and how it is set up to maximize value delivery and growth opportunities. The internal structure corresponds to the company’s ability to deliver strategic aims of the new business and innovation in the future, as well as feasibility in terms of mobilizing various types of resources, namely financial and human. For this reason, the final part of this theoretical chapter will focus on existing literature of corporate venturing.

3.4.1 Corporate Venturing

A large challenge in the field of Corporate Entrepreneurship (CE) is the integration of new business opportunities into the structure of existing organizations. This process is referred to as Corporate Venturing (CV) and defined by Narayanan et al. (2009, 58) as:

"the set of organizational systems, processes and practices that focus on creating businesses in existing or new fields, markets or industries-using internal and external means."

This definition concludes that the field of CV mainly contains issues of creating new business ventures within or outside the existing organization (Sharma and Chrisman, 1999) and strategies of strategic renewal and innovation. Other literature sources define CV and CE in more explicit ways. Cooper (1997) sees CE as creation of new external ventures, while internally created ventures in an existing organization are referred to as intra-entrepreneurship. This term is hereafter going to be replaced by Harryson’s (2006, 140) shorter term of intrapreneurship. In Hill and Birkinshaw’s (2008) attempt to examine performance of CV units, they define the CV unit as an organizational unit, controlled by the parent firm and with a purpose of investing in new business opportunities (Block and MacMillan, 1993; Burgelman, 1984). Hill and Birkinshaw (2008) characterize new venture
units through the dimension of strategic logic, based on March’s (1991) findings of exploration and exploitation in organizational learning. The term of exploration includes experimentation with new potential business opportunities, which also means that the results are uncertain and distant. Therefore, exploration requires an organization to adapt its present structures and to develop new organizational capabilities and further innovation. In comparison, the term of exploitation assumes distinct selection, development and use of existing assets, technology and knowledge of an existing organization. The returns of exploitation strategies are therefore more certain and predictable (Harryson, 2006; March 1991). Hill and Birkinshaw (2008) add that strategically exploring venture units focus on early development of new business opportunities arisen in the current organization in order to turn them into sources of growth. Exploiting units, on the contrary, exploit existing assets and more mature technologies of the existing organization to harvest and monetize them (Campbell, 2003) by often using the possibilities of spinning them out. Miles and Covin (2002) contribute with their dimension of the entrepreneurial focus to the assessment of venture units. In this case, the action of the venture unit happens either within the organization (internal venturing or internal origin) or outside the organizational borders (external venturing or external origin).

Additionally, when innovative opportunities lead to the question of expanding into new business areas, it is necessary to evaluate how related these new fields to the core business of the company are (Burgelman, 1984). This so-called operational relatedness refers to the grade of difference between the core capabilities and skills of the firm and the required capabilities and skills for new entrepreneurial business activity. Therefore, low relatedness between these capabilities means large differences in skills and capabilities. Based on the findings of Burgelman (1984), Miles and Covin (2002) and other authors in this area, Harryson (2006, 140) proposes a model to classify CV through the mentioned dimension of relatedness, as well as through Hoskisson and Busenitz’s (2002) dimension of learning distance, which measures how much a firm’s capabilities can drive to new innovation. The outcome of Harryson’s (2006, 141) model “A Squared View of Corporate Venturing” is thus applied here.

Harryson’s model describes the earlier used type of intrapreneuship as a venture type with internal origin, integrated structures and high relatedness to the parent organization. CE is also regarded as internally originated, but with a low relatedness and therefore autonomous structures. The other types of Merger & Acquisition and External CV and JVs mentioned in
Harryson’s model are of external origin and will be ignored for the following classification of venture units. Table 3.6 portrays the dimension of organizational relatedness in combination with March’s and Hill and Birkinshaw’s dimensions of exploration and exploitation.

**Table 3.6: Options for Internal Organizational Adaptation**

<table>
<thead>
<tr>
<th>Logic of Strategic Exploration</th>
<th>High Organizational Relatedness: <em>Intrapreneurship</em></th>
<th>Low Organizational Relatedness: <em>Corporate Entrepreneurship</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal development through Integration into Existing Division</td>
<td>Internal (or external) development or support unit Corporate Incubator</td>
</tr>
<tr>
<td>Logic of Strategic Exploitation</td>
<td>Internal venture creation New Division</td>
<td>External venture creation Spin-Off</td>
</tr>
</tbody>
</table>

*Source: Own. Adapted from Hill and Birkinshaw (2008), Burgelman (1984), March (1991), Harryson (2006)*

This model will be used as an adapted version of existing literature, applied for the purposes of this thesis. Furthermore, through more detailed analysis of relatedness in completion with the dimension of strategic logic, it provides a more particular view of internal entrepreneurial efforts and which structural modifications the organization will have to undergo. The left-handed half shows the differentiation of strategic renewal within a company, by deciding between business integration in an existing division or creation of a new division. The right-handed half focuses on the creation of autonomous structures, in particular either internal or external situated incubators or spin-offs.

The decision of which venture option a company should choose is on one side dependent on the fit between the characteristics of the specific option and the resources and capabilities of the current organization. On the other side, certain critical issues can be found within the options, as well as within the organization, which can inhibit the potential matching. Therefore, it is important to incorporate these certain hurdles in order to identify integration barriers. Kim and Mauborgne (2005) use a basic model to identify four overall issues that could hinder the execution of an innovation entering a new business in *blue oceans*, which can be used to describe potential barriers in establishing a venture option:

- **Cognitive Hurdle**: Organization is wedded to the status quo;
- **Resource Hurdle**: Limited resources;
- **Motivational Hurdle**: Unmotivated staff;
- **Political Hurdle**: Opposition from powerful vested interests.
The cognitive hurdle in the model states that an organization and its employees are not aware of the necessity of a strategic change towards an innovative business opportunity and are not willing to leave the static status quo. The limitation of resources represents another major hurdle of introducing a strategic draft within an organization. Estimated from a traditional perspective, a change requires resources that are often not available in the required amount and could cause major conflicts within the organization. In order to establish a strategic change, the mass of employees must be motivated to act, which will afford more resources and a long time frame. Organizational politics and strong opposing internal interest conglomerations stand for the last hurdle for introducing strategic change.

Following is the presentation of further explanations of the four possible venture options, by considering their benefits and disadvantages, as well as potential barriers for their establishment and respective issues of each type.

### 3.4.2 Direct Integration into an Existing Division

Direct integration of a new business into an existing division of an organization is ideal in the case of high relatedness of the new business opportunity with the company’s core business, according to the matrix above. This integration requires strong administrative and operational linkages as well as management which is highly involved in day-to-day operations. This kind of option is preferred in highly integrated firms, where process changes or business integrations have immediate impact on the mainstream business. Direct integration is therefore most likely to be found in firms where radical changes and innovations have high potential to harm the strategic position of it. Main advantages are the experience and understanding that existing units already have with their business. A critical issue in this sense will be the acceptance of the new business opportunity (Burgelman, 1984; Tidd et al., 2001). Integrating an innovation, especially an innovation which could possess disruptive potential, would mean to change the present structures to a required degree. This change would further lead to resistance, which is a natural reaction of groups or individuals to leave the comfort of the status quo. According to these findings, three main sources for this barrier of change can be identified (Connor et al., 2003, 15):

- **Barriers to appreciation:** Appear when people do not understand the need for change, the reason, the details or the potential outcomes;
Barriers to acceptance: Are based on emotional reasons, as for instance the need of security, the feeling of threatened self-confidence or anxiety about the loss of organizational power;

Barriers to acting: Barriers of taking action are either caused by the individual’s lack of skills, such as physical, communication and conceptual skills, or by the organization’s lack of providing needed resources as funds, labor or time.

Another main barrier of integrating a new business into a current division is the threat of inter-unit conflicts. Based on Walton and Dutton’s findings, Hatch and Cunliffe (2006) explain that conflicts occurring in organizations derive in the first place from certain contexts of the organization. These are, for example, the organizational culture and the social and physical structures, the organizational environment and its degree of complexity, the growth strategy and its impact on the allocation of resources, as well as the organization’s technology that creates the distribution of new tasks or introduction of new reward criteria. Consequently, these given contexts in an organization influence certain local conditions, as group characteristics, incompatibility of goals, task interdependence, rewards and performance criteria, allocation of common resources, status disparity, responsibility questions, communication difficulties and individual differences. Conflicts can be observed by a set of resulting indices, as for instance open hostility within the organization, distrust and disrespect, lack of cooperation and interaction, and interrupted information processes.

3.4.3 New Division

The option of creating a new (venture) division is characterized by rather high relatedness to the company, and the necessity to exploit the potential business opportunity, as depicted in the matrix. According to Miles and Covin (2002), this venture option can be seen as an either direct or indirect form of internal venturing. While direct internal ventures are financed through the strategic budget and created by corporate employees, indirect internal ventures are financed out of a CV capital fund, which encourages employees to develop internal ventures. As identified by Tidd et al. (2001), a company can create new venture for four main reasons:

- To combine technologies or knowledge of different areas to adapt to or enter a new market;
- To combine research of different areas for the development of technologies;
- To integrate external knowledge for internal use or new development; and
➢ To explore new markets.

According to Burgelman (1984), the venture division represents an area for emerging projects with potential to create new business areas, but which has also to be evaluated on a regular basis. To guarantee the success of the division’s task, it becomes essential to define its limits of operation and mission and criteria to evaluate whether to terminate or support projects. Additionally administrative links and supervision should be loose, in order to allow the division a certain autonomy to develop itself on the one hand, and to maintain the efficiency of the company’s core business on the other hand. Nevertheless, operational linkages are to a certain degree necessary, in order to allow the transfer of knowledge, capabilities and skills between the division and the organization (Tidd, 2001).

In addition to providing increased technology independence and project development, this form of internal venturing provides benefits of developing the organization’s capabilities, resources and knowledge. Furthermore, it supports the development of more autonomous entrepreneurial behaviors among the organization’s human resources and helps the company to better identify and develop entrepreneurial activities (Miles and Covin, 2002). Even though the new division is monitored by the joint corporate management levels, it is treated as a single integrated system with increased autonomy and possesses a single set of goals. The new division profits from certain support services of the firm, but is still responsible for its operations and strategies for markets. Furthermore, the creation of a new division supports better allocation of capital in the company, reduces risks, effectively trains the divisional managers and increases the responsiveness on a strategic level (Minzberg, 1993).

Disadvantages appear in form of higher costs due to the increasing necessity of managerial involvement and the larger resource requirement (Miles and Covin, 2002). In addition, intra-organizational and inter-divisional or departmental conflicts could appear due to competition in terms of resources and competencies distribution in the company as well as internal competition between technologies and business lines. According to Birkinshaw (2001), technological or product competition are part of the product development process. Competition between business lines arises when two or several businesses of a company compete for the same customer. Especially this kind of internal competition represents a significant barrier for the introduction of a new division. In this context, three main issues must be considered which influence the decision of allowing the coexistence of two parallel business lines.
➢ **Cannibalization:** The question to which degree one business cannibalizes another;

➢ **Market heterogeneity:** The question if the market is heterogeneous enough to host similar technological solutions;

➢ **Complementarities:** The question if the existence of two parallel businesses creates synergies among each other.

### 3.4.4 Incubator

To define the main concept behind the term *Incubator*, the following definition seems at this point the most appropriate one:

“The incubation seeks an effective means to link technology, capital and know-how in order to leverage entrepreneurial talent, accelerate the development of new companies and thus speed the exploitation of technology.” (Grimaldi and Grandi, 2005, 111)

Corporate incubators therefore represent specialized units, which have the main tasks to support emerging businesses of an organization with providing different services relevant for the business implementation, for example, business plans, management teams and the obtaining of capital. Usually, a corporate incubator maintains a strong collaboration with the parent company through the full ownership and involvement of parent management teams. However, due to the lower relatedness, corporate incubators also enjoy a certain degree of freedom and possess strong characteristics of independent units, which own specific resources within their own organization. The relevant type of incubator models for this work is the *corporate private incubator for-profit purposes* (Grimaldi and Grandi, 2005; Becker and Gassmann, 2006). Main purposes of introducing corporate private for-profit incubators are to quickly create new ventures, to support the creation of these potential independent business units or spin-offs and to provide initial investments, business support, infrastructure, human and financial resources, knowledge networks, intangible and high value assets, short time orientation and shorter market entry times (Grimaldi and Grandi, 2005). According to Becker and Gassmann (2006), the implementation of an incubator requires careful analysis of different elements in the incubator model, as shown below.
The mission of the incubator unit is generally based on the corporate firm’s mission, which means it considers the overall strategy, the company’s focus and technology, as well as the given timeframe. The incubator’s structure builds on several issues, such as its size, the expected funding and industry focus. Furthermore, an incubator may be maintained inside an organizational business unit or separated from the organization. The process mainly determines the incubator’s involvement in the potential new venture and the factor of resources declares which tangible resources (e.g. financing, infrastructure and human resources) or intangible resources (e.g. networks and brand management) should be dedicated to the incubator. Another important decision is to state the type of the profit incubator. Becker and Gassmann (2006) identify four technology based types. The in-sourcing incubator and the market incubator receive technologies from external parties, whereas the fast-profit incubator and the leveraging incubator are used for technologies developed in-house and are therefore, for this thesis, of greater focus. The fast-profit incubator is responsible for the transfer of non-core business-related technology to spin-offs, whereas the leveraging incubator deals with mainstream compatible technology that should be introduced in new markets. The benefits of the fast-profit incubator are short-term focused high financial returns and larger possibilities of spin-off businesses, while the disadvantages are higher risks through early involvement or bulling the financial markets with certain strategies. Leveraging incubators lead to advantages such as lower losses of new developed core technology, lower R&D costs and the development of new businesses. On the other hand, they show such

Figure 3.6: Framework of Incubator Analysis
disadvantages as an unclear management interface between R&D and marketing or a low probability of strategic advisors to evaluate technology potential.

In terms of disruptive innovation, these two incubator units also possess high potential to act destructive for the core businesses of the parent company and to disrupt its current industry. The fast-profit incubator’s main purpose is to deal with this kind of innovation, but furthermore, one of the leveraging incubator’s tasks is to identify disruptive technologies and create new business models out of it (Becker and Gassmann, 2006). In both cases, disruptive innovation enforced by these incubators could mean on one hand the destruction of the current core business because its values and norms do not match the new innovation (Christensen, 2004). This would certainly encounter resistance among the existing structures. On the other hand, this method might be sometimes necessary to get rid of organizational bonds in order to secure the company’s competitiveness and growth.

3.4.5 Spin-Off

The term *spin-off* is defined as a

*“new business formation based on the business ideas developed within the parent firm being taken into a self-standing firm”* (Parhankangas and Aerenius, 2003, 464)

As stated in Narayanan (2009), the creation of a new business becomes necessary for the company’s wealth and should be accomplished through renewing the organization’s options for competing in the new market. Specifically, spin-offs effectively support the creation of these new business opportunities through an incubated development and commercialization of the technology. Although different views of ownership transfers are able to be found in existing literature (Parhankangas and Aerenius, 2003), a complete spin-off is regarded by Tidd (2001) as a totally independent unit with no more ownership left by the parent corporation. Due to the classification of spin-off in the proposed matrix, the very low strategic relatedness to the parent corporation signifies a major driver for creating a spin-off, most likely resulting out of a changing strategic focus (Tidd, 2001).

The strategic logic of exploitation implies the creation of a spin-off in order to monetize different assets of the company, such as patents and technology, within a short time period (Hill and Birkinshaw, 2008). Furthermore, if the parent company sees the hidden value of the innovation, but organizational values of the mainstream business hinder allocation of resources necessary for further development, the mother company should then consider the introduction of a spin-off. Arguments for spin-offs are that the innovation will require
different cost structures for developing profitability, or that the development does not match
the corporation’s growth needs (Christensen and Overdorf, 2000). Christensen (2004)
believes that an innovation, which has high success potential but also inherits potential of
disrupting the organization’s businesses, enforces the creation of a spin-off in order to
develop independent skills for successful commercialization of the technology.

When setting up a spin-off, the parent company has to distinguish between three
different types, identified by Parhankangas and Aerenius (2003). The first type concentrates
on development and commercialization of new technologies in an uncertain business field and
maintains a stronger collaboration to the parent. The second type serves new markets and
possesses also a tight connection to the parent, but exploits already existing technology. The
introduction of this kind of spin-off originates usually from lacking motivation to diversify a
new venture into a new market. The third type of restructuring spin-offs is in this context of
less importance, since their main task is the support of the parent’s reorganization attempts in
old businesses.

As the spin-off is regarded as an independent unit, Tidd (2001, 302) name several major
advantages of an independent unit, which can be applied to a spin-off:

- Less risk for the mother cooperation and independence for the new venture;
- Less responsibility of supervising and less decision-taking impact;
- The parent can clearly focus on mainstream business management, while the spin-off is able to focus on its own development and can create a greater commitment among its management and employees;
- Synergy and learning effects: Spin-offs can expect the supply of tangible and intangible resources, while the parent would benefit from potential improvements for its organization.

Nevertheless, the creation of a spin-off is not a general solution for innovation
processes. Therefore, it is necessary to make careful assessment of the firm.

3.4.6 Summary of Integration Options

After introducing the four main options of organizational integration of a new business,
a summary table is presented to compare the main advantages and disadvantages of each
option. To provide a systematic comparison of the venture options, three key factors of the
previously identified commercialization strategies are applied, i.e. ‘strategic aims’ of each
venture option, issues concerning the new venture’s ‘resources and capabilities’ and
characteristics related to its ‘network and management’, which will assist in determining the
match between commercialization strategies a company chooses for their internally developed
innovation and the integration method of this strategy into the organization in Chapter 5’s
analysis. Issues involving the venture’s possible ‘fit into organizational structures’ and aspects
of the potential ‘business expansion through innovation’ complete the table of comparison.

Table 3.7: Summary of Possible Venture Options for Organizational Integration

<table>
<thead>
<tr>
<th>Integration into an Existing Division</th>
<th>Corporate Incubator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Aims</strong></td>
<td><strong>Strategic Aims</strong></td>
</tr>
<tr>
<td>- Experimentation of innovation</td>
<td>- Experimentation of innovation for future development</td>
</tr>
<tr>
<td>- Growing the current division by adapting present structures and developing new capabilities</td>
<td></td>
</tr>
<tr>
<td>- Aligned to organization’s mission and strategy</td>
<td></td>
</tr>
<tr>
<td><strong>Resources &amp; Capabilities</strong></td>
<td><strong>Resources &amp; Capabilities</strong></td>
</tr>
<tr>
<td>- Use of existing R&amp;Cs</td>
<td>- Providing of R&amp;C for company, new venture or innovation &amp; technology development</td>
</tr>
<tr>
<td>- Experience and understanding present</td>
<td></td>
</tr>
<tr>
<td><strong>Network and Management</strong></td>
<td><strong>Network and Management</strong></td>
</tr>
<tr>
<td>- Need of strong operational &amp; administrative linkages within the division</td>
<td></td>
</tr>
<tr>
<td>- Need of high managerial involvement</td>
<td></td>
</tr>
<tr>
<td><strong>Organizational Fit</strong></td>
<td><strong>Fit into Organizational Structures</strong></td>
</tr>
<tr>
<td>- High alignment with core business &amp; goals</td>
<td></td>
</tr>
<tr>
<td>- Barriers of acceptance</td>
<td></td>
</tr>
<tr>
<td>- Potential problem of inter-unit conflicts</td>
<td></td>
</tr>
<tr>
<td><strong>Business Expansion through Innovation</strong></td>
<td><strong>Business Expansion through Innovation</strong></td>
</tr>
<tr>
<td>- Reluctance towards (disruptive) innovation</td>
<td></td>
</tr>
<tr>
<td>- Lower speed of business expansion (high relatedness)</td>
<td></td>
</tr>
<tr>
<td>- Possible need to restructure &amp; acquire necessary R&amp;C</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New Division</th>
<th>Spin-Off</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Aims</strong></td>
<td><strong>Strategic Aims</strong></td>
</tr>
<tr>
<td>- Exploitation of innovation</td>
<td></td>
</tr>
<tr>
<td>- Aligned to organization’s mission and strategy</td>
<td></td>
</tr>
<tr>
<td>- Continuous support from parent</td>
<td></td>
</tr>
<tr>
<td><strong>Resources &amp; Capabilities</strong></td>
<td><strong>Resources &amp; Capabilities</strong></td>
</tr>
<tr>
<td>- Higher costs &amp; need of resources</td>
<td></td>
</tr>
<tr>
<td>- Integration of external and new R&amp;C for internal use</td>
<td></td>
</tr>
<tr>
<td>- Results and expertise from different organizational units</td>
<td></td>
</tr>
<tr>
<td>- Development of organizational capabilities</td>
<td></td>
</tr>
<tr>
<td><strong>Network and Management</strong></td>
<td><strong>Network and Management</strong></td>
</tr>
<tr>
<td>- More independent development</td>
<td></td>
</tr>
<tr>
<td>- Stronger commitment &amp; entrepreneurial thinking</td>
<td></td>
</tr>
<tr>
<td>- Under parent supervision</td>
<td></td>
</tr>
<tr>
<td><strong>Fit into Organizational Structures</strong></td>
<td><strong>Fit into Organizational Structures</strong></td>
</tr>
<tr>
<td>- Internal competition &amp; Inter-unit conflicts</td>
<td></td>
</tr>
<tr>
<td>- Necessity of clear handover of responsibilities</td>
<td></td>
</tr>
<tr>
<td><strong>Business Expansion through Innovation</strong></td>
<td><strong>Business Expansion through Innovation</strong></td>
</tr>
<tr>
<td>- Diversification without disrupting other units</td>
<td></td>
</tr>
<tr>
<td>- Entering new markets not related to core business</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Own*
3.5 Summary and Conclusion

Blue Ocean Strategy over recent years has spread throughout industries around the world, with major companies attempting to adopt value innovation concepts and new ways of thinking in attempts to create their own *blue oceans*. However, this chapter shows that Blue Ocean Strategy, while appealing, can benefit from further contributions of already existing literature within the fields of Business Models and CV, and vice versa.

To summarize, the three major strategies included in this chapter can be connected to draw several conclusions based on the literature. First, Blue Ocean Strategy’s concept of value innovation provides an understanding of new value that an innovation can provide to a new business in a firm, in terms of customer perception and competitiveness among industry players. However, the limitation to this theory is that, aside from customers, value can be seen from other external stakeholders as well, such as those who value corporate social responsibility issues, e.g. the environment, a significant issue in public transportation. Thus, to complete the understanding of the value provided in public transportation, Stakeholder Theory combined with Blue Ocean Strategy provides a greater understanding of the value an innovation can provide in society. Furthermore, value to customers changes as the customer in question changes. Blue Ocean Strategy does not consider the potential of various businesses models that change the target customer, thus changing the marketing strategy and value creation. Execution of this value is achieved through the appropriate business model adopted, which includes how to execute the value through determining an appropriate commercialization strategy for the innovation in the new business area. Furthermore, the business model structure in traditional literature (e.g. Afuah) shows the complexity of a business model, and can be used to further build the topics presented in Blue Ocean Strategy involving coopetitors, which are the key in industry nowadays.

Value must be viewed not only from an external perspective but also from internal. Blue Ocean Strategy discusses in great depth the potential issues and risks of the delivery of value innovation to the firm, mainly in terms of the four hurdles of implementing innovation. This chapter shows that CV in combination with these hurdles can provide a more complete representation of how companies create a new business with innovation, showing how the set up of the new business can impact growth opportunities and future success.
4 CONCLUSIONS & RECOMMENDATIONS

The final chapter of this thesis presents the results of the overall study, both from a theoretical perspective. A theoretical model is extracted using the learning from the distinct literature and the case study, resulting in a general business model for innovation and new business entry in public transportation, serving as a base for the general conclusions and recommendations of this thesis. Finally, suggestions for further research are provided.

4.1 General Conclusions and Recommendations

Based on the findings for the case study, in coordination with the existing literature presented in Chapter 3, general conclusions can be made on the topic of entering new businesses for MNCs in public transportation using internally generated technologies that can be applied to various companies. Through researching this topic of new business entry with technological innovation, vast amounts of literature can be applied in great detail. While this work does not attempt to cover all theories presented in academia today on this topic, it does contribute to a new perspective or understanding of this topic through linkages found between Blue Ocean Strategy, Business Model theories, mainly by Afuah, and CV theories, which are found to better assist companies in their strategies for entering new businesses using internal innovation.

4.1.1 General Conclusions from a Theoretical Perspective

1. Blue Ocean Strategy’s value innovation is strengthened by the application of the theory in combination with Stakeholder Theory and Corporate Social Responsibility.

While Blue Ocean Strategy is generalized to any industry focusing on product-oriented businesses, in public transportation, especially, it is found that CSR plays an important consideration in terms of focusing on social values rather than only monetary, such as environmental considerations and political issues that stem from involving public goods (road infrastructure, government customers, etc.). Furthermore, value innovation extracts new value to customers, but can be seen from many different perspectives depending on who the customer is. Therefore, value innovation is highly related to the strategy that a company adopts to commercialize the technology, which results in changed positions in the industry for the company (as a customer, competitor, supplier, or complementor).
2. The various strategies of commercializing the technology of a company into a new business change the target customer, and thus the value offering.

Value innovation from Blue Ocean Strategy in current literature has not yet been connected to the commercialization strategies for innovation, and this thesis provides a relevant linkage, showing that value provided to various potential customers is dependent upon the commercialization strategy adopted, and vice versa.

3. Value is enhanced through cooperating with other industry and non-industry players, a similarity in theories found by both Kim and Mauborgne (2005) in their Blue Ocean Strategy and Afuah (2004) in his business model theory.

A linkage exists in existing theory, where both Blue Ocean Strategy and business model strategy discusses in different contexts the importance of value enhancement made through collaborations with other players either inside or outside the business/industry.

4. CV theory and implementation of Blue Ocean ideas within a company can be combined to provide a clearer focus on how to integrate or separate a new business driven by innovation and new ways of thinking (“blue oceans”).

Combining CV and Blue Ocean theory provides a more complete picture of the organizational decisions that need to be made when implementing innovation within an MNC. The complementation of the two theories brings in various hurdles identified by one, and applies them to the organizational set-up options found in the other. The implementation of the business and the value creation can be better delivered to the customer and sustained in the future through a proper organizational set-up of the new business.

4.1.2 General Recommendations

Given these general conclusions, the main research question of this study and its sub-questions can thus be answered, which result in the academic recommendations for this thesis.

**Main Research Question:**

*How can a multinational company in urban public transportation use an internally generated breakthrough technology to enter a new business beyond its current core?*

Entering a new business is already a challenging mission for any company of any size, and entering a new business beyond the company’s current traditional core business is an
even more risky challenge. Preparation for new business entry gets started many years before the official launch since the company has many tasks to do, for example investigating the market, assessing potential success, finding partners, etc. An MNC is usually believed to have more R&C than other firms of smaller sizes and market coverage, but in reality the challenges they face when entering a new business are sometimes even tougher, especially in terms of the level of openness to innovation and integration into the existing organizational structure. New business entry is not easy for any company; rather, it constitutes various risks which need to be addressed. In general, for an MNC that owns a breakthrough innovation or technology, it is recommended that there be generally three main issues that need to be considered: the values of the innovation, the strategies to commercialize it and the internal positioning of the new business, which in turn consist of many options that require careful assessment. The following model depicts a general framework of issues for consideration that can be applied for an MNC in entering new businesses with innovation technology.

**Figure 4.1: General Business Model**

Following are the specific answers to three sub-questions based on the general business model as described above.

**Sub-question 1:**

*How can a multinational company in urban public transportation create value for relevant stakeholders through using breakthrough technology in a new business area beyond its current core?*
To create value in this respect, it is recommended that an MNC in urban public transportation first determine the new value that the technological innovation can bring to the new business area, and how it can change the factors of competition to appeal to customers in a new way, unconventional to the business before this MNC’s entry. In this way, a company can work towards entering a “blue ocean”, where it crosses the boundaries of the given business, bringing in factors and customers that traditionally are excluded. Furthermore, public transportation providers have always focused on technical aspects of their innovations, determining success by technological performance and improvements, and not by lifestyle or feeling. Therefore, it is recommended that in order to reach second tier customers, and other second tier customer groups, it is important to appeal to them on not only functionally but also emotionally, since public transport is, in essence, a lifestyle choice that affects each day, and therefore, should be marketed as a lifestyle. Therefore, the recommendations for sub-question 1 can be summarized as follows:

1. Determine the new value that the technological innovation brings to the business
2. Focus on a combination of functional and emotional marketing to appeal to first and second tier customers.

Sub-question 2:

*How can a multinational company in urban public transportation secure scalability in its new business model to extend business beyond its current core?*

To create a scalable business model means in this respect to create a business model that ensures growth and success in the new business both at present and in the future. It is recommended that an MNC in urban public transportation first examine the potential strategies for commercializing the value of the innovation, in terms of positioning in the new business environment. In general, the company has four major positions to consider, which were identified by Afuah (2004) as actors in a business model. The MNC can choose to be a supplier to current competitors in the business, thereby adopting a licensing or selling strategy of the technology, a competitor strategy, in which the company chooses to internally develop and sell the innovation competing with current products on the market, or an intermediary approach, where the firm can be more involved than a supplier with the customers and second tier customers, but involve other actors in the industry as collaboration partners. Contrary to current literature on commercialization strategies for innovation, acquisitions and JVs can be involved in any strategy, considering the complexity of the new business, whereby a company
should consider any strategy in coordination with collaborations or possibly acquisitions in support of the main business entry strategy, for example to provide technological advancement in the future to sustain the new business, whether they are a manufacturer, licensor, seller, or intermediary. The company should decide on a strategy based on many factors, presented in various literature sources. Therefore, the recommendations for sub-question 2 can be summarized as follows:

1. Consider the four major positions to determine the various strategies available to commercialize the innovation; determine the appropriate collaborations to add value to the new business and sustainability in the future;

2. Consider various factors to evaluate the strategies: Strategic motives, monetary motives, speed of entry, Intellectual Property Right protection of the technology, resources and capabilities, and management/network issues or risks.

**Sub-question 3:**

*How can a multinational company in urban public transportation position their new business with respect to the existing organization?*

To ensure proper integration of a new business into a company’s operations, it is important to consider the various options available to maximize value delivery to customers and ensure the successful implementation of the commercialization strategy chosen. The internal company environment plays a crucial role in the success or failure of new businesses and technological innovation, and thus must be carefully assessed, when attempting to add a new business to a company’s operations. As shown in the figure of the general business model, the business model includes the connections between the MNC, the technology and the four major options of integration or separation. The recommendations for integrating a new business into the existing organizational structure can be summarized as follows:

1. Investigate the options of integrating the new business in an existing unit, a newly created unit, an incubator, or spinning it out as a separate unit outside the core business, to determine which options allow for the maximization of value for both external and internal stakeholders; consider the potential risks or hurdles in implementing the new business, both tangible and intangible.
4.2 Suggestions for Future Research

Given the wide scope of this thesis, various delimitations were made in Chapter 1 to enhance the focus of this study. Several topics can be further examined in relation to the topic of this thesis, which would further enrich the contributions of this study, as follows:

1. How should an MNC in urban public transportation adjust its strategy of entering a new business with internally developed technology to match the variations between different geographic markets?

The limitation of this study was the extraction of the geographic consideration, assumed to be Scandinavia, where the assumption is that there is higher acceptance of new technology and innovation by both industry and governments. However, these MNCs operate worldwide, and research could thus include various types of cities, which differ in government, societal demands, etc.

2. How can an MNC in public transportation decide on the type of business to enter using internally developed technology to expand outside the core business?

This study was completed with the assumption that the company has already decided the focus on the technology and the area of business expansion. The study was focused on the strategies following that initial decision. However, another study can take a step back examine which new business is most attractive for a given technology.

3. How can a multi-national company in public transportation plan the long term implementation of technology, given constant change over time?

One consideration when conducting this study was the strength of the impact of change in technology, which was only introduced but not elaborated. In many industries, technologies come and go with speed, and value diminishes or increases at different rates over time. In public transportation, it was found that there are many types of solutions currently being researched to increase mobility, public acceptance, and reduce environmental problems. If these technologies do reach a breakthrough, then a study can be on the severity of the impact.
BIBLIOGRAPHY

Journals


**Books**


**Websites**


Appendix A: Methodology Protocol

Preliminary Questions
- First Exchanges of Documents (01-19-2009)
- Pre-Telephone Interview with MNC (01-23-2009)
- Secondary Data

Problem Definition
- Trip 1
  - Collect relevant documents
  - Discussions and semi-structured interviews with company
- Secondary Data

Case Study Design

Formulation of Interview Questions

Data Collection – Berlin Trip 2
- Interview with European Patent Office
- Interview with Institute for Mobility
- Pre-Screening Telephone Interviews
- Direct Observations
- Interviews with the case company
- Secondary Data
- Interview Notes

Interview Write-ups

Empirical Findings

Key Respondent Reviews

Source: Own
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