Car2go, a Car Sharing Service through the Lens of Disruptive Innovation

Vagkn Ovsepian (53598)
Roskilde University
4/1/2016
# Table of Contents

Introduction .................................................................................................................. 4 
Case Description .......................................................................................................... 6 
Problem Formulation.................................................................................................... 7 
Research Question ...................................................................................................... 9 
Theoretical Framework (Literature Review) ............................................................... 9 
  Review of Relevant Extant Literature .................................................................... 9 
    Service Innovation .................................................................................................. 9 
    Disruptive Technology .......................................................................................... 10 
    Disruptive innovation ............................................................................................ 10 
  Sharing Economy ...................................................................................................... 11 
Review of External Business Analysis Models Used In the Study .............................. 12 
  PEST ....................................................................................................................... 12 
  SWOT ...................................................................................................................... 13 
  Porter’s five forces ................................................................................................. 13 
Market trends ................................................................................................................ 14 
Studies on the topic ..................................................................................................... 14 
Methodology .................................................................................................................. 19 
  The Research Tools and Their Creation ................................................................ 20 
  Component Elements of Conceptual Tools and the Object of Study .................... 20 
    Probing tools ....................................................................................................... 21 
    Comparative and evaluative tool .......................................................................... 21 
  Broad Methodology of Creation of the Tools .......................................................... 21 
  Conceptual Torch Creation ..................................................................................... 21 
  Based On Problem Formulation ............................................................................. 21 
  Based On Case Description ..................................................................................... 22 
  Conceptual Lens Creation ....................................................................................... 23 
    Layer 1: Based on Literature Review .................................................................. 23 
    Layer 2: Based on Disruptive Innovation Theory ............................................... 24 
    Layer 3: Based on Market Analysis Tools ............................................................ 25 
Questionnaire and assumption structure creation ..................................................... 25 
Analysis ......................................................................................................................... 26 
  Final Points of the Conceptual Torch Based On Broad Methodology .................... 26 
  Final Structure of the Conceptual Lens Layer 1 (Based on Review of Literature) .... 27 
  Final Structure of the Conceptual Lens Layer 2 (Based On Disruptive Innovation Theory) ... 27 
  Market Analysis - Conceptual lens Layer 3 (Probing Tool for the study) ............... 28 
    SWOT .................................................................................................................... 28
Introduction

The industries and businesses around the world have now been witnessing unprecedented changes with growth in the last two decades at a rate that seems much faster than the whole of the last century. The prime reason that is apparently behind such a fast rate of changes is the innovation rate in general and services innovation in particular. The present study, based on a preliminary review of literature as part of its endeavour to achieve a better framework for understanding and applying the theory and principles of innovation in general and what has come to be known as disruptive innovation in particular strives to understand the service innovations and put them in proper context towards the objectives of the study. (Cortez, 2014)

The study further goes on to understand and present the concept of disruptive innovation as put forth by Clayton M. Christensen and further studied and enriched by other scholars and researchers. Disruptive innovation being based on the concepts of service innovation and disruptive technologies has been presented and studied as a focal concept for this study. The literature review has defined and contextualized the concept and theory of Disruptive innovation with its essential elements capable of bringing about disruptive changes to the market settings as well customer preferences through initially low end technologies from mainstream business perspective (Shaheen & Cohen, 2012). The same is discussed in the review of literature section. Based on the review itself, the work discusses the contextual role of Business model as well as car sharing services as a prime example of disruptive innovation and attempts to create a conceptual lens by means of analytical management tools such as Porter’s five forces, SWOT and PEST of the Car2go services as a case study for disruptive innovation.

Business model innovation has been understood as an important allied concept of disruptive innovation in the sense that disruptive innovation as a concept and theory which is based essentially on disruptive technologies can achieve predictive value only once the compatible business model innovation is figured out and practiced.

Car sharing services have in the last few years developed into a fully fledged industry and form an important component of the booming sharing economy. Based on their disruptive business models and eco friendly technologies, these beacons of the sharing economy have become the preferred areas of interest and investment for various economies around the world. Car sharing is being increasingly seen as a flexible transportation alternative which also reduces the negative social, economic and environmental impacts of private ownership of cars and vehicles. Car sharing industry which originated in Europe a few decades ago has now
present in all the continents is based on the advances in disruptive technologies is growing at an unprecedented rate in the last few years and disrupting the incumbent industries in its sector (Yu & Hang, 2009).

Car2go is seen one of the brightest spots in the car sharing industry particularly on the disruptive innovation horizon. With its free floating, electric car fleets, it has managed to beat the factors restricting the growth of car sharing for a long time. The Car2go services have been systematically introduced and innovated for bringing the best results and in the process has seemingly disrupted many traditional business models and frameworks in the automobile and allied industries (Yu & Hang, 2009). It has also changed the way the consumer or clients perceive and make their transportation choices. However, a critical evaluation of whether Car2go fits the description of a perfect disruptive innovation as a case needs to be ascertained, which is the prime objective of this study.
Case Description

The present study strives to ascertain whether Car2go, the Car sharing service by the automobile manufacturing company Daimler, qualifies as a good case example for disruptive innovation. As the review of literature suggests, Car2go was launched in 2009 in the city of Ulm, Germany. By the end of 2014 Car2go fleets of 250 - 1200 vehicles 26 cities across North America and Europe were being offered (Finkorn & Muller, 2014). In 2011, Car2go launched a fleet of all electric cars in San Diego California USA. This was preceded by launches in various North American and European cities (Shaheen & Cohen, 2012). In 2011 itself, Car2go announced expansion to 50 cities in Europe and a few locations in North America. Car2go later launched a social media based pilot project. It is thus apparent that Car2go right from its birth has been experimenting and systematically evolving over a period of time and has seen unprecedented growth. It has expanded internationally in very short span of time and has affected the automobile industry and set benchmarks for others to follow.

Evidently, Car2go is a project that was conceived and implemented as an innovative initiative. Daimler, initiated the project to take advantage of the huge crowd sourcing and shared economy trends emerging at the time, with enabling IT infrastructure that had sufficiently evolved by the time, Car2go was launched. The fact that Car2go was systematically launched in various cities around the world in its various versions such as diesel and electric also show that innovation was at the core of Car2go as a project. As any innovative project the purpose of systematic launches was to gain sufficient iterative knowledge of best business practices suitable for continued growth and evolution of the car sharing space in the automobile industry. As suggested by a preliminary review of literature as part of this study, Car2go is continuously experimenting not only with car technology, but also user and operational technology such as user interfaces. The best part of Car2go’s evolution has been the positive environmental effects it has had. The effects have been studied by various scholars over a period of time now and lessons for other industries are being drawn from the same.

Quite literally, Car2go is forcing the businesses, regulators as well as customers to change their preferences and choices regarding car sharing. Also suggested by peek in to the relevant literature, the way the businesses are adopting and adapting to Car2go’s initiatives in terms of technology and operations, shows the disruptive power of Car2go’s business model. The disruptions have extended well into the regulatory as well as the customer decision
realms and have affected the car regulatory bodies to take notice and adapt to the changes being brought about due to innovations in car sharing space, led by a few players of whom Car2go is a major one. One of the most intriguing aspects of Car2go’s innovation has been the development of capability to provide free floating car sharing systems. The same are being replicated internationally. Car2go’s innovations have reduced and posses a still greater potential to reduce private car ownerships (Finkorn & Muller, 2014). On the regulatory front, Car2go evolving as the largest free floating car sharing service in the world (Vine, Zolfaghari, & Polak, 2014), it has and continues to present unanticipated benefits and risks. This has a potential to disturb the balance between regulators, industry and consumers (Cortez, 2014). Car2go has led the way in car sharing services restructuring the costs of car based mobility. The higher fixed costs of car based mobility are averaged out by the car sharing services such as Car2go. The regulators have to restructure their taxation structure for example to adapt to these changes in cost structure.

Car2go presents the researchers, based on the review of its performance in the innovative space, with a need to determine whether the innovation of Car2go indeed follows the theoretical path suggested by the disruptive innovation theory.

Problem Formulation

The preliminary literature review as well as the case details above, prompt us to examine as to how Car2go seems like a disruptive innovation. The need presents us with a problem wherein Car2go has to be evaluated from a theoretical perspective to set a perfect example to guide the businesses towards successful disruptive innovation. The problem thus presented though is multidimensional and has to be deconstructed to simplify and solve.

Car2go is suggested to be a case of disruptive innovation by a preliminary research. The preliminary research as recorded in the review of literature section suggests that Car2go has been in a state of constant innovative change since its birth and in fact its birth itself was based on utilizing unique business opportunity presented at the time, enabled by technological and business advances. The overarching features being systematic innovation, disruptive user interface and constant experimentation with the car technology and business processes on the causal side and reduction of private car ownership and its consequent effects on the effectual side, Car2go presents itself as contender for further examination towards the disruptive innovation fit.
Disruptive innovation as a theory is itself limited in its predictive value. Also, as per the initial review of literature, the usefulness of disruptive innovation theory as a predictive framework is seriously limited by overt emphasis on attack and consequent floundering of the incumbent firms and industries. However, for disruptive innovation theory to be of real value it has to take into account the value for both disrupting as well as incumbent firms as a relative effect, based on fulfillment of individual conditions based on the learning value of the theory for the given set of firms or industries. Car2go has to be examined in the light of this limitation and the additional conditions for it to provide disruptive learning value need to be determined.

The technologies used by Car2go have to be determined to be disruptive in nature through further research. The technologies play a pivotal role in qualifying a business as disruptive or not and it is the technologies which initially appear to be trivial in nature that are responsible for building a gradual sustainable advantage around itself which eventually pose a threat to the mainstream technologies.

Car2go business model has a need to be likened to a disruptive business model as well since it is the business model which in effect harnesses a the disruptive technology to an advantageous position for the disrupting as well as presents learning opportunities for the disrupted and incumbent firms.

Car2go in spite of the apparent disruptive effects has not yet been critically analyzed on conceptual premises of the disruptive innovation theory. The research so far though has put Car2go on a high disruptive innovation pedestal has so far lacked in a critical assessment on the disruptive scale both quantitatively as well as qualitatively.
Research Question

The above discussion towards problem formulation thus brings us to the chief research question as mentioned below.

The present study seeks to determine whether the services provided by Car2go can be seen as disruptive Innovation. The research question is further deconstructed and analyzed for study in the Methodology section below.

Theoretical Framework (Literature Review)

Review of Relevant Extant Literature

Service Innovation

As per Financial Times (Service Innovation, 2015) Service innovation is the one – “that takes place in different forms using different factors such as IT, hardware, knowledge and investment in staff training, marketing and research and development (R&D).” Service innovations themselves can easily be copied and cannot be safeguarded for long. Although the advantage accruing out of service innovations coupled with right timing and unique business models to capture the unique value of the innovation early on can help safeguard the advantage.

Another study (Hertog, 2010) has conceptually defined service innovation based on a four dimensional model. The four defining dimensions of service innovation are service concept, the client interface, the service delivery system or organization and the technological options available. Further, the study identifies the importance of organizational or non technological innovations in services. The service innovation is rarely One-dimensional and is based on a combination of two or more dimensions mentioned above. The dimensions of service innovation are usually replicated in other industries or sectors. The combinations of the service dimensions may change in role of a given dimension in the overall innovation with time. Service innovation strategies vary with overall business strategies of firms. Service innovation is usually the result of proliferation of specialized service functions. The service innovations cannot be restricted to the given firm and spreads across the industry. Regulation or de regulation can cause innovations to occur in service industries.
Disruptive Technology

Disruptive Technology (Christensen, 1997) refers to “a new technology having lower cost and performance measured by the traditional criteria, but having high ancillary performance.” The low end and seemingly trivial technologies attack the established technologies and eventually capture the customer value over a period of time (King & Baatartogatokh, 2015).

Scholar (Chesbrough, 2010) has studied the notions and concepts of ‘disruptive technology’ and ‘disruptive innovation’ within the purview of Business Model Innovation. He has observed that companies can commercialize new ideas and technologies through their business models. Further they emphasize that same idea or technology taken through two different business models will yield two different business outcomes. He thus stresses the importance of business model innovation. He further explores the barriers to business model innovation and the cognitive competencies which are required to identify these barriers and also ways to overcome them.

Authors (Utterback & Acee, 2003) have identified and discussed the limitations of the above conception of disruptive technology. They have pointed out that C. Christensen in his bid to give undue importance to the “attack from below” has ignored various other change patterns that may best be described as discontinuous in nature. They have emphasized that even in C. Christensen’s view the importance of disruptive technology lies not displacement of established products but enlarging and improving the scope of markets and adding to their functionalities. Further, the authors present an alternative scenario wherein a high end innovation is introduced into a demanding market and later moves towards the mass market.

Disruptive innovation

Disruptive innovation (Yu & Hang, 2009) as per the disruptive innovation theory advanced by C. Christensen defines disruptive innovation in terms of technologies that emerge as a result of a process. The process, which produces technologies that provide value that is different from the mainstream technologies of the time and are initially inferior in terms of mainstream customer value are called disruptive innovation. Disruptive innovation has been graphically represented and defined in terms of the trajectories of changing performance of the firm and/or the industry with time along with the level of performance demanded by the customers (Figure 1). The points on the graph where the two trajectories intersect can be identified as points of disruptive innovation. Further innovations have been identified as sustaining versus disruptive as attributed to C. Christensen.
In this context, it is important to point out the evaluations of predictive value of the theory of disruptive innovation. A study (King & Baatartogatokh, 2015) identifies the four key elements of the theory to further evaluate how well the theory describes what happens in business practice. The four elements are “1) sustaining innovation by incumbents, 2) overshoot of customer needs, 3) emergence of a disruptive innovation to which incumbents have a capability to respond fail to do so and 4) incumbent firms floundering as a result of disruption.” The study based on the evaluation of 77 cases by a panel of experts, concluded only 9% of the cases fully exhibited all four elements of the theory. However, the study identifies that the value of the theory lies in providing useful insights about managerial myopia. Further, they suggest the way forward for the managers towards the best use of theory for their purpose. It suggests that after evaluating the value of introducing or fighting an innovation, they must look for ways to leverage their existing capabilities in accordance with the applicable elements of the theory and finally collaborate with other companies to maximize the advantage through the leverage.

**Sharing Economy**

Sharing Economy (Allen & Berg, 2014) is referred broadly to “an emerging set of business models, platforms and exchanges that uproot traditional markets, break down industrial categories and maximize the use of scarce resources.” Examples of sharing economy can be found easily in the car sharing services such as Uber and Car2go and accommodation services such as Airbnb. However, the sharing economy has spread to many more areas such as finance, investments and routine tasks. The real threat as identified by scholars is the government regulation which is driven at the behest of the incumbent industries that are threatened by the disruptive nature of the sharing economy. They have suggested novel approaches to the regulatory design which can serve to improve the growth.
of sharing economy as well which increase overall flexibility in the industry and better equip incumbent firms to deal with disruptiveness.

A PWC (Price Waterhouse Coopers) study shows that consumers are increasingly showing a great need for sharing based economy. The study observed that companies can work today to change threats into opportunities tomorrow. Interestingly, the study revealed that in North America, the people who are most interested in a sharing economy are those who are between 18 and 24 years of age, with household income between $50,000 and $75,000 and having kids below 18 years of age (PWC, 2015). The study observes that sharing economy is creating new opportunities in the automotive industry and is creating a vast network of transportation options for the customers. The study shows that 8% of all the adults have taken part in automotive sharing in some form or the other. Also, 1% of these have served as service providers under this model. The appeal of the sharing economy is forcing the people to give away car ownership in spite of falling gasoline prices.

**Review of External Business Analysis Models Used In the Study**

**PEST**

Further to the market analysis scenario for the car sharing industry, it is important to review the various strategic analysis tools and their applicability for analyzing the Car2go market. PEST analysis is considered to be an effective tool to analyze the external environment of a business or an industry. In general, PEST is carried out by businesses to support their strategic analysis of the business. PEST analyzes the political, economic, social and technological factors of a business and is an acronym for those factors. PEST analysis acknowledges that the various environmental factors interact with each other to make up a unique environment for the business. The analysis usually presents a broad picture of the environment of a business. The analysis technique helps provide a valid basis and important information to conduct a SWOT analysis of the business. A PEST analysis effectively identifies the key drivers of change for a business (Kim & Ho, 2014). The insights provided by the analysis are both short term and long term. It tells the business which assumptions to make and which to avoid in formulating a strategy. This analysis can be used in conjunction with a SWOT analysis and needs to be conducted regularly to keep updating the strategy.

Many Scholars have conducted PEST analysis of the car sharing industry with varying objectives. In this context a study concerning the dynamics of the e-car industry observes that a PESTEL analysis which includes the legal and environmental factors and is a slightly different version of the PEST, is conducted for a given macro market to identify the
distinctive environment pertaining to market. The implications are same for a PEST analysis. As per the study, political factors for the e-car industry and consequently the car sharing industry as a biggest market for e-car industry are of high importance. The environment and infrastructure politics in a market is of prime importance (Debye, 2014). The manufacturing infrastructure is very important for the e-car and thus the car sharing industry. In economic terms, the energy cost and consumption are essential for e-cars and thus must be considered by the car sharing industry as well. The fixed costs of charging stations are also important to consider. The social factors such as mobility habits are a driving factor for car sharing services. People are becoming aware and prefer greener ways of mobility with the passage of time. The Technological challenge for the e-car and thus the car sharing industry lies in the scope for improvement in the engineering and technology of the e-cars. The challenge is to find sustainable and economic technologies.

**SWOT**

SWOT analysis is the strategic planning tool that enables definition of the problems and business situations in a strategic manner. The acronym SWOT stands for Strengths, Weaknesses, Opportunities and Threats with respect to a business, product or market, which form basis of the analysis. Whereas PEST is a problem analysis tool SWOT is a problem defining tool and approach. Research on importance of SWOT has shown that it can be used to analyze each of the products, services and the markets to determine the best way to achieve growth in the future (FME, 2013). Upon a successful completion of the SWOT analysis managers must be able to decide which markets offer the best opportunities for the growth of the given business over the product or service life cycles. SWOT has been identified as an iterative and not a prescriptive tool just like PEST. SWOT analysis can be applied to great variety of organizational scenarios however its success depends a great deal on the clarity in thinking and judgment of those conducting the analysis. The output of a given SWOT analysis is not definitive and might require more runs of the analysis with additional inputs for better results.

**Porter’s five forces**

Porter’s five forces analysis is another strategic analysis tool that employs five scenarios which affect the environment of any business. The scenarios are Competitive Rivalry, Threat of New Entrants, Threat of Substitutes, Bargaining Power of Suppliers and Bargaining Power of Customers. The ability to define the market properly is crucial to effectively carry out this analysis. This analysis looks at the forces the competitors of a business can exert on a market of a business. Moreover, it suggests how this could affect the business in the long run. In
effect, Porter’s model helps determine the ‘attractiveness’ of the market of a business in terms of its overall profitability given the opportunities and risks (FME, 2013). It is important to note that Porter’s five forces analysis is designed to analyze products or service at a single line of business level. Also, if a business has a diverse range of products and services, it needs to conduct separate analysis for each of the products/services. The analysis is useful in qualitatively assessing the strategic position to take while we are yet to develop a new offering or perform a review of the strategic position.

**Market trends**

A study by ‘Navigant Research’, reports the major market trends in the car sharing market around the world and help us identify the parameters by which to analyze the market for a car sharing firm and industry in general (Berman, Jerram, & Gartner, 2013). The study observes that till 1990 was a nascent industry. Since then, however, the industry and its market has grown at a very fast pace. As per the report, by 2012, approximately 1.8 million car share members were using services in 27 countries across five continents.

From an informal network of small companies, the industry has grown to be managed by large multinational firms. Further, the study discusses the major factors that have driven and fuelled the growth of the car sharing industry. The factors identified include urban congestion, shifting generational mindsets and convergence of business models. The study has identified Car2go as one of the key market and industry player in car sharing (Berman, Jerram, & Gartner, 2013). As per the market forecast in the study, the projected global revenue for car sharing services is $6.2 billion by 2020 at a CAGR of 30.9%. North America and Europe are likely to maintain their position as the leading markets for car sharing around the world. Although, Latin America, Middle East and Africa are also likely to grow at fast pace, their overall revenue is likely to remain much below that of North America and Europe.

**Studies on the topic**

Quite interestingly, a number of studies based on SWOT analysis of Car2go and car sharing from different perspectives have been conducted. One such study was conducted keeping the entry of Car2go into the B2B markets based on market analysis and SWOT as a component of the same and suggestions proposed (Maher, Kletzel, & Ribitzky, 2012). As per the analysis, the major strengths of Car2go have been identified as being a recognized brand, perceived as young and hip, a patented door opening technology, diverse vehicle offerings in the fleet, first mover advantage in many markets, specialized parking spaces. The weaknesses identified as per the study include, start-up mentality despite being in mature phase, business model forces drivers to make two way trips. The opportunities include lack of penetration in
B2B market, opportunity to capitalize on tax benefits of car sharing versus car ownership. The threats to Car2go as per the study include the strategic partnerships being formed by competitors, perception as an expensive service and growing number of alternatives. Relevantly, the study also considers the business model of Car2go and observes that Car2go being a subscription based business model is very flexible in terms of trip choices and eases mobility decision making for clients.

Another study has shown that car sharing service Car2go started by Daimler in 2009 provides a flexible alternative to the traditional transport needs globally and thus helps reduce the negative impacts of private vehicle ownership (Vine, Zolfaghari, & Polak, 2014). As per this study, car sharing has a history of more than 65 years in Europe. Now it has expanded to 1,100 cities around the world in 26 countries over the five continents. The study has observed that people aged between 21 to 30 years have an increasing trend of using alternative means of transport thus reducing the distance travelled by their own vehicles as well the vehicle ownership. It was in 2010 that 26 countries officially announced car sharing as a strategy for better transportation to minimize individual expenses on transport as well as the negative impacts of automobile usage on the environment. People around the world have gained access to car sharing by joining an organization that offers fleets of vehicles in a given location. Most of the car sharing services is based on either hourly payment or monthly subscription. Most of them use an advanced user interface technology including automated reservations, smart card vehicle access, vehicle tracking in real time through GPS and one way transport facilitation equipment.

A study on challenges and opportunities for car sharing has observed that car sharing, in contrast to the traditional car selling format to end users has presented the requirements for different set of customer relationships, regulatory requirements and entirely new ways of interaction with the public sector (Vine, Zolfaghari, & Polak, 2014). The study has identified various different types of car sharing, based on the pickup and drop options for the users. The services can be either point to point free floating or point to point station based. Car2go has been acknowledged as the largest provider of point to point free floating car sharing services around the world. In such services typically, the fleets are centrally owned by the service provider and an agreement with an on street parking management agency is usually required. The parking is usually managed by city municipalities and can put the car sharing services in some overtly vulnerable situations. An inability reach proper understanding with municipality for example can prevent a car sharing agency from operating in the area. The study observes new types of business relationships and structures emerging as a result of growth of car sharing. Car2go represents one such arrangement, wherein Daimler a car maker, in order to
not only utilize the sharing economy advantage, but also to proactively avoid any car maker-service provider conflicts chose to enter the car sharing space.

Industry, as part of its R & D effort is conducting its own studies in disruptive innovation and the disruptive technologies. A similar study by IBM (Digital Disruption and the future of the automotive industry, 2015) has identified Car2go as one of the services as alternatives to vehicle ownership and to be the most disruptive in the automobile industry. The paper based on the study has acknowledged the fact that Car sharing services can prove to be a game changer for the automobile industry. Such services are disrupting the vehicle sales and an estimate puts the figure at 20 vehicle sales being deferred per car sharing vehicle. The Disruption that car sharing services such as Car2go are causing will take time to reach the mainstream however a general trend suggests the same will take effect within ten years.

Scholars have seen the car sharing services as vital market leap in the automobile industry, but have at the same time seen it as disruptive (Seebode, 2011). The disruptive element has been seen not only in the industrial perspective but also from the point of view of a customer. The question whether and how a disruptive service can force the customers to change the way they perceive a service and solve their specific problems and the consequent change in terms of the choices they make. Quite significantly, the transition from marketing to the early adopters of an innovative service or underlying technology has to undergo a slight jerk in the sense that most companies pursuing disruptive innovation face the challenge of adapting to the difference in marketing to the early adopters first and then to the mainstream customers.

Car2go (Ryan & Julian, 2015) was created in Europe by Daimler on Crowd Sourcing Platform, which in itself is disruptive business model. The employees came together to create the platform and introduced innovation that was threatening to dethrone the existing market linkages. The authors have looked at disruptive approach to innovation to business as a precursor to the collaborative and facilitative approach to innovation that is being adopted as per the new approach that is called the ‘Catalyst’ Approach. The disruptive innovation by companies like Car2go can be a guiding light for the automobile segment in particular and industry in general to innovate and deliver high performance at workplace in a more realistic as well as systematic manner. As a framework for successful collaborative transformation of disruptive innovation by individual firms such as Car2go, a principled approach based on innovation in people, process, action and collaboration has been suggested.

A study (The Future of Eco Innovation, 2012) on the role of business models in bringing about positive and green changes in the environment, underlines the disruptive role of
services like Car2go in the environmental regulation regime apart from the business realm. The business realm though being the driver of the disruptive innovation causing disruptions in the business players’ competitive environment, market linkages as well as customer preferences over a period of time, its positive effects on the environment have made it car sharing range of business innovations being truly all pervasive and basis of positive disruption. The various economies around the world are formulating policies to revive industrial activity, markets and job creation, with a simultaneous thrust on fighting the challenges to the global environment. The given study is based on the organized efforts of the world economies to achieve such goals by exploring the potential of such eco innovations which are seen as radical and systematic. This is a step in the direction of encouraging industry to utilize economic opportunities through development and fusion of eco innovative products, technologies and processes. The observations are based on case studies of various companies that fit the description above. Car2go is one of the companies that have been used for case study for eco innovation research in the given study.

Scholars have been drawing valuable lessons from the various product innovations that have taken place in the recent years and made attempts to systematize the body of knowledge thus generated by the disruptive innovations. One such study (Bucherer, Eisert, & Gassman, 2012) has identified Car2go among others as pursuing and achieving both product and business model innovation and thus disrupting the existing business scenarios. The study identifies Car2go as a distinctive car sharing service which is not station based. Thus Car2go is a purely service based model and requires totally different structures from a traditional automobile manufacturing or sales business. Although the owner of service is Daimler which has traditionally been in the manufacturing and sales of cars, the customer demand for Car2go has exceeded its expectations. Car2go innovation makes up for the two most challenging factors restricting the car sharing services namely specific pickup points and prior reservations. Innovation has been identified as being an outcome of both threats and opportunities.

Car2go came from an established company Daimler which chose to act on an opportunity rather than any threat and thus came up with the car sharing service. For such services the initial analysis phase prior to design and implementation is much shorter. Car2go is characterized by piloting and prototyping which is typical of firms pursuing disruptive innovation. In this case, Car2go chose the city of Ulm, wherein the pilot customers were carefully chosen as part of the study design (Bucherer, Eisert, & Gassman, 2012).
Research on Performance oriented systems yields various insights on Car2go’s performance oriented systems imposing a competitive threat to incumbent firms. The study observes that Car2go, instead of selling vehicles, offers the performance of the products that is the ‘mobility’ to end users. Free floating and one way vehicle access instead of station based access and flexibility of usage and payment options. Such performance based systems employ strategy as a tool to identify and adapt to problems in the business environment. The chief tasks of such firms as identified by the study are supply of a better module to address the environmental problems (Schiederig & Herstattt, 2014).

Car2go follows a business strategy based on Low Cost Differentiation and produces highly differentiated product for its customers and cater to a specialized set of their needs, while at the same time keeping the costs low. Car2go with locations in North America and Europe, Car2go offers two seat electric vehicles for rent by hour or on monthly subscription. As a matter of fact, the customers feel convenient as they can use a member card to access the vehicle and are free to drive it and leave it anywhere in the neighborhood. The prices are inclusive of the insurance charges, parking and maintenance costs. The customer’s credit card is automatically charged. The differentiating factor for Car2go is the extremely short term rentals as per customer demand. This shows a cost leadership strategy. This allows multiple customers to rent a car on the same day. Evidently, a low cost differentiation strategy is difficult to implement. This is so because the niche competencies limit the advantages accruing out of economies of scale. The specialized orientation also limits the opportunities for any architectural innovations (Khosla & Sawhney).

A study on ‘regulatory disruption’ has suggested that apart from incumbent firms, the regulators of the industry in which the firms are operating are also challenged by disruptive innovations (Cortez, 2014). It has been seen that many of the new technology or process that is proving to be disruptive to an industry might fall within the jurisdiction of a particular regulating agency but maybe incompatible to the regulatory framework of the agency. Scholars advise regulators to be cautious instead of the firms in such cases. It has been suggested that restricting disruptive firms, their technologies or processes through regulation is not effective and is often counterproductive as it does not augur well for the growth of the economy. In such cases, it is advisable to form advisory and warning regimes which are flexible rather than restrictive and punitive regimes to manage the disruptive changes that take place as part of disruptive innovation. As per the study, the regulatory agencies must be wary of premature or erroneous regulation. However, in order to overcome such tendencies for regulation, the agencies must experiment with rules that are time based and certain other variations of the regulations for traditional or mainstream businesses.
Methodology

The paper uses qualitative research and conceptual methodology to present a robust decision making framework for answering the research question (Can the services provided by Car2go be seen as disruptive Innovation?). In order to create the decision making framework, it relies on the review of literature, case description, and the research question, as well as the market analysis tools (PEST, SWOT and Porter’s five forces) and disruptive innovation theory and model. Secondary research can be useful as a tool to ‘lend new strength to the existing body of knowledge in social research’ (Sutehall & Sque, 2010). A secondary, exploratory analysis carried out by an independent researcher can add a new perspective and dimension to the interpretation and applicability of a theory or model in unlikely situations or to validate it in likely situations. The approach can also be useful in assessing the predictive value of a theory by applying it to the situations where it is most likely to succeed, but with a very critical conceptual review of the situation as a case study.

Qualitative and conceptual research is also important for carrying out further advanced research in empirical and quantitative terms. In order to establish valid underlying context of research, such a conceptual research with qualitative frameworks is indispensable (Conceptual Framework, not dated).

The present study thus creates certain conceptual tools (presented in details below) to explore the existing and reviewed body of relevant knowledge based on the research question and compares the findings through those conceptual tools with a predefined structure and function in the form of a questionnaire designed for the purpose. The questionnaire being based on the research question and the disruptive innovation model is theoretically robust, however the validity and reliability of the questionnaire or other conceptual tools from a statistical viewpoints is beyond the scope of this study.

The overall methodology followed is conceptual and logically adapts from a simple search process of looking through a lens. In analogous terms, just like a lens as a tool lets us look at objects with more clarity, precision and focus, similarly, a conceptual lens can help us look at a business situation or entity with respect to a theory with more clarity and focus. Thus, in a logical sense, we are as a result of looking through this conceptual lens better off in deciding about a certain phenomenon, which looks likely, but is yet to be ascertained with more focus and precision. Furthermore by the same analogy, for a lens to function, we need a torchlight to illuminate the object for the light to pass through a lens and reach our eyes,
similarly, we need a conceptual torch to illuminate the business entity /situation/theory in proper perspective, so that the knowledge inputs thus produced from the illumination reach our perceptual and sensory realm and let us see the problem and the situation more clearly and helps us decide and answer the research question with more certainty.

The research follows a conceptual process as illustrated – 1) Creation of a Conceptual Torch, 2) Creation of Conceptual Lens, 3) Creation of a Comparative tool in the form of questionnaire 4) Looking through the Lens (Analysis) 4) Comparing the sightings (findings) with Assumptions based on comparative tool 5) Discussing the comparative findings and finally, 6) Concluding by answering the research question based on the discussion. (Yu & Hang, 2009).

The Research Tools and Their Creation

Below is illustrated the creation of conceptual tools. The final tools, the conceptual lens, torch and comparative tool (questionnaire) are presented in the following section as well. Also, the research methodology and the process have been graphically depicted in the following flowchart (figure 2).

![Flowchart](source: author’s creation)

**Figure 2**: Research Methodology and The Process (source: author’s creation)

Component Elements of Conceptual Tools and the Object of Study

**Object of probing**: Car2go business with respect to disruptive innovation theory
Probing tools

*Conceptual torch:* Problem formulation, case description,

*Conceptual lens:* Review of literature, market analysis tools, disruptive innovation theory.

Comparative and evaluative tool

*Questionnaire and Assumption structure.* Research Question, Disruptive innovation model and decision variables to overcome limitations of predictive value of disruptive innovation model.

**Broad Methodology of Creation of the Tools**

The process of creation of evaluation and comparative tools involves a cognitive, evaluative and inductive processing of the component elements of the tools described above. The logical and conceptual basis of the above process is that the probing tools are used to generate intelligence relevant enough to be used for processing by the comparative and evaluative tool to arrive at the decision required to answer the research question.

**Conceptual Torch Creation**

**Objective of the research activity.** Create a conceptual torch to light up Car2go as a business entity based on disruptive innovation, bringing the disruptive innovation features of Car2go into light.

**Process and result of the research activity.** The conceptual torch is based on the problem formulation and case description and the broad methodology applied to respective components. Thus, it yields the following salient points about disruptive innovation features of Car2go and surrounding themes.

**Based On Problem Formulation**

*Need for examination on disruptive innovation scale.* The preliminary literature review and the case details, prompt us to examine as to how Car2go seems like a disruptive innovation, thus there is a need for its examination on disruptive innovation scale.

*The problem presented by the review of the need.* The need presents us a problem wherein Car2go has to be evaluated from a theoretical perspective to set a perfect example to guide the businesses towards successful disruptive innovation. Consequently, the problem
presented though is multidimensional, it has to be deconstructed in order to be simplified and solved.

*The innovative extent of Car2go.* Car2go has been in a state of constant innovative change since its birth. In fact, its birth itself was based on utilizing unique business opportunity occurred at the time, enabled by technological and business advances.

*The innovative character of Car2go.* The overarching innovative features of Car2go are systematic innovation, disruptive user interface and constant experimentation with the car technology and business processes. These are the apparent causal factors of Car2go’s disruptive innovation.

*The Disruptive aspects of Car2go’s innovation.* The reduction of private car ownership and the fact that more and more car makers tend to tie up with car sharing agencies are apparent effects of Car2go’s disruptive innovation.

*Further need to examine disruptiveness of Car2go’s innovation.* Disruptive innovation as a theory is itself limited in its predictive value. The theory has to take into account the value for both disrupting as well as incumbent firms as a relative effect. The additional conditions for assessment of Car2go to provide disruptive learning value have to be determined. Also, the technologies used by Car2go have to be determined to be disruptive in nature based on review and analysis.

**Based On Case Description**

*Growth based on innovation.* In 2011 itself, Car2go announced expansion to 50 cities in Europe and a few locations in North America. By the end of 2014, Car2go fleets of 250 - 1200 vehicles in 26 cities across North America and Europe were being offered. In 2011, Car2go launched a fleet of all electric cars in San - Diego California USA. This was preceded by launches in various North American and European cities.

*Continued growth based on emerging technologies.* Car2go later launched a social media based pilot project. Car2go right from its birth has been experimenting and systematically evolving over a period of time and has seen unprecedented growth. It has expanded internationally in very short span of time and has affected the auto industry and set benchmarks for others to follow.

*Car2go disrupting its business environment.* Car2go is forcing the businesses, regulators as well as customers to change their preferences and choices regarding car sharing. The way
the businesses are adopting and adapting to Car2go’s initiatives in terms of technology and operations, shows the disruptive power of Car2go’s business model. One of the most intriguing aspects of Car2go’s innovation has been the development of capability to provide free floating car sharing systems. The same are being replicated internationally.

**Car2go disrupting the regulatory environment.** The disruptions caused by Car2go have extended well into the regulatory realm. The regulators have to restructure their taxation structure for example to adapt to these changes in cost structure.

**Car2go disrupting user decisions.** Car2go has helped reduce the car ownerships. Also, Car2go has led the way in car sharing services restructuring the costs of car based mobility. This has helped further reduce the car ownerships and usage of owned cars.

**Conceptual Lens Creation**

**Objective of the research activity.** Create a conceptual lens to look through Car2go as a business entity based on disruptive innovation

**Process and result of the research activity.** The conceptual lens is based on the review of literature, market analysis tools and disruptive innovation theory and the broad methodology applied to respective components and yields the following salient points that provide the capability to examine the disruptive innovation features of Car2go and surrounding themes. Additionally, the three components of the conceptual lens can be seen as three layers of the lens and are analyzed and synthesized in a subsequently ordered manner in the analysis section;

**Layer 1: Based on Literature Review**

**Service innovations.** Service innovation takes place in different forms using different factors such as IT, hardware, knowledge and investment in staff training, marketing and research and development (R&D). The advantage accruing out of service innovations coupled with right timing and unique business models to capture the unique value of the innovation early on can help safeguard the advantage itself. The four defining dimensions of service innovation are service concept, the client interface, the service delivery system or organization and the technological options available. Service innovation is usually the result of proliferation of specialized service functions. Also, the organizational or non technological innovations in services are of prime importance.
Sharing economy and Car2go. The appeal of the sharing economy is forcing the people to give away car ownership in spite of falling gasoline prices. Car2go has been acknowledged as the largest provider of point to point free floating car sharing services around the world. Car2go represents an arrangement, wherein a car maker, in order to not only utilize the sharing economy advantage, but also to proactively avoid any car maker- service provider conflicts ties up with car rental and sharing services. The disruption Car2go is causing will take effect within ten years. Car2go was on Crowd Sourcing Platform, which in itself is disruptive business model. Car2go is characterized by piloting and prototyping which is typical of firms pursuing disruptive innovation. It follows a business strategy based on Low Cost Differentiation and produces highly differentiated product for its customers and cater to a specialized set of their needs, while at the same time keeping the costs low. The differentiating factor for Car2go is the extremely short term rentals as per customer demand. This shows a cost leadership strategy.

Layer 2: Based on Disruptive Innovation Theory

The disruptive innovation process. The process, which produces technologies that provide value that is different from the mainstream technologies of the time and are initially inferior in terms of mainstream customer value are called disruptive innovation.

The graphical representation. Disruptive innovation has been graphically represented and defined in terms of the trajectories of changing performance of the firm and/or the industry with time along with the level of performance demanded by the customers.

Key elements. The four key elements of the theory to further evaluate how well the theory describes what happens in business practice. The four elements are 1) sustaining innovation, 2) overshoot of customer needs, 3) emergence of a disruptive innovation to which incumbents have a capability to respond and 4) incumbent firms floundering as a result of disruption.

The importance of disruptive innovation theory. The importance of disruptive technology lays not displacement of established products but enlarging and improving the scope of markets and adding to their functionalities.

Importance of disruptive business models. Companies can commercialize new ideas and technologies through their business models. Further they emphasize that same idea or technology taken through two different business models will yield two different business outcomes. The business model innovation is of vital importance along with disruptive technological innovation.
Layer 3: Based on Market Analysis Tools

The outcome of the lens creation process based on market analysis tools does not require an intermediate stage of analysis and the market analysis tools provide a direct insight into Car2go’s disruptive innovation. Thus the findings of market analysis are directly presented in the analysis section itself. The market analysis as discussed in the analysis section includes the SWOT, PEST and Porter’s five forces analysis as part of overall analysis.

Questionnaire and assumption structure creation

**Objective of the research activity.** Create an evaluative and comparative tool in the form of a questionnaire to compare the findings of the probing tools to ascertain Car2go’s fit as a business entity based on disruptive innovation.

**Process and result of the research activity.** The conceptual lens is based on Research Question, Disruptive Innovation model, decision variables to overcome limitations of predictive value of Disruptive Innovation model and the broad methodology applied to respective components yields the following salient points that provide the capability to examine the disruptive innovation features of Car2go and surrounding themes. The result of this activity is presented and used in the analysis section directly as input of analysis for comparison with the findings of probing tools, as it does not require an intermediate stage of processing. The questionnaire presented below forms the basis of research assumptions and serve as the evaluative tool against which the findings of the probing tools have been compared and evaluated for discussion and conclusion.

**Questionnaire for the Study**

1. Do incumbent firms with respect to Car2go follow the principle of sustaining innovation as per disruptive innovation theory?
2. Has an overshoot of customer needs occurred in the mainstream businesses and technologies employed by them in the automobile industry supposedly being disrupted by Car2go?
3. Is emergence of a disruptive innovation due to Car2go’s business effort evident?
4. Are the incumbent firms capable of responding to the emerging disruption?
5. Are the incumbent firms failing to utilize the capability to respond to the disruption to a noticeable extent?
6. Does the theory provide enough insight into the predictive outcome of disruptive versus sustaining innovation
7. Does the disruptive innovation of Car2go follow the constructive pattern of correction and reconciliation for the disrupted businesses and regulators, as well as customers in the long run?

8. Does the business environment of Car2go suggest it to be a market attractive enough to follow the assumptions of disruptive innovation?

9. Does the business environment of Car2go present an opportunity for it and incumbents to work collaboratively with other companies to extract a positive outcome of following the disruptive innovation theory?

10. Does the business environment of Car2go enable managers across the automobile and related industries present enough opportunity for the managers to leverage their capabilities in case they follow the disruptive innovation theory?

It is to be noted here that this is not a survey research and the questionnaire though being a research tool here is not a survey tool, where data is collected from subjects and analyzed. The questionnaire here is a tool that poses research questions by elaborating chief research question and is an intermediate stage of arriving at research assumptions structure which can be likened to a hypothetical structure requiring validation.

Analysis

As illustrated in the methodology section, the final outcomes of the research tool creation process as well as the cognitive, evaluative and inductive processing, the results of the processing as also the final evaluative tool in the form of a research assumptions structure are presented in this section and the comparison and evaluation of the results with respect to the evaluative tool is included and discussed in the discussion section.

Final Points of the Conceptual Torch Based On Broad Methodology

- There is a need for examination of Car2go on disruptive innovation scale in a qualitative sense.
- Car2go has to be evaluated from a theoretical perspective to serve as perfect example of disruptive innovation.
- The innovative extent of Car2go’s business is noticeable and subject for further enquiry and has both technological as well as organizational aspects to it.
- The innovative character of Car2go is apparent in its systematic innovation technology and business processes and constant experimentation with itself.
The Disruptive aspects of Car2go’s innovation that call for prime examination are reduction of private car ownership and more car maker and car rental agency tie ups.

There is a further need to examine disruptiveness of Car2go’s innovation to extract maximum predictive value out of the same especially in context of its technologies.

Car2go has grown and evolved based on innovation since its birth and the growth is increasingly global in nature.

Car2go continues to grow riding on its emerging technologies, for some of which it has a patent.

Car2go is disrupting its business environment, as well customer choices through pioneering capabilities like free floating car sharing.

Car2go is disrupting the regulatory environment as well.

Car2go disrupting user decisions about car ownership and usage.

Final Structure of the Conceptual Lens Layer 1 (Based on Review of Literature)

- Service Innovations are inclusive of a variety of factors and areas such as IT, hardware, knowledge and investment.
- Right timing and early innovation can help sustain competitive advantage accruing out of innovation.
- Service concept, client interface and service delivery and technology define service innovation.
- Car2go has been a pioneer in many respects in the sharing economy and is seen as a leader in systematic innovations and new technologies.
- Car2go differentiates itself on various business parameters to gain and sustain new competitive edges such as cost leadership.

Final Structure of the Conceptual Lens Layer 2 (Based On Disruptive Innovation Theory)

- The disruptive innovation process produces technologies that provide a different value from the mainstream technologies.
• The disruptive technologies are initially trivial with respect to the mainstream
technologies and the incumbent firms are not able to adapt to them due to organizational barriers.
• The Graphical representation of disruptive innovation theory defines the trajectory of performance change of firms in a disruptive environment coupled with customer expectation of performances.
• Key Elements of the disruptive innovation theory are sustaining innovation, overshoot of customer needs, disruptive innovation and floundering of incumbents.
• The importance of disruptive innovation theory lies in enlarging scope of markets.
• Disruptive Business Models can help companies commercialize new ideas and technologies to their advantage.

Market Analysis - Conceptual lens Layer 3 (Probing Tool for the study)

SWOT

The problems and business situations surrounding Car2go have been defined here in a strategic manner. The analysis helps to identify the business ecosystem of Car2go and provide insight into the disruptive effects of Car2go’s business innovations. This helps to define the strategic positioning and environment of Car2go. The following analysis also helps us identify the competitive position of Car2go, its future opportunities and also the current and future threats to its business. The business objective of this SWOT analysis is to serve as a tool for contributing to the evaluation of Car2go’s fit for the disruptive innovator as per the disruptive innovation theory.

Strengths

• Car2go has gained a first mover advantage in the car sharing sector in both technological as well as business practices aspects and has built a strong brand name synonymous with innovation (Maher, Kletzel, & Ribitzky, 2012).
• Car2go continues to cling to its entrepreneurial spirit and the internal environment of Car2go is still that of start-up, even though it has now matured as a business (Maher, Kletzel, & Ribitzky, 2012).
• Adapting quickly to customer needs is an important aspect of Car2go’s functionality.
• Car2go has a patented technology in the car access or car opening. This gives an edge to Car2go in the competitive environment. Car2go continues its R & D efforts to develop
more and more technologies based on customer needs particularly in managing fleet operations more effectively (Maher, Kletzel, & Ribitzky, 2012).

- Car2go has large fleet sizes which it is trying to manage through cutting edge and new technologies.
- Car2go offers unique and convenient services in the form of free floating car sharing and access (Shao, Lou, Chen, & Wang, 2013).
- The quality of Car2go’s vehicles is technologically high though it does not include many large or luxury vehicles.
- Car2go has acquired a position of an industry leader in using social media for marketing its services.
- Car2go relies on relationship marketing to market its services thus providing a valid feedback mechanism to enable development of innovative practices.
- Car2go, uses highly competitive and flexible pricing and this helps it to achieve cost leadership.
- Car2go follows a systematic and structured financial planning to its advantage.
- The firm consciously follows the path of social responsibilities and develops technologies that are environment friendly, which gives it a green image and adds to its competitive advantage.

(Shao, Lou, Chen, & Wang, 2013)

**Weaknesses**

- Car2go’s large fleet size is a weakness or disadvantage in many situations particularly the B2B situations as it does not include a variety of higher end vehicles and luxury cars and thus becomes unattractive to the business executives (Maher, Kletzel, & Ribitzky, 2012).
- Car2go though holds on to its startup spirit and being innovative in every aspect of its operations, it is yet to have a culture of sustainability to balance the same in the long run (Maher, Kletzel, & Ribitzky, 2012).
- Car2go has a limited orientation towards face to face interactions and marketing with the users and this gives it an image lacking the human touch (Shao, Lou, Chen, & Wang, 2013).
- Car2go has a low owned stake in the business it is managing and this lowers its leveraging power in corporate decision making.
- In its efforts to be and appear eco friendly, Car2go is investing more in eco friendly technologies which is contributing to increasing operational expenditures and decreasing net profits (Shao, Lou, Chen, & Wang, 2013).
Opportunities

- In demographic terms, there is an increasingly large population with driving licenses around the world, which is a source of opportunity for Car2go as it is bracing for global growth (Shao, Lou, Chen, & Wang, 2013).
- There is an increasing level of environmental awareness among people around the world, which augurs well for Car2go as it gels with its green and innovative image.
- The availability and continued use of both gasoline powered as well as electrically powered vehicles in practice provides an opportunity for Car2go to reach a wider market.
- In a competitive sense, the lead Car2go has taken in terms of flexibility in pricing with respect to time and easy parking options which are preferred by customers is also a source of opportunity.
- The regulatory environment for car sharing is protective for start-ups and equalizes the competitive sphere for the different players in the car sharing space (Shao, Lou, Chen, & Wang, 2013).

Threats

- The market being catered to by Car2go has diverse income levels and this inhibits the development of structured and optimum price planning into its overall offering (Shao, Lou, Chen, & Wang, 2013).
- The differing values of the diverse market being catered to can also prevents Car2go from achieving economies of scale as it goes for higher growth. There are a large section of people who prefer privacy to convenience and this can be a threat to Car2go’s growth plans.
- An ongoing global recession and any future recessionary conditions pose a threat to Car2go.
- Car2go having lower owner stake can face limitations in the form of lack of funds for expensive green technologies.
- The difficulty in controlling chances of road accidents is a potential threat to the business (Shao, Lou, Chen, & Wang, 2013).

PEST

In order to support and give further strategic basis for analysis of the external business environment as done in the SWOT analysis above, a PEST analysis of Car2go is carried out.
Car2go is being examined for fit to the disruptive innovation model, thus a clearer picture of how its external business environment and how Car2go interacts with it are of vital importance.

**Political Factors (P)**

- Car2go has and is building big fleet of electric cars and also developing and using other green technologies. Using and developing green technologies is not only an environmental issue but also affects national and international politics and plays an important role in geopolitics (Debye, 2014).
- The Kyoto protocol and the recent summit in Paris to reduce the effects of industry and technology are examples of the same. This implies certain rules and regulations that are made after political negotiations. There is a political pressure and lobbying that goes on between nations which affects the regulatory framework and in turn the business environment of Car2go.
- The politics concerning investment in developing infrastructure of expensive green technologies is affecting Car2go’s plans to expand into many new markets like Asia and Africa (Debye, 2014).
- Apart from the infrastructure spending, the R & D efforts by the government and the political bottlenecks surrounding it can also affect Car2go’s plans to sustain its competitive edge in green technologies. For example, Car2go can hope to expand its fleet of electric cars if the governments in the host countries are also willing to research the effective infrastructure required to facilitate the same.
- The free floating car access service of Car2go is threatened by the stringent parking rules in certain locations worldwide. For example, Car2go’s growing fleet has incurred thousands of parking tickets in New York, which threatens to snowball into a local political issue (Tangel, 2015).

**Economic Factors (E)**

- The economic environment of Car2go is characterized by the costly infrastructure required to maintain the electric cars. Also, it is important to consider the energy consumption and the resulting cost as a major economic input.
- The parking fee is another economic factor that affects Car2go’s business. Usually parking spaces being limited, the costs might go up if a competitor tries to enter the market.
The car sharing industry usually requires an economic environment wherein the country has a high GDP growth and also the existence of a car rental industry can help reduce costs and make business feasible for car sharing services like Car2go.

Car2go has to be alert and prepared for managing effects local and/or global economic recession.

**Social Factors (S)**

- The mobility and habits and trends of the population play a decisive role in the success of Car2go’s business. More and more people are already moving towards a sharing economy usage and are comfortable with the same. However, at the same time, there are still many others who still prefer privacy over convenience and cost. Thus this becomes an important decisive social factor for Car2go (Shao, Lou, Chen, & Wang, 2013).
- The awareness towards eco friendly technologies and environmental concerns are increasingly shaping the way people perceive a business. Car2go stands to gain with a further increase in awareness for such environmental issues. The environmental concerns which have increasingly become a subject of a social discourse are affecting the business environment of Car2go.
- Increasing use of social media is forcing businesses to study the social media behavior and its implications for marketing a business. Car2go has taken well to this challenge and has taken an early lead in understanding social media behavior and utilizing it for promoting the business.
- The social responsibility which Car2go is fulfilling is enhancing its image among the young population and is helping spread positive word of mouth about the service (Shao, Lou, Chen, & Wang, 2013).

**Technological Factors (T)**

- The technologies supporting electric cars are currently not very well engineered and Car2go would do well to look for either developing or adopting newer and better engineered technologies that can play an important role in the enhancing the electric car fleet of Car2go (Debye, 2014).
- The increasing fleet sizes are making car sharing services providers to utilize the smartphone technology to develop and implement apps that facilitate a smooth user interface and provide better and more convenient services.
- In the car sharing services, driverless cars are increasingly being used which are rented and driven by multiple users in a day. They are experimenting with new ways of users’
access to cars, which also ensures automation of transactional record keeping. Car2go has as pioneer has patented card based car access system, which has added to its competitive advantage.

**Porter’s Five Forces Analysis**

The Porter’s five forces analysis has been conducted to gain an insight into the forces the competitors of Car2go exert on its business environment.

**Horizontal Competition**

**Competitive rivalry.** As of now Car2go is facing little direct competition as it operates in the markets as a first mover and an innovator. However, there are certain competitors in localized markets in various geographical locations (Shaheen & Cohen, 2012). For example Zipcar in the North American market is a formidable competitor. Other competitors include Modo, Quicar, Greenwheels etc. Therefore, as of now no fierce competitive rivalries can be seen in the competitive space of Car2go.

**Threat of new entrants.** As per a scan of the competitive environment of Car2go, it is found that there is a definite threat of new entrants that are vying to enter the markets already being served by Car2go as a first mover. Various car sharing companies are going global and threatening a possible fierce competition to Car2go as the car sharing technologies are becoming more and more mainstream and the car manufacturers such as Peugeot, Volkswagen, Mercedes and BMW are entering the market with already established manufacturing business and huge resources at their disposal. Also, the traditional car rental companies such as Uber and Hertz are also entering the car sharing market as they have been the worst affected by car sharing services and are now beginning to do a course correction (Shaheen & Cohen, 2012).

**Threat of substitutes.** Any increasing interest in alternative form of transportation to that of Car2go will be seen as threat to that of Car2go. As of now the threat is only nascent as Car2go is at the forefront of the technologies in the car sharing space and all the traditional forms of car usage or other transportation are currently nowhere near in terms of the relative convenience, privacy and ease of use as well as eco friendliness. However, as technology advances, super fast public transportation such as bullet trains might be possible substitute to Car2go in the distant future though (Problems Down the Line, 2015).
**Bargaining power of suppliers.** The Bargaining Power of the suppliers in the car sharing industry is particularly low as the major suppliers traditionally are the car manufacturing companies or the car rental companies who are joining the car sharing services as means to salvage their own business from this new form of emerging car usage, which threatens their car sales or reduces their rentals. Car2go has very minimal competition as it has been started by Daimler which is itself a car maker and also in other areas where Car2go has a tie-up with firms such as Eurocar, it has an edge.

**Bargaining power of customers.** The Bargaining Power of the Customers in the business environment of Car2go is high as the business model of Car2go is very customer centric and they are very sensitive to any qualitative or quantitative fluctuations in customer or user demand.

**Research Assumptions based on the Research Questionnaire as Evaluative tool**

The findings or sighting based on the two probing tools are evaluated with respect to the assumptions which are denoted as A1 through A10 in the evaluative tool. The informed assumption structure is denoted. The assumption structure is then used to compare the findings of the analysis (through the use of conceptual probing tools-lens and torch) in the discussion section and conclusion finally arrived at.

**A1.** The incumbent firms with respect to Car2go follow the principle of sustaining innovation as per disruptive innovation theory.

**A2.** An overshoot of customer needs has occurred in the mainstream businesses and technologies employed by them in the automobile industry supposedly being disrupted by Car2go.

**A3.** The emergence of a disruptive innovation due to Car2go’s business effort is evident.

**A4.** The incumbent firms are capable of responding to the emerging disruption by Car2go.

**A5.** The incumbent firms are seen failing to utilize the capability to respond to the disruption to a noticeable extent.

**A6.** The theory of disruptive innovation provides enough insight into the predictive outcome of disruptive versus sustaining innovation in case of Car2go.
A7. The disruptive innovation of Car2go follows the constructive pattern of correction and reconciliation for the disrupted businesses and regulators, as well as customers in the long run.

A8. The business environment of Car2go suggests it to be a market attractive enough to follow the assumptions of disruptive innovation.

A9. The business environment of Car2go presents an opportunity for it and incumbents to work collaboratively with other companies to extract a positive outcome of following the disruptive innovation theory.

A10. The business environment of Car2go enables managers across the automobile and related industries presents enough opportunity for the managers to leverage their capabilities in case they follow the disruptive innovation theory.

Discussion

As per the methodology, the detailed analysis of the market conditions, as well with conceptual and cognitive aid from the conceptual probing and comparison tools, we are now equipped to compare and evaluate Car2go as a fit case of disruptive innovation within the purview of disruptive innovation theory and model. As explained in the methodology we go ahead and compare the insights and findings from the analysis with the Assumptions below to arrive at an answer to the research question.

The Comparative Evaluation

A1. The incumbent firms with respect to Car2go follow the principle of sustaining innovation as per disruptive innovation theory.

Evaluation A1. As per evaluation, the incumbent firms such as Hertz and Uber in the car rental space and BMW and Mercedes in the manufacturing space did follow sustaining innovation to strengthen their traditional businesses. Thus A1 is valid.

A2. An overshoot of customer needs has occurred in the mainstream businesses and technologies employed by them in the automobile industry supposedly being disrupted by Car2go.
Evaluation A2. As per evaluation, the customers in the mainstream markets were being over served and this reflected in the rising ownership per capita as well as the thriving rental businesses in the last decade. Thus A2 is valid.

A3. The emergence of a disruptive innovation due to Car2go’s business effort is evident.

Evaluation A3. As per evaluation of analysis, Car2go’s business effort has yielded technologies such as smart car access and smart phone technology for user interface which is fuelling growth of Car2go and disrupting car sales and rentals. Thus A3 is valid.

A4. The incumbent firms are capable of responding to the emerging disruption by Car2go.

Evaluation A4. As per evaluation, the incumbent firms such as Hertz and BMW were capable of responding to emerging disruptions by Car2go, but were late in responding due to organizational barriers. Thus A4 is valid.

A5. The incumbent firms are seen failing to utilize the capability to respond to the disruption to a noticeable extent.

Evaluation A5. As per evaluation, though the incumbent firms were initially seen as failing to utilize the capability to respond to disruption, they responded initially in a sustaining way and later by following the disruptive technologies and business models. Thus A5 is partially valid.

A6. The theory of disruptive innovation provides enough insight into the predictive outcome of disruptive versus sustaining innovation in case of Car2go.

Evaluation A6. As per evaluation, Car2go seen from the perspective of theory of disruptive innovation, does provide insight in the form of predictive outcome of Car2go’s and incumbents business over a period of time as evident from the market analysis for example incumbents such as Hertz and Mercedes following sustaining innovation initially and disruptive innovation led by Car2go later. Thus A6 is valid.

A7. The disruptive innovation of Car2go follows the constructive pattern of correction and reconciliation for the disrupted businesses and regulators, as well as customers in the long run.
Evaluation A7. As per evaluation, the Car2go’s disruptive innovation affects the customer as well as regulators in mobility choices and parking and other regulations and set a standard for other firms. Thus A7 is valid.

A8. The business environment of Car2go suggests it to be a market attractive enough to follow the assumptions of disruptive innovation.

Evaluation A8. As per evaluation, based on porter’s five forces model, it is apparent that Car2go’s business environment is attractive enough to follow the predictive assumptions of disruptive innovation model. Thus A8 is valid.

A9. The business environment of Car2go presents an opportunity for it and incumbents to work collaboratively with other companies to extract a positive outcome of following the disruptive innovation theory.

Evaluation A9. As per evaluation, Car2go by Daimler as well as other car makers such as General Motors with relay rides and Volkswagen with street car in UK are a few examples of incumbent firms utilizing the opportunity provided by the business environment of Car2go to work collaboratively with other companies. Thus A9 is valid.

A10. The business environment of Car2go enables managers across the automobile and related industries present enough opportunity for the managers to leverage their capabilities in case they follow the disruptive innovation theory.

Evaluation A10. As per evaluation, the business environment of Car2go enables managers across incumbent firms to leverage their capabilities such as car makers leveraging their car assets and established market linkages with car rental agencies to start car sharing services. Thus A10 is valid.

Conclusion and Future Perspectives

As per above Discussion, we are equipped to answer the Research Question. We have seen that Assumptions A1 through A10 are valid except A5 which is seen as partially valid. Thus we can assert that services provided by Car2go can be seen as disruptive innovation with great deal of confidence.
The market analysis has suggested future perspectives for Car2go as well as car sharing business in general. The future for Car2go is going to be very fiercely competitive with new entrants ready to enter almost all the major international markets where Car2go has so far taken a lead as a first mover and disruptive innovator. The technological as well as cost leadership notwithstanding, Car2go will face stiff competition from car manufacturers increasingly tying up with car rental companies, the car sharing technologies equipped in the factory will increasingly become the norm.

The competition though augurs well for the users and the natural environment though as the competition will foster green technologies and the governments too will take greater notice and invest in green technologies and bring costs down for presently expensive green technologies.
References


