



Università
Ca' Foscari
Venezia

Master's Degree programme – Second Cycle
(*D.M. 270/2004*)

in Economia e gestione delle aziende
International Management

Final Thesis

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Ca' Foscari
Dorsoduro 3246
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How Tesla integrates Shared
Value principles with Ecosystem
Innovation to build sustainable
competitive advantage.

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ABSTRACT

Sustainability and innovation are two increasingly intertwined issues, with the former relentlessly impacting on the latter. Many companies are already treating sustainability as a goal to be pursued, as a basic value guiding long-term growth strategies.

The thesis moves from the traditional dichotomy of sustainability versus innovation, shedding a light on how Tesla is able to integrate both shared value initiatives and ecosystem innovation for sustaining its long-term growth.

A first overview of Corporate Social Responsibility and Corporate Shared Value is provided, followed by a discussion on the role the automotive industry is playing in the development of sustainable strategies. A deeper understanding about Tesla is then developed under the lens of the SWOT, Value Chain and Resource Based analysis. The last part assesses the way Tesla is building competitive advantage through a sustainable strategy and a business ecosystem innovation.

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PART 1. CORPORATE SUSTAINABILITY

INTRODUCTION

All the world know that our population is both growing and aging and we have seven billion people today becoming 10 billion by the end of the century; we consume natural resources faster than they can be replaced; the emissions that are mainly responsible for climate change are keep increasing.

Certainly, these are not simple issues. They cannot be solved in one day. They are complicated and perceived so far away that our temptation could be to bury our head under the pillow.

However, we have to find solutions. It is a duty that we have in respect to our planet and future generations.

Considering that I am coming from a management course of study, in particular, I am worry about companies. Are they embracing sustainability issues in their businesses? Therefore, are corporations looking for long-term goals?

A study published by Elsevier and SciDev.Net shows that sustainability research is growing nearly twice as fast as research overall. McKnett, in his famous talk “The investment logic for sustainability”, stated: “about 80 percent of global CEOs see sustainability as the root of the growth in innovation and of the competitive advantage in their industries. Managers understood that they could not ignore these topics, because doing so can jeopardize future long-term returns” (McKnett, 2013). Recognizing the importance and the relevance of sustainability issues, and even implementing them, does not mean that CEOs truly believe in the power of such initiatives and their outcomes; they in fact can simply recognize them as new constraints and requirements to be met to stay on the market.

The question lies at multiple levels: do companies integrate sustainability in their strategy? How and at which level?

In the next chapters, I will make an analysis in order to try to answer to this question, starting from the well-known Corporate Social Responsibility, introducing the concept of Creating Shared Value.

1.1 – THE RISE OF CORPORATE SOCIAL RESPONSIBILITY

The concept of social responsibility originates from a series of changes in society that have taken place after the Second World War. The 1960 and 70s were led by social and feminist movements

of freedom, love and non-monetary value with a consequent aversion of corporation's pursuit for profit. In this way, corporations were commonly seen to be growing at the expense of the broader community. The end of the 70s were characterized of a growing mass unemployment, due to the famous energy crisis of 1973. Simultaneously, a significant number of financial and environmental crises happened on a global level caused by multinational corporations. Some examples are the Bhopal Gas Tragedy in 1984, Exxon Oil Crisis in 1989, accusations of Nike's use of sweatshops in the 90s, Shell's Brent Spar oil rig in the North Sea in 1996, and the Enron and Parmalat bankruptcies in 2001 and 2003 respectively (Matten & Moon, 2008).

As a result, the last decades of the millennium observed the increase of social activism and urban riots such as the famous Seattle demonstration at the WTO Ministerial Conference in 1999. This happened because some people believed that MNCs would exploit WTO to promote the interests of the global corporations at the expense of the broader community and developing countries. Thanks to these events, non-governmental organizations and activist groups which contest for the societal costs of negative externalities that spilled over from corporative activities (Karnani, 2011), started to use highly publicized campaigns with the purpose of forcing companies to take social responsibility and "change their business practices voluntarily" (Kapstein, 2001). Naturally, these socio-environmental concerns also manifested themselves in the political arena through global conferences such as the Earth Summit in Rio de Janeiro in 1992, the Kyoto protocol on Global Warming in 1997, and the World Summit on Sustainable Development in Johannesburg in 2002 (Bhattacharyya, 2008).

However, both the USA and the EU hold a strong belief in the free-market economics, which in Europe manifest edit self through continued deregulation and privatizations. The developed countries therefore placed a strong emphasis on the responsibilities of corporations yet displayed reluctance about governmental regulation (Doane, 2005). This is showed in the voluntary United Nations Global Compact launched in 2000 "that relies on public accountability, transparency and disclosure to complement regulation" (Knudsen, 2011). Thus from the very onset, CSR has been a voluntary requirement that stems from the amplified expectations of peoples and governments embedded with a dichotomy between profits and "doing good". The solution of governmental regulation is still widely advocated today despite the consequent restrictions to the free market systems.

Another highly contributing factor to the advent of CSR is the process of globalization and the consequential increased power of MNCs due to their geographical expansion into areas characterized by severe social problems. The presence of influential, resourceful corporations in poor, developing countries also spurred transnational social movements to call upon MNCs to make political and social decisions including societal and infrastructural improvements of the

areas in which they operated (Brown, Roemer-Mahler & Vetterlein, 2009). Additionally, globalization has spurred innovative technology, the rapid and extensive fragmentation of production systems, and a reduction of transportation costs; all of which have facilitated the implementation of CSR across value chains (Knudsen, 2011). CSR, thus, started out as a purely ethic endeavor and was often labelled accordingly. Porter for instance used the term “philanthropy” in his earlier articles on CSV (Porter, 1999; 2002).

Today, CSR has “won the battle of ideas” (Economist, 2005). The subject of externalities is on the global political agenda, and the generally accepted implicit “social contract” between business and society requires corporations to be responsive to the long-term needs and wants of people and planet (Lantos, 2001). Numerous organizations, such as the Dow Jones Sustainability Index, now rank companies on the performance of their CSR activities. In an effort to live up to these new expectations (and receive good rankings, certainly), companies are increasingly demonstrating their commitment to CSR through disclosures of verifiable data and information (Perrini et al., 2012). Today, however, many businesses are being criticized for engaging in widespread, unrelated CSR activities claimed to be initiated only for the sake of window dressing (Bhattacharyya et al., 2008; Porter & Kramer, 2006).

1.2 – THE DEFINITION OF CORPORATE SOCIAL RESPONSIBILITY

What exactly is CSR is not easy to define as describe its birth and development. The term is both discretionary and complex and it has many different rules of application (Matten and Moon, 2008).

I will employ the definition used by the European Commission, which defined CSR as “a concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment” by integrating “social and environmental concerns in their business operations and in their interaction with their stakeholders” (the European Commission, quoted in Weber, 2008).

In short, CSR can be seen as “an investment into human capital, the environment, and stakeholder relationships” (Weber, 2008). It implicitly refers to the notion of the triple bottom line: people, planet, and profits, indicating the amplified expectations of society towards the responsibilities of business.

A very dominant way to view CSR has been formulated by Archie B. Carroll in 1979 and summarized in his famous CSR pyramid (fig. 1). It essentially shows how the financial responsibility of creating profits constitutes the foundation of corporate practice, and how their

obligation to operate within the legal frameworks of society rests upon this main function. It is argued that companies thereby receive what is known as a "social sanction" or "license to operate" from society which requires them to contribute to societal growth and wellbeing in return (Devinney, 2009). As CSR addresses the responsibilities of companies beyond these legal and financial requirements, it is arguable that CSR relates to the top two levels of the pyramid: the ethical and philanthropic expectations and desires of society (Carroll & Shabana, 2010).



Figure 1 – CSR pyramid (source: Carrol (1996))

Carroll and Shabana (2010) remarks that “the social responsibility of business encompasses the economic, legal, ethical, and discretionary (here referred to as philanthropic) expectations that society has of organizations at a given point in time”. This definition is interesting because it highlights the element of change and diversity, which Matten & Moon emphasizes as a distinctive feature of CSR.

Matten & Moon (2008) namely points to the fact that CSR is globally diverse. They state that in liberal market economies, such as the US and the UK, CSR takes the form of “explicit”, voluntary actions. Contrarily, in the coordinated market economies of continental European countries, CSR is much more “implicit” seeing that it is embedded in the welfare system and public institutions; a contention that has been empirically confirmed by a research of Jackson and Apostolakou

presented in Knudsen (2011). Such interesting topic of global diversity should be taken into account when we want to explain CSR.

Two theories have often been used in the CSR literature to explain and understand the mechanisms of CSR are Agency Theory and Nexus of Contracts Theory. Agency Theory argues that “corporations are structured to minimize the costs of getting some participants (the agents) to do what other participants (the principals) desire” (Donaldson & Preston, 1995). The purpose of the agent, i.e. the manager, is thus to create value for the principals, i.e. the shareholders.

The Nexus of Contracts Theory views the corporative assets as provided by all stakeholders including customers, employees, society etc. All stakeholders thus enter into contracts with the corporation.

With an equal right to bargain and thereby agree to cooperate within the organization, “rather than simply deal with each other through the market, to minimize the costs of search, coordination, insecurity, etc.” (Donaldson & Preston, 1995; Lantos, 2001; Matten & Moon, 2008).

The two theories have often been applied in a combination that offers a view of managers as the agents of all stakeholders, which in turn are drawn into relationships with the manager to accomplish organizational tasks as efficiently as possible (ibid). Although this theory certainly offers some understanding into the corporative dealings with various stakeholders, such as insights into the substantial influence of the managers’ personal values and beliefs, I do not find that it offers a satisfactory explanation of the general mechanisms of CSR.

Therefore, I follow the notion of Matten and Moon (2008), who contend that both the Agency Theory and the Nexus of Contracts Theory may be too simplistic to account for the significant influence of contextual factors within national institutional frameworks. I therefore wish to incorporate the explanatory contributions of New Institutionalism into the understanding of CSR.

It is apparent that all markets generate actors with the prime objective of generating profits and simultaneously balancing the expectations of their respective stakeholders. The exact strategy, of course, lie at the discretion of managers (i.e. agents). According to New Institutionalism, however, these strategic decisions are colored by the social, cultural, and political context in which they operate. More specifically, New Institutionalism “considers the processes by which structures, including schemas, rules, norms, and routines, become established as authoritative guidelines for social behavior” (Scott, quoted in Matten & Moon, 2008). This process occurs when longstanding institutions become historically entrenched frameworks of a certain society. Institutions are defined as “stable, valued, recurring patterns of behavior, defined by their adaptability, complexity, autonomy, and coherence” (ibid). Four such primary institutional

frameworks have been historically identified: the political system, the financial system, the education and labor system, and the cultural system. Numerous external factors may emanate from these systems causing the cross-national diversity in CSR activities. Concrete examples of such factors may include differences in cultural values, difference in political and legal institutions, community level factors, institutional factors (including regulation), the presence of independent monitoring organizations, institutionalized norms and expectations about corporate behavior, associative relations between firms, and institutionalized stakeholder dialogue (Brown et al., 2009). Unlike solely viewing CSR by means of Agency or Nexus of Contracts Theory, New Institutionalism offers a method to explore the managerial and key stakeholder influences on CSR within their institutional context. It, furthermore, allows for an understanding of the interdependence and interaction among all stakeholders and instead of the bidirectional interaction between one stakeholder group and the manager.

The explanatory review of New Institutionalism in the following paragraphs will be derived from the inspirational analysis by Dirk Matten and Jeremy Moon (2008), "Implicit" and "Explicit" CSR: A Conceptual Framework for a Comparative Understanding of Corporate Social Responsibility. Naturally, such institutional frameworks can change, as noted by Carroll & Shabana above. For example, new cultural expectations may spur on innovative CSR strategies and activities. The so-called "Americanization" of management practices that is currently taking place in Europe and thereby causing explicit CSR initiatives to spread, is an example of such a change (Matten & Moon, 2008). New Institutionalism as explains this homogenization of institutional environments: "...regulative, normative, and cognitive processes that lead to increasingly standardized and rationalized practices in organizations across industries and national boundaries. The key argument is that organizational practices change and become institutionalized because they are considered legitimate. This legitimacy is produced by three key processes: coercive isomorphism, mimetic process, and normative pressure" (ibid).

New Institutionalism is thus able to describe both the diversity issue and the aspect of change, i.e. the dynamic perspective, as exemplified by the difference of CSR activities in LMEs and CMEs respectively.

Despite the similar dedication to e.g. democracy and capitalism, the US and Europe have different historically grown institutional frameworks wherefore CSR have taken different forms (implicit and explicit).

Despite the contextual quality of CSR, however, according to New Institutionalism the three processes of coercive isomorphism, mimetic processes, and normative pressures may cause our current version of CSR to change.

1.3 – DEBATE ABOUT CSR: CAPITALISM VS STAKEHOLDER THEORY

Having already defined CSR and presented through theoretical framework of New Institutionalism, now I will present the ongoing debate of Corporate Social Responsibility. I will do it, because Mr. Porter's CSV framework (and many theories like this) constitutes an answer to the argument. A comprehension of the opposing arguments help to understand the implications of CSV theory. I will start with a presentation of the key argument of the adversaries of CSR who believe in the capitalist system and its emphasis on neo-classical economy and free market systems. Then, I will provide the opposing view, which rests upon the tenets of Stakeholder Theory.

1.3.1 – THE ASSUMPTION OF THE FREE MARKET SYSTEM

In 1776, the Scottish economist and philosopher, Adam Smith, wrote his famous work "An Inquiry into the Nature and Causes of the Wealth of Nations" in which he introduced his famous analogy "the invisible hand": "every individual necessarily labors to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it... He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end, which was no part of his intention. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it" (Smith, quoted in Karnani, 2011).

Numerous scholars, including the neoclassical economist and libertarian, Milton Friedman, have adopted this view on the responsibilities of businesses. Friedman follows the microeconomic Pareto Optimality Theory, which states: "free market forces ensure that maximum social benefits will be achieved at minimum social costs when each company tries to maximize profits" (Lantos, 2001). This process is said to be so efficient that "it would be impossible to make any single person better off without making some other person(s) worse off" (ibid), i.e. the classical trade off argument. In other words, spending assets on CSR, or other activities that direct funds out of a business without generating profits, will compromise that firm's revenues and, consequently, affect its abilities to invest, increase production, lower prices, create job opportunities, develop markets for suppliers etc. which is evidently to the detriment of society (Devinney, 2009). Friedman, therefore, believes that "there is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud" (Friedman, 1970). The last wording of this quote

illustrates that Friedman's notion of corporate responsibility is the equivalent of the lower, two levels of Carroll's pyramid (figure above). Correspondingly, Friedman observes that a manager is in reality an employee of a company's shareholders. This relationship emphasizes the fact that his or her sole responsibility is to them and the generation of profits, wherefore this position is often referred to as the shareholder view (Pedersen & Neergard, 2009).

1.3.2 – THE BELIEF OF STAKEHOLDER THEORY

The rise and development of the stakeholder theory has been similar to that of CSR because both phenomena reflect the same change of perception about corporate management and the role of corporations in society. The theory arose as a reaction to the shareholder view deployed by Friedman and other opponents of CSR (Lantos, 2001). In short, it states that a company comprises stakeholder, which all have a stake and a legitimate interest in the firm (Donaldson & Preston, 1995). Consequently, business essentially involves creating value for all these stakeholders and not simply its shareholders (Pedersen & Neergaard, 2009). As such, stakeholders are defined as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, in Perrini et al., 2012). The difference between the "narrow" view of corporate responsibility and the "broad" stakeholder view can be visualized by the classic Input-Output Model (figure 2) and the Stakeholder Model (figure 3) (Donaldson & Preston, 1995). Contrary to the Stakeholder Model, the Input-Output Model shows how a firm receives unidirectional inputs from its stakeholders with the one purpose of providing a product to its customers.

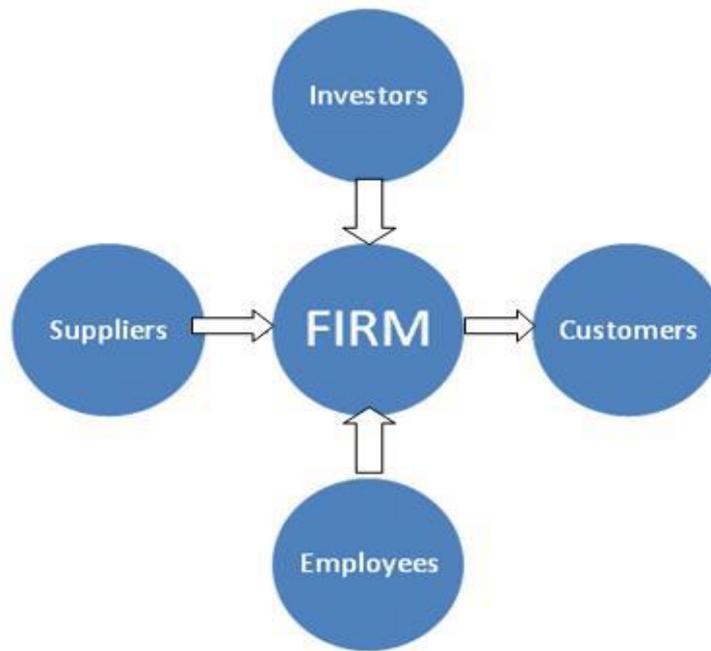


Figure 2 - Input, Output model

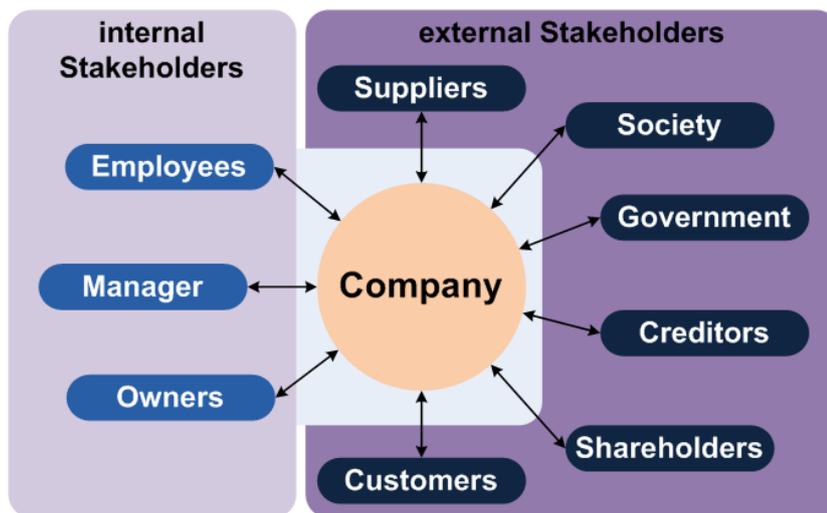


Figure 3 - Stakeholder model

Noticeably, an implicit consequence of the adoption of the stakeholder theory is a redefinition of the purpose of the corporation in comparison to its function in the capitalist view. According to advocates of CSR, it is the responsibility of the firm to satisfy and balance multiple stakeholder interests rather than only meeting conventional economic and financial criteria (ibid). Numerous arguments reflecting the contradicting viewpoints presented above have prospered in the CSR literature for decades, a few of which will be presented below.

1.3.3 – MUST COMPANIES IMPLEMENT CSR?

Proponents of CSR often argue that the assumptions of Pareto Optimality are only valid in a non-existent market with perfect competition. In an imperfect market, monopolies, deceptive advertising, bribery, tax evasion, price fixing etc. contribute to profit maximization while damaging the society (Lantos, 2001). Furthermore, it does not account for negative externalities so long as those additional costs are not borne by the respective corporations. In reference to these “clear and present dangers to society”, proponents thus often appeal to the morality of corporate managers (Meehan, Meehan & Richards, 2006). It is for instance argued that firms should engage CSR because the fact that they possess more knowledge and more capital makes them better equipped than e.g. NGOs and may more often result in innovations of beneficial products and technologies (Devinney, 2009).

Others appeal to the rationality of managers by pointing to the corporate long-term benefits. One such way is the resource-based view analysis, which states that a company utilizes the resources (tangible or intangible) at its disposal to create competitive advantage. If these resources are unique, heterogeneous, and not entirely mobile, this competitive advantage may be inimitable and constitute a basis of positioning and differentiation, which in turn may provide long-term profits. Seeing that CSR capabilities include the ability to scan, understand, and respond to societal needs and changes, proponents argue that CSR may be seen as such a resource upon which to build competitive advantage (Plesner & Neergaard, 2005).

The CSR positioning builds upon the consumer psychology that “companies that actively support CSR are honest, more reliable and, hence, produce high-quality products” (Lantos, 2001). In other words, CSR may provide reputational advantages, as well as a tacit or explicit license to operate. In addition, firms may experience increased access to capital through socially responsible investing (Brown et al., 2009) and obtain governmental permissions more readily than companies without CSR.

Finally, other commonly heard arguments often used to justify CSR, relate to the fact that CSR can be used as a preemptive measure to avoid government regulation and that precaution is often “more practical and less costly than simply reacting to social problems once they have surfaced” (Brown et al., 2009; quote from Carroll & Shabana, 2010).

Contrarily, adversaries of CSR argue that the stock market is “notoriously impatient” (Reich, 1998) wherefore the stock market’s short-term demands provide disincentives for engaging in CSR (Doane, 2005). The long-term argument is therefore difficult for managers to rely upon as they are rewarded or penalized for short-term achievements.

CSR adversaries have also pointed to the fact that often the ethics of CSR is not all black and white. According to Kapstein, for instance, child labor in MNCs in developing countries in some cases may be the best alternative for children who are not in school and would otherwise beg on the streets or work at local factories under poor conditions (Kapstein, 2001). A less extremist but similar example is that of Merck and other pharmaceutical companies that were pressured by NGOs and global media in 1997 to sell medicines in South Africa for bearers of the HIV virus at production costs. It is certainly admirable to facilitate the procurement of lifesaving drugs for everyone regardless of nationality and income. However, it is simultaneously unsustainable if an implicit consequence of the lost profits is a decrease in innovative research that might otherwise have led to the cure of future diseases. Likewise, it may well result in a diminished incentive for companies to search for treatments for diseases of underdeveloped countries with fewer resources (ibid).

The danger of this last consequence is the inherent politics. When social concerns become corporate responsibility, business essentially assumes the role of judge, jury, and executioner and will in that sense be “granted an excessive concentration of power which would threaten the pluralistic division of powers among our various social institutions, thereby threatening our democratic freedoms” (Lantos, 2001). This issue is amplified by two related problems:

- 1) Corporations are not representative of all the society. Neither do they represent the poor and disadvantaged, nor the geographic spread of society (Devinney, 2009).
- 2) Managers would be performing political functions in which they have not been adequately educated nor been properly elected (Karnani, 2011).

Other counterarguments include the classic free rider problem (i.e. if one company invests in infrastructural improvements in a developing country, competing companies in the same area will benefit without the costs) and the consumption of time and money resulting from disclosures and other reporting requirements (Kapstein, 2001).

Finally, I wish to draw attention to the aspect of imitation, which I have briefly touched upon earlier. CSR adversaries argue, contrary to the RBV, that gaining competitive advantage through the creation of a brand based on CSR is only likely to ensure average profits (as opposed to above average) (Blomgren, 2010). Sergio Zyman, former chief marketing officer at Coca-Cola, expresses essentially the same thing when he said: “today’s preference becomes tomorrow’s price of entry” (Zyman, 2002). In other words, CSR is a means for branding and differentiation until it has become so widely adopted that being socially responsible is simply a requirement to compete and CSR will cease to be a unique concept (Economist, 2008).

Paradoxically, this argument against CSR has rendered the question of whether or not a company should engage in CSR something obsolete.

I shall now demonstrate how a vast number of external factors, explainable by New Institutionalism, have precluded a complete ignorance of CSR and will thereby return to the processes of coercive isomorphism, mimetic processes, and normative pressures briefly mentioned above. In order to facilitate the comprehension for the reader I summarized the above discussion in table 1 below.

ARGUMENTS FOR CSR	ARGUMENTS AGAINST CSR
Stakeholder theory	Capitalism and “the invisible hand”, Pareto Optimality
Pareto Optimality does not apply in the real world	Today's preference becomes tomorrow's price of entry
Externalities are highly damaging to society	The stock market rewards short term results, not long term investments
Corporations possess the resources and innovativeness to efficiently tackle complex societal problems	Companies must be allowed to get a return on investments
CSR is a means to acquire long-term benefits, competitive advantage, and a license to operate	Reliance on companies to fulfill social responsibilities will render them too powerful
CSR increases access to capital and governmental permissions	Managers have not been elected and lack the competencies to pursue social and political goals
Corporate social action will prevent government action	Firms are not representative of society at large
Precaution is easier and less costly than reaction	Free rider problem
A better society constitutes a better environment for doing business	Reporting requirements are costly and time consuming

Table 1 – CSR debate

1.4 – THE ROLE OF CONTEMPORARY EXPECTATIONS AND COMPETITIVE CONTEXT

As established above, New Institutionalism contends that a number of regulative, normative, and cognitive processes occur via coercive isomorphism, mimetic processes, and normative pressures. I will now demonstrate in a little more detail how these factors have contributed to the establishment of CSR as the lowest common denominator.

1.4.1 - COERCIVE ISOMORPHISM

According to Matten & Moon (2008), examples of coercive isomorphism may include SRI indexes, CSR inspired criteria by regular investment funds, codes of conduct (CoCs) issued by for instance the UN or the Organization for Economic Cooperation and Development (OECD), and compliance with environmental standards such as ISO 14000 and Green Leaf. All of these indexes, bodies, and funds have been established due to the increased expectations of society. The effect of coercive isomorphism can be exemplified by the increasing number of companies that enlisted in the UN Global Compact up until 2008. The so-called “window dressing” compliance, however, does not satisfy the still growing expectations, and in the period from January 2008 until 25 June 2008, the UN Global Compact therefore delisted 630 companies or close to 15% for failing to communicate adequately on progress (Knudsen, 2011).

These expectations are now also reflected in the judicial and legal institutions where tribunals no longer judge strictly according to the “business judgment rule” reflecting the shareholder view (Donaldson & Preston, 1995). One such example is the title VII of the Civil Rights Act of 1964, which “explicitly makes it a violation of law for an employer to fail or refuse to hire any individual on the basis of discriminatory criteria” (ibid). Managers are thus called on to act in the interest of all stakeholders and the society, even at the expense of corporative profit.

1.4.2 - MIMETIC PROCESSES

Mimetic processes refer to the tendency of companies to copy and integrate the practices of the most successful opponents or those of the majority. Examples include the trend of MNCs to publish voluntary sustainability reports (Porter & Kramer, 2006), to join business coalitions for CSR, and to have employees enroll in various sorts of CSR education programs. The special edition on CSR in the Economist 2008 presents an extensive empiric analysis of 1254 executives from around the world on their relationship to CSR (Economist, 2008). The issue includes a large

number of figures and tables of survey results, which clearly show that CSR has infiltrated the generic corporate management strategies. For example, when asked the question: “Does your company have a coherent strategy for corporate sustainability that covers the whole business and its supply chain?” Only 18% replied that they did not and that they had no immediate plans to develop one.

1.4.3 - NORMATIVE PRESSURES

Normative pressures usually stem from “educational and professional authorities that directly or indirectly set standards for legitimate organizational practices” (Matten & Moon, 2008). This has occurred due to the integration of CSR into curricula of business schools and other institutions of higher education. The newly educated academics from these institutions, amongst whom the future CEOs are likely to be found, are presently being incorporated into the businesses, and they often represent a viewpoint with less emphasis on neo-classical economic theory and more emphasis on stakeholder management. Likewise, the increased public awareness and media attention severely augment the normative pressures on companies to accept a responsibility for pressing social concerns and the consequences of their negative externalities.

Conclusively, modern businesses have been forced by history, necessity, increased expectations, coercive isomorphism, mimetic processes, and normative pressures to actively and consciously relate to the subject of CSR. Not surprisingly, this development has given birth to a new, but highly related, dispute regarding the business case for CSR.

1.5 - THE BUSINESS CASE OF CSR

In summary, the dispute over CSR is comprised of normative stakeholder theorists using ethics and the social contract as prime arguments on the one hand, and neo-classical, capitalist economists on the other. As a direct consequence of this dispute, numerous scholars have instigated and completed studies and analyses in a search of the business case for CSR.

The business case builds on the key assumption that CSR provides a number of tangible benefits: monetary benefits, such as revenue increases, cost decreases, risk reduction (e.g. consumer boycotts), and increase in brand value. But also it provides a range of intangible benefits: improved access to capital, secured license to operate, improved customer attraction and retention, improved reputation, improved employee recruitment, motivation, and retention

(Weber, 2008). The reasoning for this insistent search for the business case, of course, is that if it could be proven that CSR entails direct financial benefits to the bottom line of a corporation, it would constitute an integration of the conflicting positions as well as a managerial justification for CSR expenses to the respective shareholders. Porter's CSV framework forms one such attempt of financial and social integration. However, in order to adequately analyze the framework, it is necessary to understand the difficulties inherent in the development and measurement of the business case.

Therefore, countless attempts, both empirically and theoretically, have been made to establish a connection between corporate social performance (CSP) and corporate financial performance (CFP). The majority of these attempts, however, draw different conclusions and provide mixed inconsistent results, which makes it impossible to confirm the existence of a general business case for CSR. In the following paragraphs, I shall address a number of different challenges that contribute to the encumbrance of this research.

In this thesis, I adhere to Donna J. Wood's definition of CSP as "a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships" (quoted in Orlitzky et al., 2003). CFP is defined as "a company's financial viability or the extent to which a company achieves its economic goals" (Orlitzky et al., 2003).

1.5.1 – METHODS OF MEASUREMENT

Much research has been criticized for inherent methodological problems such as measurement errors, sampling problems, the lack of control variables, means of aggregating results etc. (Perrini et al., 2012; Plesner & Neergaard, 2005; Vogel, 2005). The reason for these difficulties emanates from the multidimensionality of especially the CSP construct (Schreck, 2011) as is evident from the definition above. Moreover, many CSR expenditures are discretionary (Vogel, 2005), and CSP factors which may contribute to a company's CFP are often qualitative and, therefore, difficult to measure (Lantos, 2001). Such examples include corporate image, public relations, and customer satisfaction. In addition, in many cases, these qualitative CSP factors require the use of surrogates such as employee turnovers for the measurements of employee satisfaction; just as is the case when measuring the effectiveness of other corporative strategies such as mainstream advertising (ibid). Broadly speaking three subdivisions of CFP and four of CSP exist that researchers can measure on which all have great implications for data processing and the scientific value of the results, seen from a scientific theoretical perspective. The

following measurement methods have been adapted from the highly enlightening meta-analysis by Orlitzky et al. (2003).

1.5.2 – MEASUREMENTS OF CFP

1. Market based (investor returns): that is price per share or share price appreciation. Reflects the notion that shareholder satisfaction determines that fate of a corporation.
2. Accounting based: a company's return on assets (ROA), return on equity (ROE), or earnings per share (EPS). Reflects internal decision-making capabilities and managerial performance rather than external market responses.
3. Perceptual (survey): a qualitative method in which survey respondents provide subjective estimates of e.g. corporate use of assets or its financial goal achievement relative to competitors.

1.5.3 – MEASUREMENTS OF CSP

1. CSP disclosures: Consist of analyses of annual reports, letters to shareholders, and other corporate disclosures to the public functioning as the abovementioned surrogates of CSP.
2. CSP reputation ratings: Including, for instance, the FTSE Good Index, Fortune 500, or Dow Jones Sustainability Index. Such "reputation indices are based on the assumption that CSP reputations are good reflections of underlying CSP values and behaviors" (Orlitzky et al., 2003).
3. Social audits, CSP processes, and observable outcomes. According to Orlitzky et al., social audits consist of a systematic third-party effort to objectively assess a company's CSP. Social audits may still result in a ranking, however, such as the measure provided by the Council on Economic Priorities.
4. Managerial CSP principles and values: A manager maps a company's social orientation in relation to e.g. Carroll's CSR Pyramid in order to reveal the values and principles inherent in a company's culture.

Evidently, these various means of measurement reflect different philosophies of science. It would be problematic to make use of surveys as the indicator of CFP and disclosures or reputational rankings as indicators for CSP due to their inherently subjective nature. Likewise, empirical research by Wood & Jones indicates that it is problematic to compare measurement methods that are not theoretically aligned – also known as the mismatching thesis (Orlitzky et al., 2003).

These different means of measurement in effect entail that both the number of CSR related lines in a company's annual rapport and the amount spend on philanthropic donations have been used as indicators of CSP (Schreck, 2011). Obviously, these highly different indicators cannot reflect the same phenomenon in any meaningfully comparable manner. Consequently, these issues of subjectivity and estimation have triggered questions about the validity of the measures used to assess social performance as well as the diversity of measures used to assess financial performance (Vogel, 2005) which in turn makes comparison between different analyses highly problematic. Plesner & Neergaard provide one such example of how mixed results may arise from the use of different indicators in their 2005 analysis: "we find a negative relationship between FP as stock returns. However, when employing an accounting measure of FP in the shape of ROA, a positive relationship is found" (Plesner & Neergaard, 2005).

1.5.4 – ENDOGENEITY AND CORRELATION

Another factor which is complicating the business case research and causing substantial inconsistency in the empiric results (Perrini et al., 2012) is the fact that we know very little of the mechanisms and direction of causality (Devinney, 2009; Schaltegger & Synnestvedt, 2002; Vogel, 2005). Originally, the scientific point of departure was to establish an influence of CSP on CFP in accordance with the instrumental stakeholder theory, which states that "high CSP bolsters a company's competitive advantage by weighing and addressing the claims of various constituents in a fair, rational manner" (Orlitzky et al., 2003). Therefore, this direction of causality is known as the good management theory (ibid).

Yet along the way, it became evident that high prior CFP also has substantial effects on subsequent CSP (Blomgren, 2010; Plesner & Neergard, 2005). This direction of causality, named the slack resources theory, claims that managers only consider to engage in ethical activities beyond compliance if a sufficient amount of surplus resources are available (Orlitzky et al., 2003; Schreck, 2011). It is, in other words, equally plausible that more profitable companies are simply able to allocate more resources to CSR, and thus have higher CSP, as it is that companies are more profitable because of their CSR engagement (Lantos, 2001; Vogel, 2005). In fact, opponents of the business case for CSR would argue that companies "may indeed have been more profitable if they had been less responsible" (Vogel, 2005). In short, empirical testing of CSR entails problems of endogeneity and possible causal loops (Schreck, 2011). I insert the word "possible" because as long as the connection between CSP and CFP cannot be identified, it is perhaps more convenient to speak of the two components as correlational rather than causal.

1.5.5 – TIME LAG

The research problem related to time lag, as the name implies, refers to the difficulties that researchers face when they attempt to measure effects that do not occur within a foreseeable time span of the execution of the research and data collection. This is most often the case when a CSR investment yields intangible benefits, such as corporate reputation, which do not affect the bottom line instantly (Drews, 2010). Time lag may not only be the cause of inconsistent results simply because the possible effects of investments occur after the end of the research period but also because it may be difficult to trace the roots of certain benefits after a substantial period of time.

1.5.6 – MEDIATING VARIABLES, SITUATIONAL CONTINGENCIES, AND EXTERNAL FACTORS

For the sake of clarification, it should be notice that the term “mediating variables” is used to refer to two different concepts in the CSR literature. In some instances, it carries a meaning identical to the above use of the term “surrogates” (in e.g. Carroll & Shabana, 2010). In this thesis, however, I employ its second usage, i.e. the definition of mediating variable as Wendy K. Olsen has phrased it: “Mediating variables are seen as intervening factors that can change the impact of X on Y...”

Mediating variables, situational contingencies, and external factors are all interweaving issues that overlap and arise from each other wherefore they can be difficult to separate. As a result, they are highly difficult to distinguish, control, and account for during research. It is, therefore, highly plausible that such omitted variables which affect both social and financial performance are responsible for many of the inconsistencies in modern research (Vogel, 2005).

Examples of institutional influences and mediating variables may include: the degree of regulation in a given industry, the power, legitimacy, and urgency of stakeholders, the type, size, and degree of internationalization of a company, the presence of independent monitoring organizations, the cultural setting, customer behavior, oil prices, interest rates, national employment etc. (Brown et al., 2009; Plesner & Neergaard, 2005; Schaltegger & Synnestvedt, 2002; Schreck, 2011).

In addition to all these challenges, measurements of the CSP/CFP relationship must also account for any situational contingencies. These events may be impossible to control and predict but are imperative to identify in order to maintain a scientific result. Examples include sudden media attention, the development of new (environmentally friendly?) technologies, changes in consumer preferences, regulatory changes etc. (Schaltegger & Synnestvedt, 2002).

All these complications accumulated, it is not surprising that researchers have not been able to produce unequivocal evidence that the business case for CSR exists. Nonetheless, companies continue to invest in CSR, and all evidence point towards a continuing increase of this trend. This fact emphasizes the relevance of frameworks such as CSV, constructed with the purpose of increasing the efficiency of both natural and financial resources, and further accentuates the necessity of research such as the present dissertation, which aims at optimizing the established knowledge that is extracted from such investigations.

1.6 – WHY CORPORATE SHARED VALUE?

Certainly, Michael Porter is not the only one who has sought to answer the essential question on how to engage in CSR, yet this first part of my thesis builds upon his particular framework for a number of reasons. Firstly, on a strictly personal and unscientific level, I found my dedication for the subject of CSR in general through a reading of Professor Porter's articles a while back. I was inspired by the fact that I felt immediately divided between an intuitive support of his ideas and a strong sense of skepticism.

Secondly, as I have established, the literature on CSR is highly extensive and, largely, inconclusive. CSV constitutes one possible answer to a series of societal concerns out of many available theories in the literature.

Finally, CSV share numerous similarities and often overlap with many other CSR frameworks under the umbrella term of strategic CSR. Porter is thus analytically representative of many other scholars who have theorized on the subject of strategic CSR. For instance Bhattacharyya et al. (2008), Bruch & Walter (2005) who use the term "corporate philanthropy", Brown et al. (2009) and Carroll & Shabana (2010) have all treated the same subject under the term "syncretic stewardship", Lantos (2001) who called it "enlightened capitalism", Leavy (2012) etc.

1.7 – ANALYSIS OF CSV

In this chapter, I will discuss how Michael E. Porter relates to the various key issues addressed in the thesis up until this point and identify how they have been incorporated into a final framework. Therefore, this analysis will consist of five steps: 1) determining the purpose and the function of the framework, 2) relating the CSV framework to the key issues of CSR, 3) analyzing the suggested implementation of CSV, and 4) summarizing and aggregating the assumptions revealed through the previous four steps.

1.7.1 – THE PURPOSE AND THE FUNCTION OF CSV

Initially, I wish to draw a distinction between the purpose of the framework and its functionality. By the term “purpose”, I refer to the objective that it was intended by Porter to fulfil which reflects an inherently subjective motive for the creation of the framework. By “functionality” I refer to the rationale behind its actual usage which is related to the operationally of the framework, i.e. “what can managers achieve through CSV?”

On several occasions, especially in the earlier publications, Porter touches upon the reason for his creation of CSV. He states, for instance, “...the resources available for solving society’s problems are scarcer than ever. Using those limited resources most effectively has immense social value... The time has come to embrace a new agenda...” (Porter & Kramer, 1999). The wording is somewhat dramatic as he points to societal challenges and express an urgent need for change. Recent examples of such dramatic exclamations include “the capitalist system is under siege” (Porter & Kramer, 2011) and “business is caught in a vicious circle” (ibid) both of which are expressions of opinions calling for a transformation of business systems. Correspondingly, Porter himself has articulated that “my work aims not to be descriptive but normative” (Porter, quoted in Argyres & McGahan, 2002), and he believes that CSV constitutes “the next evolution in capitalism” and “major transformation of business thinking” (Porter & Kramer, 2011). Thus, Porter constructed the CSV framework with the inherent purpose of creating a normative framework for the solution of societal challenges, which, in his view, calls upon a revolutionary change in the existing business system.

The operational function of CSV, on the other hand, is to form a method of integrating economic and non-economic rationales for social engagement into corporate management. This function implies an inherent belief in the existence of the business case for CSR. In fact, according to Porter and Kramer (2011): “Businesses must reconnect company success with social progress. Shared value is not social responsibility, philanthropy, or even sustainability but a new way to

achieve economic success.” The notion of superior profitability is thus fundamental to the CSV framework. Porter does not believe in ethics or morality as sustainable drivers of societal change: “I believe that any theory of strategy, and any understanding of competition, has to address the fundamental question of profit. It all starts with profit” (Porter, quoted in Argyres & McGahan, 2002). I, therefore, wish to highlight the following phrase from the 2002 publication as a key tenet of CSV (then called corporate philanthropy): “The acid test of good corporate philanthropy is whether the desired social change is so beneficial to the company that the organization would pursue the change even if no one ever knew about it” (Porter & Kramer, 2002). This is highly interesting and constitutes a substantial difference between CSV and alternative theories of strategic CSR because it reflects a belief in the business case for CSR which is so strong that the monetary benefits are sufficiently valuable for the company to justify a CSR engagement, thus completely disregarding the intangible benefits in measuring the business case. This view emanates from the supposition that corporative disregard of social responsibilities results in monetary losses through an ineffective use of natural resources, costly externalities, and a loss of profitable investment opportunities.

1.7.2 – CSV IN RELATION TO THE KEY ISSUES OF CSR.

Having thus established the purpose and the function of CSV, I will now address how Porter relates to the various key issues of CSR. Some key points have already been briefly addressed in the previous paragraphs.

1.7.2.1 – FREE MARKET SYSTEM, THE BUSINESS CASE FOR CSR, AND PROFIT

MAXIMIZATION VS. ETHICS.

As described above, Porter adheres to capitalism and as such believes that the free market forces are the best drivers of social welfare: “capitalism is an unparalleled vehicle for meeting human needs, improving efficiency, creating jobs and building wealth” (Porter & Kramer, 2011). It thus naturally follows that Porter believes in the business case for CSR seeing that profitability must remain the motivational driver of CSR according to the invisible hand of Adam Smith. Therefore, Porter relates to Milton Friedman’s capitalistic criticism of CSR by referring to his underlying assumption that CSR cannot be financially viable for corporations. Porter asserts,

“the way most philanthropy is practiced today, Friedman is right” (Porter & Kramer, 2002) yet subsequently rejects Friedman’s fundamental assumption. According to Porter, CSV “is not philanthropy but self-interested behavior to create economic value by creating societal value” (Porter & Kramer, 2011) and as such he believes that “the concept of shared value resets the boundaries of capitalism” (ibid).

1.7.2.2 – STAKEHOLDER THEORY

As a proponent of CSR, Porter naturally adheres to the stakeholder theory, noticeably to instrumental stakeholder theory. Although Porter describes his CSV framework as normative, this notion should not be extended to his view of the stakeholder theory. The reason for this distinction is that Porter does not adhere to normative stakeholder theory because he does not believe that managers should relate to all stakeholders for normative and ethical reasons. To do so, he claims, is to perform “responsive CSR”. Contrarily, stakeholder management should be viewed as an instrument to achieve superior financial performance, i.e. strategic CSR.

1.7.2.3 – THE IMPATIENCE OF THE STOCK MARKET

Remaining on the issue of profitability, Porter states that capital markets will undoubtedly continue to pressure corporate managers to generate short-term profits. Likewise, in the face of these pressures along with growing competition, some managers may continue to reap profits at the expense of society through for instance restructuring, personnel reductions, and relocations of production systems to lower-cost countries. The result of such endeavors, however, are often synonymous to commoditization, price competition, little true innovation, slow organic growth, and no clear competitive advantage. Porter, therefore, contends that caving in to the short-term demands of shareholders entails short-lived profits and missing the most important customer needs while simultaneously ignoring the broader influences that determine the long-term success of a company (Porter & Kramer, 2011).

1.7.2.4 – TODAY’S PREFERENCE BECOMES TOMORROW PRICE OF ENTRY

In the 2002 article, Porter stated that “giving more does not satisfy the critics. The more companies donate the more is expected of them” (Porter & Kramer, 2002) which essentially

mirrors Sergio Zyman's tenet "today's preference becomes tomorrow's price of entry." This position is in line with the above view of long-term profitability as the key to corporate strategy. Porter namely holds that due to the regular, capitalist rules of market competition, once some companies start reaping the benefits of CSV, others will inevitably have to follow. It is not clarified, however, what will then occur when CSV has (possibly) been widely adopted and thus become today's price of entry and the lowest common denominator. Porter does not explain how this development would affect the qualities of competitive advantage that companies are expected to gain as a return of CSV investments.

1.7.2.5 – THE DICHOTOMY BETWEEN CORPORATIONS AND SOCIETY

In the historic review of the rise of CSR, I described how, from the very onset, CSR was embedded with an inherent notion of a dichotomy between profits and "doing good". According to Porter, however, the fact that economic and social objectives are seen as inherently conflicting is a false dichotomy (Porter & Kramer, 2002). Instead, they should be considered integrally connected due to their interdependence: "If either a business or a society pursues policies that benefit its interests at the expense of the other, it will find itself on a dangerous path. A temporary gain to one will undermine the long-term prosperity of both" (Porter & Kramer, 2006). This position is substantiated with reference to various asserted correlations: the reduction of pollution and waste reflects a more productive use of resources; productivity depends on educated, healthy, and motivated workers, and boosting social and economic conditions in developing countries leads to new markets for the production and distribution of products etc. (Porter & Kramer, 2002). In short, CSV is said to recognize that social harms or weaknesses, such as wasted energy and raw materials or costly accidents, often result in internal costs for businesses (Porter & Kramer, 2011).

1.7.2.6 – EXTERNALITIES

These social harms and weaknesses of course include externalities wherefore this key issue is very much related to the above dichotomy issue. Porter contends that opportunities to create shared value arise exactly because social problems tend to create economic costs within the value chain wherefore improvements can yield net cost savings (ibid). Wal-Mart is provided as one example of how to create shared value from existing externalities, in this case through the

reduction of excess packaging and rerouting its trucks to cut 100 million miles from its delivery routes in 2009 thereby significantly reducing greenhouse gas emissions and supposedly saving 200 million dollars in the process (ibid). When speaking of corporate and social values it is thus imperative that values are defined as profits minus costs in a corporative and societal context simultaneously.

However, Porter does not offer a suggestion on how to perform this calculation in practice or how to transform the effect of externalities into a deductible figure. This valuation of public goods and loss of public goods is a major challenge in economic science.

1.7.2.7 – TRADE OFFS

Numerous scholars argue that the costs of CSR must always be paid somewhere else (e.g. Kapstein, 2001). It naturally follows from all the above arguments that Porter, of course, refuses this notion. Moreover, due to the presumed internal costs of externalities as an integrated constituent of the business case for CSR, corporations need not trade off competitive advantage in order to achieve CSP, indeed, the two are complementary. What effectively eliminates the trade-off issue, according to Porter, is the so called “innovation effect” (Porter & van der Linde, 1995). Porter asserts that the internal costs of externalities spur innovations of products, services, production systems etc. that leads to long term financial benefits.

That being said, however, in Porter’s earlier work, he acknowledges that in every strategic decision and positioning lie a trade-off in deciding what not to do. “To achieve excellence at what it does,” he argues, “a foundation (or any organization for that matter) must decline opportunities in other approaches and in other fields” (Porter & Kramer, 1999). As we shall see shortly, it is a key point in the finalized CSV framework that a firm is to narrow the field of CSR down to very few strategic engagements.

1.7.2.8 – FREE RIDERS

The development of local clusters plays a fundamental part in all Porter’s work and thus also in the CSV framework. According to Porter and Kramer (2011): “The success of every company is affected by the geographic concentrations of firms, related businesses, suppliers, service providers, and logistical infrastructure in a particular field... Clusters are prominent in all successful and growing regional economies and play a crucial role in driving productivity,

innovation, and competitiveness. Capable local suppliers foster greater logistical efficiency and ease of collaboration... Without a supporting cluster, conversely, productivity suffers”

This emphasis on cluster development may give additional prominence to the key issue of free riders. Porter, however, presents five reasons why the free rider benefits do not negate the strategic value of a corporation to improve its competitive context (Porter & Kramer, 2002).

1) Local area: seeing, as not all competitors are located in the same region, a company will still benefit substantially in comparison to the general competition.

2) Collective activity: sharing costs within a cluster greatly diminishes the free rider issue.

3) Leading companies within a given field may be able to invest more and thus reap the majority of the benefits.

4) Distinctiveness enhances the disproportionality of the company benefits. This reason is related to the above-mentioned emphasis on few, strategically chosen CSR engagements. The closer the alignment and the more specific the investment is to the unique operations of the company the more it will benefit disproportionately to its competitors.

5) Intangible benefits. The benefits related to reputation and improved relationships with e.g. employees, NGOs, governments etc. are unique to the initiator of CSV.

1.7.2.9 – DIFFICULTIES IN MEASUREMENT OF CSP AND CFP

As mentioned earlier, Porter interestingly repudiates (or downplays) the importance of the intangible benefits related to high CSP. He argues that the use of high profile CSR initiatives conducted with the purpose of improving corporate reputation or as a form of insurance that people may be forgiving in a time of crisis reflects a confusion of public relations with social and business results. What is increasingly interesting is that he rejects these benefits, inter alia, on grounds of measurement difficulties: “Studies of the effect of a company’s social reputation on consumer purchasing preferences or on stock market performance have been inconclusive at best. As for the concept of CSR as insurance, the connection between the good deeds and the consumer attitudes is so indirect as to be impossible to measure. Having no way to quantify the benefits of these investments put such CSR programs on shaky ground...” (Porter & Kramer, 2006).

He criticizes corporations for reporting their CSR initiatives in terms of dollars or volunteer hours spent. Instead, Porter asserts, “the focus must move away from an emphasis on image to an emphasis on substance. The current preoccupation with measuring stakeholder satisfaction has

it backwards. What needs to be measured is social impact” (ibid). However, he does not provide any sort of insight as to how this social impact is to be measured and defined.

Despite his apparent preoccupation with quantification and measurement of actual social impact, nor does he relate to any of the key issues of measurement difficulties such as the direction of causality, time lag, mediating variables, situational contingencies etc. He does not conduct any extensive (quantitative) empirical research or perform any calculations to actually confirm the existence of the business case for CSR or the relationship between CSP and CFP, which is so fundamental for the CSV framework.

1.7.3 – GUIDELINE FOR IMPLEMENTATION

In summary, CSV constitutes the link between “competitive advantage” and “CSR”. According to Porter, this link can be achieved in three manners: by reconceiving products and markets, by redefining productivity in the value chain, and by enabling local cluster development (Porter & Kramer, 2011). Porter asserts that CSV can be applied to every major business decision by creating “concrete and tailored metrics for each business unit in each of the three areas” (ibid). When a company is implementing CSV, the manager must keep in mind that CSV initiatives should be closely related to the particular business of the firm. Furthermore, a company should choose only a very limited number of targets for CSR investments. These few initiatives, closely related to the core competencies of the business will foster excellence and thus ensure maximum return. Furthermore, the CSV strategy must be in close alignment with the specific corporate qualities and characteristics (which, as mentioned above, is essential to the elimination of the free rider aspect), and management must be consistent about the strategic choices also within aspects of production, service, design, and so on (Argyres & McGahan, 2002). In short, through CSV a company is able to achieve superior performance by developing a unique area of focus and approach, aligning its operations to the strategy, and finally by defining concrete goals in its chosen fields to serve as the basis of evaluation (Harvard Business School, Institute for Strategy and Society, Competition and Society, n.d.). Porter exemplifies the difference between regular, ethics based, responsive, yet admirable CSR and the integrated, value oriented CSV through the concept of fair trade. Fair trade is a label provided by Fair Trade Labelling Organizations (FLO), which requires that farmers be paid a minimum amount per pound of coffee (Carroll & Shabana, 2010). It is in other words a redistributive approach ensuring the income of poor farmers. CSV on the other hand expands the total pool of economic and social value by improving “growing techniques and strengthening the local cluster of supporting

suppliers and other institutions in order to increase farmers' efficiency, yields, product quality, and sustainability... Early studies of cocoa farmers in the Côte d'Ivoire, for instance, suggest that while fair trade can increase farmers' incomes by 10% to 20%, shared value investments can raise their incomes by more than 300%" (Porter & Kramer, 2011).

Porter concludes his 2011 article "Creating Shared Value" with the figure 5 below. Evidently, the figure adequately sums up the descriptive characteristics of CSV. The reader of "Creating Shared Value" intuitively gets the feeling that he or she has been explained how to implement CSR in practice. If one rereads my above "implementation guidelines" chapter, however, it shows that I never explain the actual how. I have described what CSV is about, what to focus on, how it benefits, but not how managers actually implement the framework. The reason of course is that Porter provides very little concrete information and no toolbox for managers to rely upon.



Figura 4 - CSR vs CSV (source: Porter & Kramer, 2011)

Finally, another contributing factor to the implementation difficulties is the fact that it is highly difficult to establish what exactly CSV really is. Remarkably, nowhere in the article "Creating Shared Value", with the sole purpose of introducing the concept, has CSV been defined, only described. In fact, I have been compelled to seek additional, clarifying knowledge of CSV in alternative sources such as interviews and the Harvard website. This lack of concrete, implementable information makes it more appropriate to describe CSV as a way of thinking

about a corporate CSR strategy instead of regarding it as an exact theory or applicable model. This observation is compatible with Porter's own consistent referencing to CSV as a framework and not a theory or model.

1.7.4 – SUMMARY OF AGGREGATED ASSUMPTIONS AND BELIEVES

In summary, Porter had a clear purpose with the construction of the CSV framework. With a focus on the ongoing, steady depletion of the natural resources, the environmental changes caused by harmful externalities and inefficient use of resources, and the unsatisfied needs of people both within and outside of the world's welfare states, Porter saw a need for change that could improve the life and working conditions for people on a global scale. He believes that many of these harms are inflicted by corporations and, thus, sought to initiate "the next evolution in capitalism." The framework is therefore undoubtedly of a prescriptive and normative character; a contention confirmed by Porter himself on several occasions (see e.g. Argyres & McGahan, 2002).

To accommodate this purpose, Porter constructed the CSV framework with the function of uniting profit oriented and social rationales in business management. This function reflects a strong belief in the business case for CSR and in companies' potential in solving multiple societal problems. Both assumptions correspond nicely with Porter's adherence to the ideology of capitalism as an economic system, which dictates that profits must function as the main driver of societal engagement if the framework is to be a sustainable solution to the societal problems that Porter wishes to address.

Despite Porter's adherence to capitalism and the tenet of profit maximization, Porter distinguishes between short-term and long-term profitability. He believes that some managers and shareholders will keep opting for the realization of short-term profits despite the lack of long-term sustainability. For instance, Porter states: "in neoclassical thinking, a requirement for social improvement (as safety or hiring the disabled) imposes a constraint on the corporation. Adding a constraint to a firm that is already maximizing profits, says the theory, will inevitably raise costs and reduce those profits" (Porter & Kramer, 2011). Instead, Porter asserts that such measures will lead to profitable innovation, also known as the innovation effect, wherefore well-situated government regulation functions as a necessary driver of CSR. This stance reveals a positive attitude towards government intervention beyond appliance to the minimum standards of civil law. Additionally, the above analysis reveals that much of Porter's research emphasizes the role of regions, clusters, and innovation in meeting social needs. All of these aspects are

contrary to the widespread tenets of neoclassical economic theory suggesting that Porter's CSV framework constitutes a solution beyond the conventional dictates of neoclassical economics. Porter utilizes an inductive methodology that focuses on in-depth case studies conducted over a longer period. His aim is to achieve a holistic understanding of the mechanisms of CSR through a contextualized analysis and thereby deduct a generic way of thinking about CSR as a competitive strategy that may apply across borders and industries. A central tenet of CSV is that corporations must choose a limited number of CSR engagements and, importantly, tailor and align these initiatives to the specific business and its unique qualities. Porter's methodology thus reflects the underlying assumption that the actual strategy for implementation of CSV is dependent on the qualities of the corporation wherefore the specific returns will be too. This view is shared by significant scholars of the field such as e.g. Carroll and Shabana (2010). "The benefits of CSR are not homogeneous, and effective CSR initiatives are not generic."

1.8 – MEASURING SHARED VALUE

So far, we discussed about shared value on its conceptual level; indeed the framework developed by Porter and Kramer (2011) on how to generate shared value is far from being a practical manual for implementing strategies, although it is prescriptive in its formulation so that the authors can stress the existence of the link between business practice and sustainability. Porter himself admit that their paper "Measuring Shared Value" lacks a framework whereby measuring the value generated and its social impact on business. This lack of measuring tools is what prevent organizations from understanding the mechanisms which built value, their magnitude, their rationale, since there is no feedback generation; they therefore miss the chance to acquire relevant knowledge and therefore to innovate, to grow and to leave a positive footprint on the society (Porter et.al., 2012). As Porter stated, in fact "even the companies that are most advanced in pursuing shared value today lack the data they need to optimize their results. Companies cannot know the extent to which they are creating shared value if they do not measure their progress on social objectives and, importantly, the degree to which social performance improves economic value for the business" (ibid).

Measuring Shared Value by Porter et.al. (2012) is a report based on the initiative of around twelve firms which are trying to implement shared value initiatives. Firms like Nestlé and Intel revealed their measuring methods. As Porter said, the research shows that "shared value measurement is distinct from other existing measurement approaches, is practical and achievable, and powerfully informs improvements and innovation in shared value strategies".

According to Porter and Kramer, measuring shared value involves efforts to build and sustain an ongoing fit between the process and the overall strategy, not a periodic activity separated from the other performance indicators.

This entails four steps:

1. identify the social issue to target. Social objectives able to improve the business performance can be discovered through an analysis of unmet social objectives and how these can be reconciled with the three levels of shared value (reconceiving products and markets, redefining productivity in the value chain, enabling local cluster development).
2. Develop the business case. A model has to be developed to uncover the mechanisms that will bring about business improvement through social improvement. Here, goals have to be set, and a decision “go/non-go” should be made.
3. Track progress. Using the model developed at step 2) as a roadmap, feedback should be gathered and valued against the objectives. This step entails the measurement of input and output and building financial (and other kinds of) forecasts.
4. Measure results and use insights to unlock new value. Understandings about the cause-effect mechanisms that brought about positive outcomes from the combination social and business are useful to amplify those positive effects through future initiatives.

1.9 – IMPLEMENTATION OF SUSTAINABILITY PRINCIPLES

As we have seen, business and sustainability can coexist. Researches demonstrate a positive correlation between business and sustainability, for example, the one conducted by Accenture in 2013 “Why green is new gold” shows that “transformational leader” outperform their industry peers in traditional business performance metrics: 65 percent in total return to shareholders and 59 percent in both revenue growth and profitability (Lacy and Hayward, 2013). However, this could happen because these companies already have the money. Recognizing the importance and the relevance of sustainability issues, and even implementing them, does not mean that CEOs truly believe in the power of such initiatives and their outcomes; they in fact can simply recognize them as new constraints and requirements to be met to stay on the market. Advocates of CSR as Carrol & Shabana (2010) and Devinney (2009) allocate to companies a responsibility towards society: “business has responsibilities”. It is argued that companies thereby receive what is known as a “social sanction” or “license to operate” from society which requires them to contribute to societal growth and wellbeing in return (Devinney, 2009).

However “doing good” is not the whole cake. CSR is taken by companies as a means to enhance corporate image and this lies behind the purpose of achieving a competitive advantage. Recent scandal of Volkswagen shows the importance of being different in the mind of consumers, in quality, reliability and sustainability. German chancellor Angela Merkel is worried about the possible damages to the image of Volkswagen and consequently to Germany image. Surely, sustainability is drawing increasing attention; for example, research output in sustainability science attracts 30% more citations than an average research papers. This however does not mean that people truly believe in sustainability essence. They implement it because it has become a market requirement. It is not located in company culture, rather in marketing department as a strategy to achieve consumer consensus. Sergio Zyman, former chief marketing officer at Coca-Cola, expresses this concept when he said: “today’s preference becomes tomorrow’s price of entry” (Zyman, 2002). Paradoxically, this argument against CSR has rendered the question of whether or not a company should engage in CSR something obsolete. Other proponents of CSR appeal to managers’ rationality: building a long-term competitive advantage in a company needs tangible and intangible resource difficult to replicate. Therefore, implementing sustainability means building a know-how non replicable for rivals. However, this always lies in the profit objective. Moreover, companies could receive government subsidies and permissions and avoid government regulations.

The spreading of CSR is due to the role of contemporary expectations and competitive context, and is driven by:

1. Coercive isomorphism: based on the expectation of a society and the adoption of rules by enterprises
2. Mimetic process: the tendency to copy the majority or successful opponents
3. Normative pressures: characterized by educational forces implementing of CSR arguments in universities

Countless attempts, both empirically and theoretically, have been made to establish a connection between Corporate Social Performance (CSP) and Corporate Financial Performance (CFP). There are several difficulties in measurement though, especially due to the multidimensionality of the CSP construct (Schreck, 2011). Moreover, many CSR expenditures are discretionary (Vogel, 2005), and CSP factors which may contribute to a company’s CFP are often qualitative and, therefore, difficult to measure (Lantos, 2001). Such examples include corporate image, public relations, and customer satisfaction. In addition, in many cases, these qualitative CSP factors require the use of proxies, like employee turnovers for the measurement of employee satisfaction; the same situation occurs when measuring the effectiveness of other corporate strategies such as mainstream advertising (ibid).

With all these difficulties, it is not surprising that researchers were not able to produce unequivocal evidence that the business case for CSR exists.

Nonetheless, companies continue to invest in CSR, and all evidence points towards a continuing increase of this trend. This fact emphasizes the relevance of frameworks such as CSV, which is a possible solution to integrate business and sustainability. Porter constructed the CSV framework with the inherent purpose of creating a normative framework for the solution of societal challenges, which, in his view, calls upon a revolutionary change in the existing business system: “businesses must reconnect company success with social progress. Shared value is not social responsibility, philanthropy, or even sustainability but a new way to achieve economic success.” Profitability is thus fundamental in the CSV framework. Indeed, Porter does not believe in ethics or morality per se as sustainable drivers of societal change: “The acid test of good corporate philanthropy is whether the desired social change is so beneficial to the company that the organization would pursue the change even if no one ever knew about it” (Porter & Kramer, 2002). CSV “is not philanthropy but self-interested behavior to create economic value by creating societal value”.

CSV constitutes therefore the link between “competitive advantage” and “CSR”. According to Porter, this link can be achieved in three manners: by reconceiving products and markets, by redefining productivity in the value chain, and by enabling local cluster development (Porter & Kramer, 2011).

His argument hinges on the dichotomy economic and social objectives, which is considered to be false (Porter & Kramer, 2002). Indeed, they should be considered integrally connected due to their interdependence: “If either a business or a society pursues policies that benefit its interests at the expense of the other, it will find itself on a dangerous path. A temporary gain to one will undermine the long-term prosperity of both” (Porter & Kramer, 2006). This position is substantiated with reference to various asserted correlations: the reduction of pollution and waste reflects a more productive use of resources; productivity depends on educated, healthy, and motivated workers, boosting social and economic conditions in developing countries leads to new markets for the production and distribution of products etc. (Porter & Kramer, 2002). In short, CSV is said to recognize that social harms or weaknesses, such as wasted energy and raw materials or costly accidents, often result in internal costs for businesses.

This is highly interesting because it reflects a strong belief in the business case for CSR; benefits will overcome costs justifying companies’ engagement of CSV.

What effectively eliminates the trade-off issue, is the so called “innovation effect” (Porter & van der Linde, 1995). Porter asserts that the internal costs of externalities spurs innovations of products, services, production systems etc., which leads to long-term financial benefits.

However, Porter does not offer a suggestion on how to perform this calculation in practice or how to transform the effect of externalities into a deductible figure. This valuation of public goods and loss of public goods is a major challenge in economic science.

He criticizes corporations for reporting their CSR initiatives in terms of dollars or volunteer hours spent. Instead, Porter asserts that “the focus must move away from an emphasis on image to an emphasis on substance. The current preoccupation with measuring stakeholder satisfaction has it backwards. What needs to be measured is social impact” (ibid). However, he does not provide any sort of insight about how this social impact is to be measured and defined.

Without a way to measure benefit of sustainability, companies are not motivated to implement it. So, how to engage sustainability? Personally, the answer probably lies within companies’ definition: companies are self-interested entities with the goal of achieving profit and this always goes against other companies who lose the game, apparently, there are not incentives to going sustainable. Here comes that sustainability is a way to win against other companies, thus not a society’s victory. However, there is a value in this, because it appears ethically correct that companies more sustainable wins against the others who are not.

Three issues can be identified when thinking about which motivations would lead firms to be sustainable:

1. Competitive advantage.
2. Governments’ regulations.
3. Culture.

The first one has already been discussed herein. Why do we think that Chinese companies will not grow with current non - sustainability business in the future? Of course, the answer lies in the economical and societal benefits to cost analysis; for example, people improvements conditions. This can be called progress. However, it also depends on governments’ regulations, which in future will be more strict and coherent with the one of well-developed countries. Why do Northern-European countries said to be the “smartest”? Because sustainability is “implicitly” embedded in the welfare system and public institutions, an argument that has been empirically confirmed by a research of Jackson and Apostolakou presented in Knudsen (2011). This means that sustainability is globally diverse: in liberal market economies, such as the US and the UK, CSR takes the form of “explicit”, voluntary actions.

Sustainability has to be implicitly part of the people, especially the ones who run the company. Porter framework of CSV is fundamental because he believes that sustainability is not a part of the agenda, but actually the agenda. Is possible to call it “culture” because sustainability is the way company is doing its business.

Therefore, the answer how to incorporate sustainability into business lies within organizational culture theory. Structures, including mental scheme, rules, norms, and routines, become fundamental guidelines for implicit sustainability implementation.

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PART 2. THE NEW PARADIGM OF THE AUTOMOTIVE INDUSTRY

INTRODUCTION

In the first part of this thesis, I have shown the relationship between business and sustainability in order to show social responsibilities of the companies. However, what are the main problems that humanity will have to solve in this century? Surely the issue of climate change and the energy creation problem. For that reason, I agree with the well-known entrepreneur Elon Musk in saying that we must find a solution for sustainable transport and sustainable energy production.

Automotive industry plays a key role in this pursue of sustainability, considering the size of the sector and its importance in the world economy. This implies the possibility of making significant changes that affect many people in the world.

In the last years something is changing, the industry doesn't grow with the usual rate. I will investigate the new paradigm of automotive industry in this chapter.

2.1 – DATA AND TRENDS

In order to have a comprehension of next paragraphs, I introduce global trends and data of the automotive sector. As we can see in figure 5, total sales are growing after the financial crisis. This can suggest that crisis is passed.

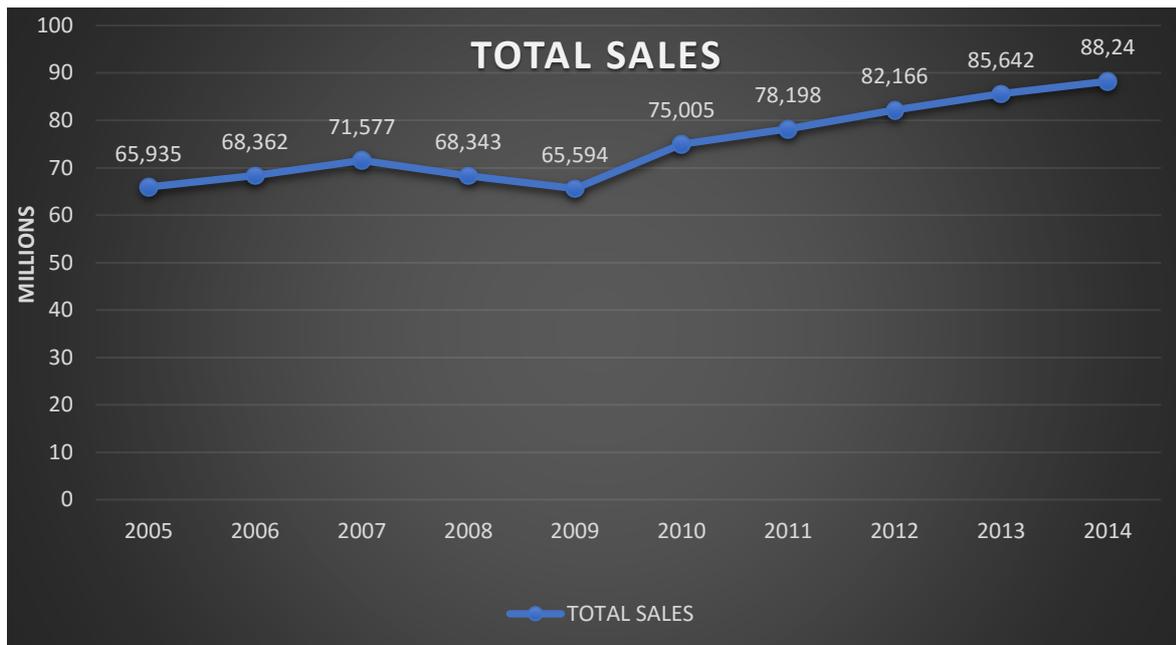


Figure 5 - Total sales of the automotive sector (data from OICA)

However, if we divide data in different areas we reach a more detailed comprehension on what is happening (table 2 and figure 6).

REGIONS	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU15 countries + EFTA	16,942,079	17,161,729	17,297,311	15,813,252	15,228,050	14,696,720	14,683,816	13,420,004	13,191,012	13,868,767
EU NEW MEMBERS	1,243,957	1,354,761	1,572,900	1,572,654	998,663	968,37	980,621	938,417	944,61	1,066,796
RUSSIA, TURKEY & OTHER EUROPE	2,877,290	3,347,350	4,136,511	4,486,524	2,418,638	3,143,598	4,075,582	4,304,846	4,207,368	3,545,404
EUROPE	21,063,326	21,863,840	23,006,722	21,872,430	18,645,351	18,808,688	19,740,019	18,663,267	18,342,990	18,480,967
NAFTA	20,242,979	19,899,024	19,301,479	16,240,451	12,859,351	14,203,961	15,597,614	17,526,688	18,764,508	19,907,715
CENTRAL & SOUTH AMERICA	3,092,489	3,452,353	4,302,734	4,667,183	4,640,513	5,526,966	5,981,399	6,149,832	6,270,316	5,572,294
AMERICA	23,335,468	23,351,377	23,604,213	20,907,634	17,499,864	19,730,927	21,579,013	23,676,520	25,034,824	25,480,009
ASIA, OCEANIA, MIDDLE EAST	20,408,597	21,818,586	23,625,638	24,284,312	28,267,659	35,191,633	35,405,435	35,405,435	40,578,622	42,579,491
AFRICA	1,127,349	1,328,314	1,340,152	1,278,762	1,181,065	1,273,898	1,473,138	1,600,993	1,685,143	1,699,621

Table 2 - Total sales per area (data from OICA)

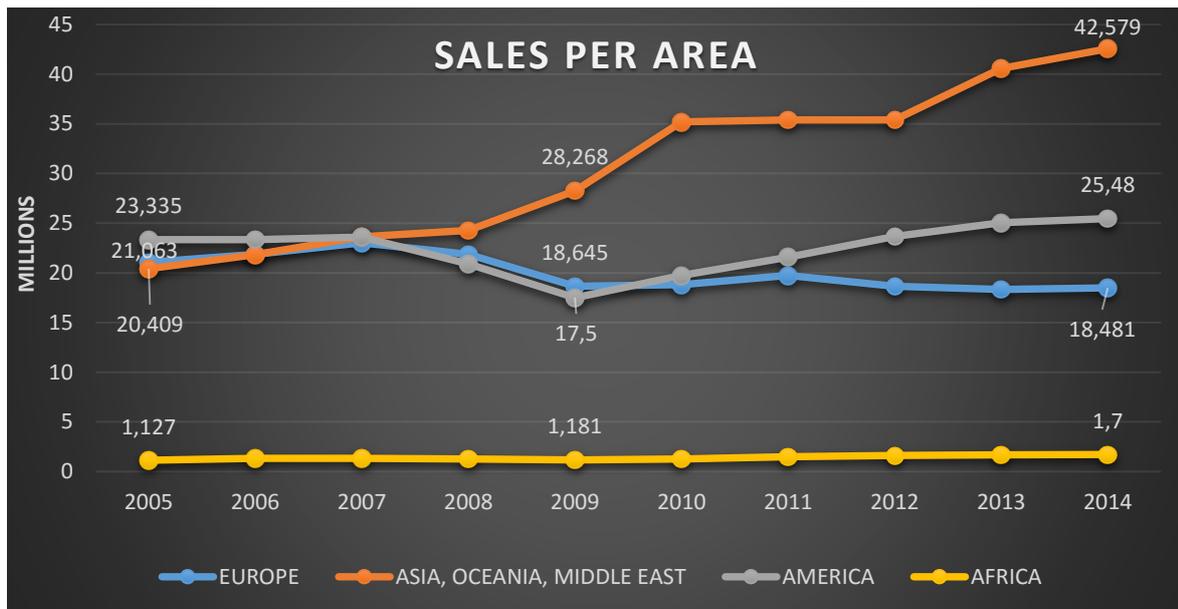


Figure 6 - Total sales per area (data from OICA)

As the graphic exhibit, with the exception of the last year, European automotive sector is still decreasing since 2007. Instead, Asian, Oceania and Middle East areas are increasing without feeling the crisis. Practically, total sales are growing thanks to the expansion in the latter areas. Asia, Oceania and Middle East reach 48% of the industry in 2014, against 29% of America, 21% of Europe and 2 % of Africa (figure 7).

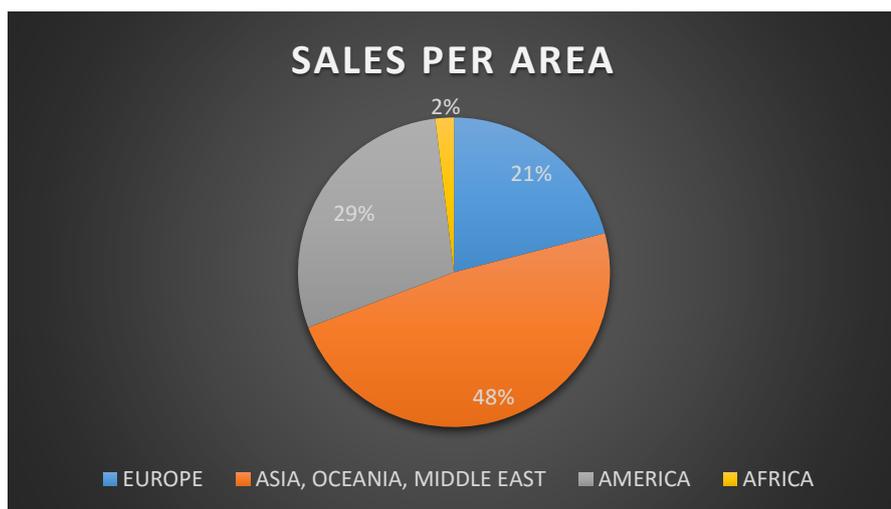


Figure 7 - Sales per area (data from OICA)

Among the others in the Asia, Oceania and Middle East Area and in the world, China has the best improvement (figure 8).



Figure 8 - Growing sales in China (data from OICA)

Forecast by AlixPartners (figure 9) show that the global industry will grow in the following years.

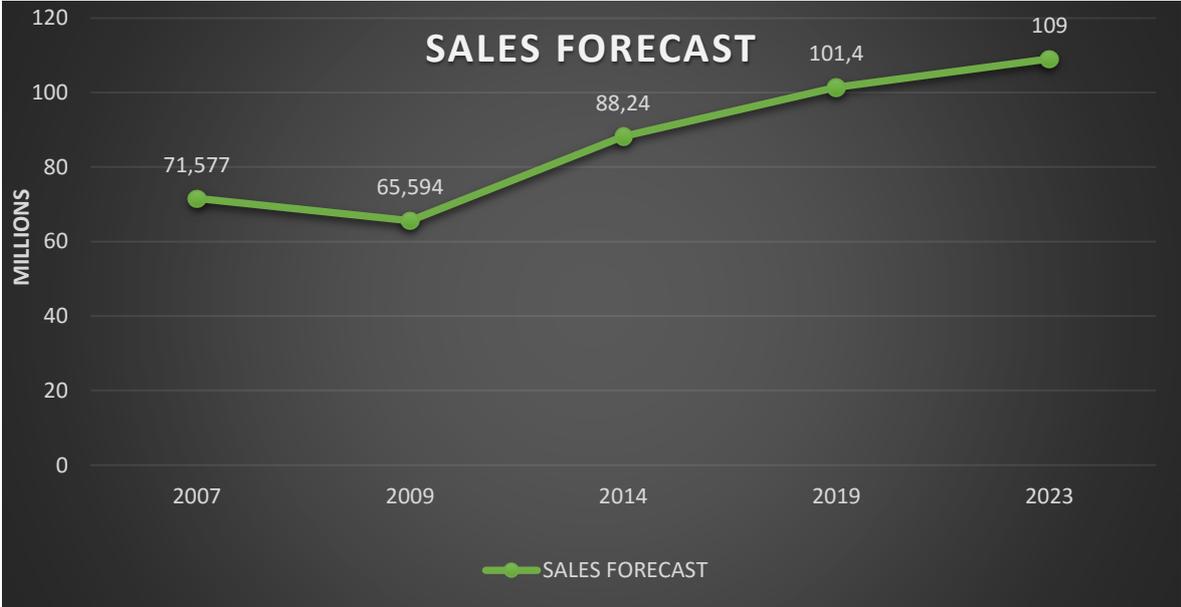


Figure 9 - Sales forecast of the automotive sector (data from AlixPartners)

If forecasts are right, China market will reach monstrous dimension. However, despite from 2013 China is the biggest market on the world (more than ¼ of total sales), AlixPartners state that the growth will slow down in the following years.

Analysts, suppose that 71% of total growth will be realize by BRIC countries (Brasil, Russia, India and China) and United States. Moreover, 44 % of increment will comes from China.

2.2 – AUTOMOTIVE ECOSYSTEM

As we can see in charts above, the automotive sector is a good basis for comparison of the real economy. It reflects the economy trend, as for example China and its growing.

To have a clear idea of its importance, in 2005 this sector produced about 65 million vehicles. This production is equivalent to a global turnover of 1.9 trillion euro. Considering countries GDP, the industry would be the sixth largest economy in the world.

According to OICA, building sixty-six million vehicles requires the employment of more than eight million people directly in making the vehicles and the parts that go into them. This is over five percent of the world's total manufacturing employment. In addition to these direct employees, about five times more are employed indirectly in related manufacturing and service provision, such that an estimated more than 50 million people earn their living from cars, trucks, buses and coaches (OICA).

As we can see in figure 10 the automotive ecosystem generates government revenue (1), encourage people development (2), create economic development (3) while fostering R&D and innovation (4).

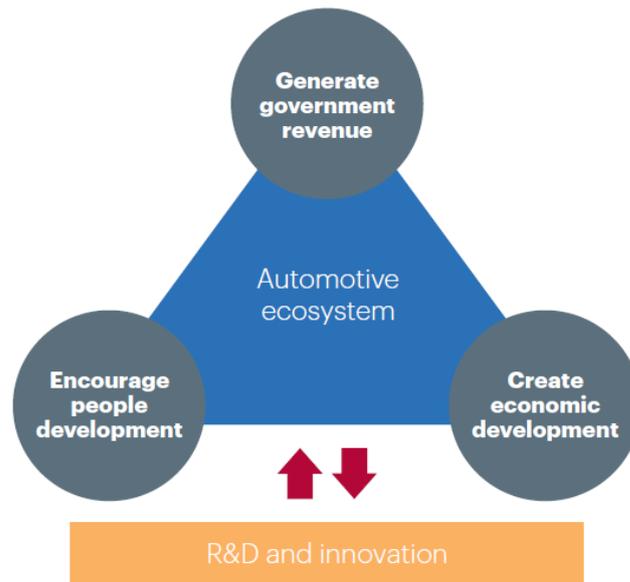


Figure 10 - The auto industry's contribution to the economy (source: AT Kearney analysis)

1. The automotive sector contributes significant tax revenues from vehicle sales, usage related levies, personal income taxes and business taxes. For instance, in Japan, auto-related taxes totaled 7.72 billion dollars in 2012, roughly 9 to 10 percent of all tax revenues, according to the Japan Automobile Manufacturers Association (At Kearney, 2013). In the United States, cars contributes 135 billion dollars per year, including 13 percent of state tax revenues and 2 percent of federal tax revenues (ibid).
2. Automakers have to satisfy consumer demand for more product variety, better performance, improved safety, higher emission standards, and lower costs. This implies huge R&D investments. They spend the third most on R&D of any industry: 108 billion dollars compared to 111 billion dollars spent by technology companies and 120 billion dollars spent by pharmaceuticals (ibid).
3. The automotive ecosystem is fundamental to worldwide economic progress. Globally automotive contributes on average with 3 percent of all GDP output; the share is even higher in emerging markets, with rates in China and India at 7 percent and rising (At Kearney, 2013). Economic development focused in two main areas: industrial development (worldwide automotive sector is an incentive to cluster development) and mobility (encourages the movements of people and goods).
4. This industry is pioneering and has the capacity to influence other sectors, because it covers many areas like R&D, design, sourcing, manufacturing, supply chain, sales and marketing. Think about for example to the expansion of lean principles in many organizations around the world or robotics expansions in other sectors. In addition, the

automotive industry's supply chain integration and modular sourcing have been influential as well.

2.3 – THE POSSIBILITY OF A “PEAK CAR”

The expression “peak car” refers to different scenarios that postulate the decline of the car (Stocchetti, 2013). Until the economic crisis, most automakers have never considered that possibility. In fact, common sense suggests that if market saturation were reached, car demand would settle relatively flat. However, as already seen in the paragraph general trends, total sales of a saturated market like Europe keep falling since 2007 (except from 2014) and empirical evidence suggests a reduction of car usage in Europe and United States. Is this just an adjustment period or consumers are actually changing their preferences?

The answer is vital in order to evaluate current strategies of carmakers. A car-free society is improbable. However, what will be the size of the automotive sector? For this reason, we have to consider the possibility of a different perception of car utility in the mind of the consumer. Understanding this, it will be possible to deduce opportunities and challenges of the automotive industry.

The “generation y”, born between 1977 and 1994, is emerging as the largest segment influencing the industry (Deloitte Review, 2014); however it is a challenging generation for carmakers who have to understand different lifestyles rising through social development and the progress on mobile devices, web, multimedia and social media. In addition there is an evolution against car in the policies for sustainable urban mobility (SUM) introduced by the EU. Taking the case of London, car incidence in total traffic has decreased from a 60% peak at the beginning of the 1990s to less than 30% in 2011 (Stocchetti, 2013). Its post-war was characterized by the policy “predict and provide” which consist in providing adequate road network as an answer to an increasing population and to a forecast of increasing demand for private transport (Banister 2002; Metz 2012). This ideal is still influential in European countries that are particularly reluctant in the field of sustainable mobility as, for instance, Italy (Stocchetti, 2013). While in the UK and the USA this model was eliminated 20 years ago. For example, London transport plan was reoriented from cars to public transport in the beginning of 1990s. London and the UK are a fundamental case of urban transport development; they might show in advance, what will happen in other countries.

In United States and in UK total miles driven are decreasing since 2007 after decades of stable growth (figure 11 and 12). Practically, the average number of miles driven by Americans has

fallen by 7,6 % compared to one decade ago (Deloitte Review, 2014), despite their renowned love for driving.

However, it seems that carmakers are still adopting a traditional approach to car, without real efforts to develop new business models.

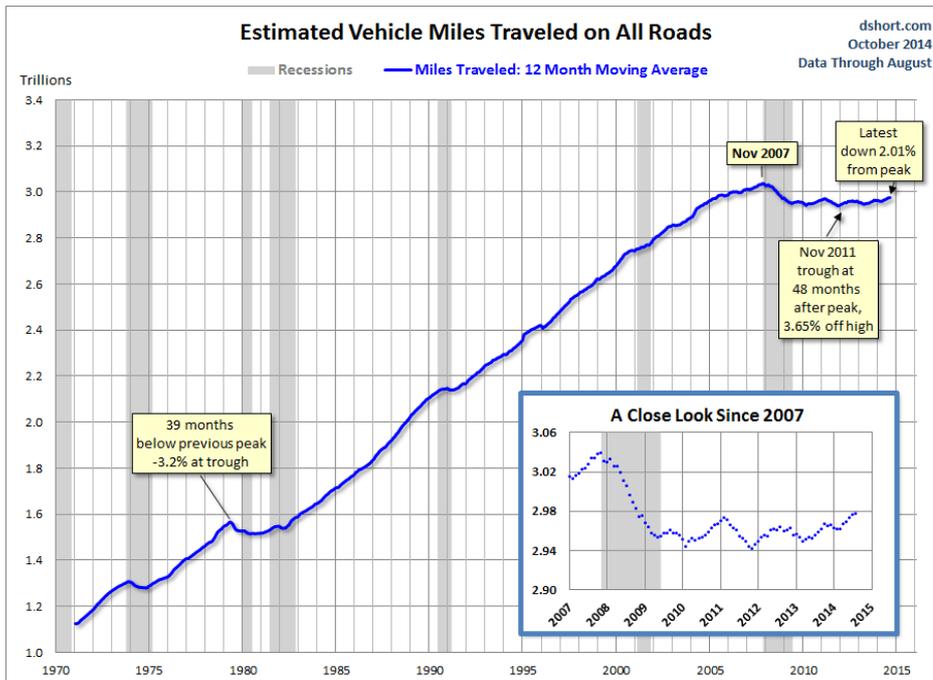


Figure 11 - Estimated vehicle miles driven on all roads USA, 1970-2012
 (Source: <http://www.businessinsider.com/vehicle-miles-driven-2013-8?IR=T>)

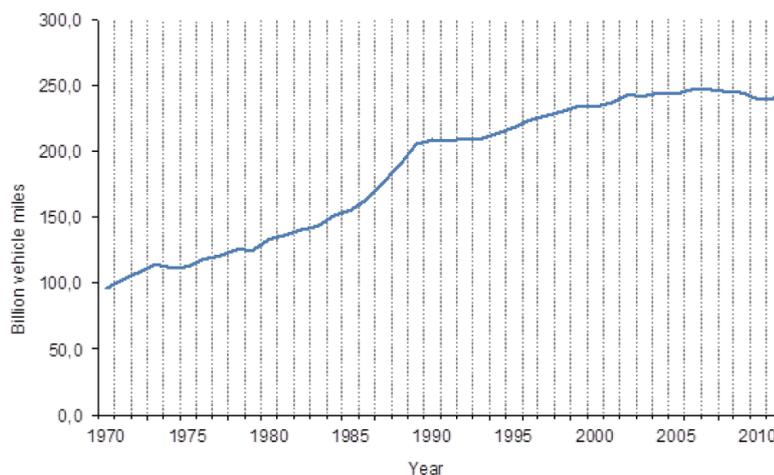


Figure 12 - Estimated vehicle miles driven on all roads in Great Britain, 1970-2012
 (Source: GB National Road Traffic Survey, Department for Transport)

2.4 – CAUSES OF THE “PEAK CAR”

Scholars who have discussed the possibility of a “peak car” have found different causes (Stocchetti, 2013):

- traffic management guidelines (ibid);
- the increasing importance of home working (ibid);
- the economic crisis (ibid);
- a shift from privately owned cars towards car rental and car sharing (ibid);
- demographic changes in license owners composition (Stocchetti, 2013).

Jones argued that: “in Europe the greater population density and urbanization, the more extensive provision of public transport facilities and the much higher cost of buying and running a car all result in maturity being reached at lower levels of car density than in North America” (Jones, 1981). Practically he identified the factors that could bring down car use in:

- the impact of population density and of urban transport policies on car demand;
- the overall cost efficiency of the car in respect to other means of transport (Jones, 1981; Stocchetti, 2013).

Goodwin does not admit explicitly the existence of a “peak car” as a downward spiral of car use, but he recognizes a lower car use and classifies possible factors in different categories (Stocchetti, 2013). Together with economic motivations like costs, prices and income, other important classes are:

- quality and reliability of public transport (ibid);
- new policy trend in land use that reduces urban sprawl and increases the quest for the benefits related to central area locations (ibid);
- social and technological changes that affect people preferences and behaviors as for patterns of work, use of leisure time, way of shopping and so on (ibid);
- mobile internet technologies that increase the accessibility of public transport and offer an alternative way of using time while commuting (Goodwin, 2012; Stocchetti, 2013).

Newman and Kenworthy pinpoint three additional reasons (to the related above) for the “peak car” (Stocchetti, 2013):

- the aging population in the cities (ibid);
- the development of a culture of urbanism, intended as the tendency to locate near the center in order to find more opportunities (ibid);

- the hitting of the “Marchetti’s wall”, that is the reaching of a development condition that puts severe limitations to the growth of urban areas and that can be overcome only through the construction of transport systems much faster than cars in a context of urban traffic (Newman and Kenworthy, 2011; Stocchetti, 2013).

Obviously, if cities get bigger and people tend to establish their businesses just an hour away from them, efficient means of transport are needed, especially in hyper-urbanized areas.

In fact, Marchetti states that the amount of time or effort that people spend in daily transfer is constant and the actual travelled distance depends on the used mean of transport (Marchetti, 1994). According to this author, the historical analysis of human settlements and of human instincts demonstrate that people tend to move and establish their activities in a defined area by a limit of one hour travelling time (known as the “Marchetti’s wall”) (Stocchetti, 2013). For example, if the average speed of a car in urban traffic is 30 Km/h, the Marchetti’s wall will be an area with a radius of 30 Km. This limit of 30 km is able to influence the individual choices of localization and the choices of destinations for daily activities, thus the urban development (ibid).

Kenworthy and Laube measured the average travel work in 46 cities of United States, Western Europe, Canada, Australia and Asia: the average values are between 22 and 35 minutes for trip, while minimum and maximum are respectively around 20 and 40 minutes (Kenworthy and Laube, 1999; Stocchetti 2013).

Shafer and Victor reached the same results but demonstrate that also the share of income allocated on travel it is fixed and it follows the income trend (Shafer and Victor 2000, Stocchetti 2013).

Metz identifies a mix of causes at the basis of the peak car, all referable to the saturation of the demand for daily travel, which on its turn derives from two joint factors:

- the improved mobility systems, providing high levels of access and destinations’ choice at a higher speed (Metz, 2010, 2012; Stocchetti, 2013);
- the “fixed budget” (in terms of time and costs) that individual allocate to daily travel and that drives people to live in a range (generally, less than one hour of travel) not exceeding a predetermined distance away from the main daily activities, work being typically the first of these ones (Metz, 2010, 2012; Stocchetti, 2013).

Stocchetti assigns a fundamental role to sustainable policies. He argued that: “sum policies might have gone far beyond spreading the acceptance of traffic restrictions, but they might have familiarized a generation with a different concept of lifestyle that breaks the long-standing relationship between income, motorization and private mobility” (Stocchetti, 2013).

The “Deloitte Global Automotive Consumer Study” found a specific set of megatrends influencing automotive industry (Deloitte Review, 2014):

- **Hyper-Urbanization.** Today half of the whole world’s population is living in the cities. And is expected that this data will reach 70% in 2050 (90% in North America). Therefore, taking into consideration Marchetti’s constant, more efficient way to move is expected.
- **Globalization.** First paragraphs (Data & Trends) showed that demand is increasing in the emergent countries. Consequently, automakers are facing a trouble situation with the trade-off of prioritizing well-developed countries or new economies.
- **Connected technology and software.** Consumer are expecting that new technologies will be integrated with their habits both outside and inside the vehicle. This implies a risk of disruption in the current business model in response to the rapidly evolving digital world.
- **Sustainability and environmental pressure.** Governments are introducing sustainable policies, like the EU 2020 60.6 miles per gallon (MPG), Japan 2020 55.1 MPG, and the U.S. 2025 54.5 MPG. Therefore, automakers are facing the problem of providing different powertrain solutions.

2.4.1 – FINDINGS

90 percent of Gen y, consisting in nearly 2 billion people worldwide born between 1977 and 1994, is expected to buy a vehicle in the next five years (Deloitte Review, 2014). For this reason it will be helpful understand what customers are demanding. That is the goal of “The Deloitte Global Automotive Consumer Study”, which includes US, Germany, Japan, China, India and Brazil in the sample.

Gen Y wants technology, as what emerges from the study. However, for a generation that is constantly exposed to digital technology, the demand of vehicle that do not crash is the first technology desired in all of the six countries of the study. For what concerns connectivity and cockpit technologies developed countries show low interest than their counterparts like Brazil and India. This relates to the 24/7 connectivity that people of well-developed countries are affording: they are bound to their personal smartphones. Therefore, it is hard for carmakers to satisfy this divergence. Moreover, introducing digital technologies in the car means stay at the same pace of production of the technology industry where a consumer leaves the older smartphone as soon as a new technology is available.

In face of this considerations, automakers must consider new ecosystems with new partners and different business model, because who will achieve these challenges will benefit of a huge disruption in the industry.

Concerning the autonomous vehicle technology from now it seems that consumers are more interested in basic level of automation (improving stability control, breaking technology etc.). It is a question of safe because they feel unconformable with the idea of not controlling the vehicle.

However Deloitte's study evidence that "consumers are unwilling to pay significantly more for access to those features" (Deloitte Review, 2014) and "though three-fourths of US consumers indicated they would pay a premium for the technology they desire, only 25 percent are willing to pay 2,500 dollars" (ibid).

Gen Y in all the six countries lists alternative powertrains as the second greatest benefit behind vehicle that do not crash. Interestingly, this generation is expecting to drive an alternative powertrain vehicle in the next five years. Customers are demanding a wider offering of alternative engines; in addition, especially in the well-developed markets is expecting the same price for these vehicles in comparison to IC ones. "Only 38 percent of US Gen Y consumers (and even lower, only 27 percent, for other US generations) indicate they would be willing to pay a premium of at least 2,000 dollars for alternative powertrains," stated Deloitte's study (Deloitte Review, 2014). However, savings is the reason for consumer who want alternative fuels. It is not a question of protecting the environment.

There is a big opportunity for carmakers to educate consumers about alternative engines, because data show that they do not know enough.

Convenience is the first factor when consumer are affording purchase decision. This is related to the entire customer experience, both purchasing process, post-sales service and maintenance (Deloitte Review, 2014). It is important for carmakers because they have to offer a great experience in all vehicle's life in order to attract consumers.

The reason lies behind lower costs, which is the first variable for every consumer. Especially, the cost of ownership rather than that of purchasing. To avoid this consumers prefer to use other means of transport. Therefore, automakers have a strong opportunity in developing more creative and flexible total purchase and operating cost financing options (Deloitte Review, 2014). Deloitte's research showed that there is a growing preference for alternatives modes of transport: "forty-two percent of US Gen Y consumers (versus 28 percent for other generations) are willing to use car-sharing, car-pooling, or similar services if they were readily available and convenient" (ibid). In fact, alternative modes of transportation can offer convenience, the

possibility of stay connected and high quality transportation. In addition, many people of gen y feel comfortable with the idea of planning transportation with an app.

Summing up, the greater emphasis given over time to the collective disadvantages associated with the use of the car may have drastically changed the individual assessment of the trade-off between the costs and the benefits of owning a car (Stocchetti, 2013). In addition, new alternatives of mobility are spreading (such as short- or long-term rental and car sharing), and getting more efficient comparing to the costs of owning a car. What's more, the time usually spent for driving can be employed for other activities, like using mobile devices during transit, or doing physical activity thus improving one's health. In all of this, local, national and European policies to make cities more sustainable are affecting the overall evaluation of the car. However, is always a question of money. New generations put more value for money related to mobility, than older generations.

2.5 – SUSTAINABILITY ISSUES

As we have seen, data show that when we refer to sustainability customers are more influenced by lowering cost than environmental concerns. However, many scholars who considered sustainability as a primary goal in our economy had constructed models consisting in the costs-benefit analysis of the car impact. All contributors in the field recognize more or less the same set of disadvantages linked to car dependence (Stocchetti, 2013).

In short:

- quality of life decreases with emissions and related health damages (ibid);
- traffic congestion generates disadvantages related to loss of time (ibid);
- high social and private costs emerge with car crashes and minor accidents (ibid);
- other societal, environmental and economic disadvantages are related to global warming and environment detriment (ibid);
- land use and the disadvantages related to the infringement of other possible use of the space occupied by the vehicles and the required infrastructures (ibid);
- negative effects of various kinds associated to a sedentary lifestyle (Stocchetti,2013).

Kenworthy and Laube (1999) demonstrate that there is no economic advantage for the collectivity in developing car dependence. Indeed, the evaluation of external/social costs of transport modes reveal higher costs arising from cars than other transport modes (Stocchetti, 2013).

Several authors tried to estimate the external costs of vehicle ownership, which are social costs not directly suffered by the owners. According to a review by Lemp and Kockelman (2008) the overall sum of external car use costs varies from 0.16 to 0.27 euro per mile driven, according to car type and size. This would mean an external total cost in Europe for each car on the street between 2,400 and 4,000 euro per year: in London, for instance, where 350,000 cars are estimated entering the central area every day, external costs would be from 2.3 to 3.8 million euro per day (Stocchetti, 2013).

2.6 – THE SHIFT IN ATTITUDES THAT WILL AFFECT CARMAKERS STRATEGY

There is a shift in EU policies for SUM from a vision focused on technical aspects (mere restrictions) to a holistic view (long-term lifestyle goals), which includes the development of societal desirable aspects (Stocchetti, 2013). Along with specific policies, new priorities are emerging with the objective of implementing smart mobility and reducing car dependency:

- **Sustainable transport.** The traditional “predict and provide” model of transport planning is left for a more sustainable one: car is no longer seen as the input for investing in road construction, besides it has a negative connotation, with car traffic as an element to be possibly minimized (Stocchetti, 2013).
- **Energy efficiency.** The development of an energy-efficient mode of transport is a cornerstone in urban planning: since car is at the bottom of the efficiency scale, transport systems push towards making its role as marginal as possible and to exploit the advantages of urban density (Stocchetti, 2013).
- **Urban and metropolitan mobility development.** Several projects have been implemented and are developing right now with the intent to increase the accessibility of the overall systems of urban mobility tools in an area through the integration of fares and tools of payment (Stocchetti, 2013). With this action, as the development advance, car will be marginalized.
- **Health and segregation issues.** Planning principles are enhancing the role of walking and cycling as ways to reduce health problems (cardiovascular disease, obesity, etc.) in order to spread the presence of people in all areas, thus improving urban safety through social control, and finally avoiding the creation of differently-accessible areas, precursors of ghettos and of social segregation (Stocchetti, 2013).

White paper 2011 states: “the use of smaller, lighter and more specialized road passenger vehicles must be encouraged. Large fleets of urban buses, taxis and delivery vans are particularly

suitable for the introduction of alternative propulsion systems and fuels” (Commission of the European Community, 2011; Stocchetti, 2013).

These objectives are integrated with EU2020, a plan drawn up by the European commission (which believes that automotive industry "remains of strategic importance and a cornerstone for the EU industry and economy, providing quality employment to millions of workers") in 2012, which has three priorities mutually reinforcing (European Commission).

1. Smart growth: developing an economy based on knowledge and innovation.
2. Sustainable growth: promoting a more resource efficient, greener and more competitive economy.
3. Inclusive growth: fostering a high-employment economy with a social and territorial cohesion.

A measurable objective is the “20 - 20 – 20”, which is reducing emissions of greenhouse gases by at least 20% compared to 1990 levels or by 30%, if the conditions necessary, bring to 20% the share of renewable energy in our final energy consumption and 20% improvement in energy efficiency.

Therefore, in the search for new technologies the Europe's energy dependence is therefore also at stake. These standards are pushing the OEMs and the specialized suppliers to invest in innovation on the powertrain, and on new materials in order to reduce vehicle weight; actually, "every cent for vehicles are made lighter typically results in 0.7% lower fuel consumption and CO2 emissions” (European Commission).

2.7 – EMERGENT NEEDS

The recent automotive crisis could not be linked to mere economic reasons. The car is no longer seen as the first and most rational means of transport. This entail a new industrial perspective:

- the search for a new business ecosystem in the automotive industry;
- a closer integration between policy makers (those involved in the mobility plan) and carmakers;
- clean and sustainable vehicles;
- the internet of things (IOT). This involves information and communication links among objects (from anything to any other, at any time at any location), vehicle to guidance/navigation, vehicle to safety systems and vehicle to fueling infrastructure.
- autonomous road vehicles (this implies a changed concept of the vehicle from an owned object to a delivered service)

- the development of an urban platform using ICT to communicate with the intelligent vehicles.

In my opinion to deal with automotive difficulties and opportunities, there is a need to shift the focus from car to mobility as the real product. Cars in fact are part of a larger system. Larger system can be define as ecosystem as I will explain later. One of the most talked possible future ecosystem in the automotive industry is the electric one.

2.8 – ALTERNATIVE POWERTRAINS SOLUTIONS

Main solutions for sustainable vehicles available nowadays are (Garibaldo, 2013):

1. more efficient IC engines;
2. alternative engines consuming non-renewable sources, such as methane and liquid gas;
3. renewable sources, such as hydrogen as fuel, or to produce electricity in a fuel cell (FCEV) as Hyundai Miurai; and methane, as a renewable source, such as the case of the Audi e-gas project;
4. mixed solutions such as Hybrid Electric Vehicle (HEV), Plug in Hybrid Electric Vehicle (PHEV);
5. battery electric engines (BEV).

OEMs are struggling to understand what could be the best technology, due to the high costs of adoption and the difficulty of consumers to afford higher prices. The recent case of the decisions taken by the London authority to change the rules for the exemption of cars, with low emissions, from the city's congestion charge is a clear example of the uncertainty, even for consumers, in taking a well-informed investment decision (Garibaldo, 2013).

To afford these uncertainty carmakers decided to introduce most of these solutions in their portfolio. This strategy, however, is very expensive and based on strong market segmentation, which is not profitable for carmakers.

2.9 – DIFFICULTIES AND OPPORTUNITIES

The search for sustainable transport is above all a social one, as I said in the first part of the thesis. Understanding this, there are important obstacles to overcome in particular for cases 3), 4) and 5).

- First, there is a problem with the final price although the cost of maintenance of the vehicle is lower than a conventional one (IC).

- Subsequently there is a problem linked to the autonomy, due to the different energy density of batteries compared to traditional fuel vehicles (case 5).
- Then there is a problem related to storage in vehicles for case 3) and for the construction of a new distribution chain for cases 3) and 5) (for example, to build the entire infrastructure necessary for hydrogen solution, it occurs an investment of 5 billions euro)
- After that, there is a problem due to the need of an extra light vehicle for cases 3), 4) and 5).

Moreover, one of the most important objections against new sustainable solutions is the "wheels to wheels" (WTW) analysis: this consists in the study of the entire life cycle of the fuel. The wheels to wheels analysis divides into "Well to Tank" and "Tank to Wheels".

Most people think that solutions 3) and 5) have zero impact on the environment, however in reality you have to consider also the "wheel to thank" phase. Hydrogen and electricity have a production process, which implies a cost for the society. For this reason when we make a comparison among all five alternatives is correct to use the "wheels to wheels" analysis.

A study commissioned by Transport & Environment, Friends of the Earth Europe, Greenpeace European Unit and WWF Germany in 2010 concluded that: the well-to-wheel environmental impact of EVs and PHEVs is largely determined by the type of electricity used to charge the production batteries. If electricity is produced from coal or lignite, well-to-wheel CO₂ emissions are typically higher equal to the emissions of a comparable IC car. When the electricity comes from gas-fired power plants, emissions are significantly lower. Electricity from renewable sources, such as wind, solar or hydro energy, would result in zero CO₂ emissions per kilometer (Kampman et al. 2010; Garibaldo, 2013).

A recent research presented by GM and based on the JEC (Joint Research Centre) data states: "fuel lifecycle GHC (greenhouse gas emissions) for conventional diesel and CNG (compressed natural gas) were within the range of conventional gasoline and gasoline strong hybrids. Biofuels and bio methane blends could reduce further top lifecycle for GHC these internal-combustion engine options. The BEV, plugged into electricity with the GHC footprint of the average mix of the EU grid, provided GHG about half that of conventional gasoline and 30% below that of a strong gasoline hybrid. If the BEV were powered with wind electricity, fuel lifecycle GHG would be zero. Wheels to Wheels GHC of the Extended Range EV, like the BEV, depends on electricity GHC footprint, but also depends on charging and driving behavior" (GM, 2012; Garibaldo 2013). Concerning autonomy problem for BEV, we should consider the average daily distance covered. If we take the example of Germany the daily average distance covered is 31 km, thus the

autonomy problem should be reconsidered. Indeed, data show that if we spread the cost of the car's life in 200,000 km, today is already convenient to buy an electric car.

Furthermore, there are substantial opportunities for innovation through the storage of electricity in batteries. As I already told, the main problem remains the energy density of the fuel, which in the case of lithium batteries used today is about 200 Wh / kg, compared with about 10 KWh / Kg of fossil fuels, in practical terms we need batteries very heavy, bulky, and expensive (about 500 euro per KWh). Estimations state that by the end of this decade the cost of the batteries could be halved thus creating opportunities for innovation.

This may bring opportunities in the problem of storage energy produced from renewable resources. For example, we know that the wind produces strong fluctuations from maximum to zero. The introduction of smart grid would manage energy in an intelligent way in order to reduce wastes. New technologies, like Tesla battery (Powerwall) allow the storage of electricity at home or in larger buildings.

The technologies described above are opportunities but they need a lot of innovation. New relations between different economic sectors are coming to the fore with a growing need for coordination, through public policies, and for innovative business models (Garibaldo, 2013). For this reason after the analysis of Tesla motors, I will concentrate in the ecosystem innovation model.

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PART 3. TESLA CASE STUDY

INTRODUCTION

In this chapter, I provide a deeper understanding of Tesla under the lens of the SWOT, Value Chain and Resource Based analysis.

3.1 – COMPANY PROFILE

Tesla Motors was founded in 2003 in San Carlos, California, as a company with the goal of accelerating electric transport. The head behind this is Elon Musk, which is the main investors with 7 million dollars initially, and 30 million later. In order to produce the first car, Tesla Motors created a design contest, which was won by Lotus Cars (British manufacturer). The Roadster is a sport car, for this reason Lotus was a natural partner, thanks to its knowledge in building sports and racing cars. Effectively, the Roadster was jointly engineered and manufactured with Tesla using Lotus Elise as a framework.

Time magazine in December 2006, proclaimed Tesla Roadster as the best innovation in transportation category. However in 2007 was clear that the company was losing money. Sales were not enough: Musk discovered that they were losing 50.000 dollars on each car sold. Apparently, there was a wrong calculation of production costs, in the 92.000 dollars final price. Martin Eberhard, which was in charge of the project, was a first time CEO with a lot of passion but no experience and he was accused of being late and over budget. Consequently, Musk that wanted to invest in Tesla, but not run, fired Martin Eberhard and decided to take over engineering himself. With him also arrived an engineering revolution in almost every important system on the car, including redesigned, retooled or switched component to a new supplier. Such dramatic changes were essential in order to reach the published performance and safety expectations, as well as to cut costs. Therefore, in 2008 the Roadster was launched completely redesigned at a base price of 109.000 dollars, and in December 2009 Tesla had sold 937 Roadster in 18 different countries around the world. According to the U.S. EPA, the Roadster can travel 244 miles (393 km) on a single charge of its lithium-ion battery pack, and can accelerate from 0 to 60 mph (0 to 97 km/h) in 3.7 or 3.9 seconds depending on the model (Tesla Motors, 2011).

More than 1,200 additional people had put in deposits to reserve a Roadster, giving the company 70 dollars million in interest-free loans. Three years later, on December 31, 2012, Tesla had sold more than 2,450 Roadsters. The 2008 version of the Tesla Roadster had been discontinued and replaced with a new model, the Tesla Roadster 2, with an improved electric powertrain performance and lower production costs. The Roadster Sport, which accelerates from zero to 60 miles per hour in 3.7 seconds (faster than a Porsche 911 GT), was the next vehicle added to the pipeline.

However, Tesla Motors decided to discontinue production of the Roadster after announcing the introduction of the Model S, for focusing in core products. The prototype was showed in 2009 and by the end of the year got 2000 customer reservation with a minimum down payment of 5000 dollars. Before becoming marketable in June 2012 Model S reached 12,000 reservations. Tesla Motors obtained a Toyota factory placed in Fremont (California) in May 2010 and chose to produce Model S there.

The car has 5 places to sit, goes from zero to 60 in 4.4 seconds, and according to U.S EPA has a per-charge range of 265 miles with an 85 kWh battery pack. U.S EPA. As Musk described the electric car's efficiency and range on Tesla's blog, "With the 85 kWh Model S battery we set a goal of delivering a range greater than 300 miles using the 2-cycle EPA test procedure that we used with the Roadster. This is a goal that no electric vehicle (EV) in history had ever achieved. We are thrilled to say that we exceeded this goal." (Tesla, 2012). One University of Central Florida senior researcher traveled more than 423 miles on a single charge in his Model S Signature model, which boasts the larger 85-kilowatt-hour battery.

Deliveries of the Model S began on June 22, 2012, and positive feedback followed. As of December 2012, there were over 20,000 reservations for the vehicle, and Tesla was producing some 500 cars a week by the summer of 2013. The base price of the Model S has been 52,400 dollars (after a 7,500 dollars tax deduction) since January 1, 2013.

The Tesla Model S won awards such as the 2013 World Green Car of the Year, 2013 Motor Trend Car of the Year, Automobile Magazine's 2013 Car of the Year, Time Magazine Best 25 Inventions of the Year 2012 award and Consumer Reports' top-scoring car ever. In 2015, Car and Driver named the Model S the Car of the Century (Sherman; Don, 2015)

In an attempt to build on its success with the Model S, Tesla has begun work on a newly designed seven-seat electric vehicle, the Model X, which will combine the best features of an SUV with the benefits of a minivan. It plans to deliver the first Model X in late 2015.

Tesla's growing popularity and big plans continued to face scrutiny through 2012 because of its financial uncertainty. Tesla completed its IPO on June 29, 2010, the first IPO by an American automaker since Ford in 1956. On the first day of trading, Tesla's shares closed at 23.89 dollars

and generated 226.1 million dollars for the company. Despite this, in its first annual report, Tesla reported an operating loss of 146.8 million dollars. By the end of 2012, it reported total losses of more than 396 million dollars. However, in a letter to shareholders for the first quarter of 2013, Tesla announced its first profitable quarter in 10 years, with a GAAP profit of 11 million dollars. In the first-quarter shareholder letter, Elon Musk stated that Tesla's profit was attributable to operating more efficiently than ever before:

"As our manufacturing processes stabilized and our supply chain continued to mature, we turned our attention to improving execution. In the process, we reduced the hours required to build a car by almost 40% from December to March. We also improved our inventory management. During Q1, raw materials declined by almost 26%, while unit production increased 80%. Better inventory management contributed over 30 million dollars in cash and reduced our logistics costs during the quarter" (Tesla Motors, 2013) .

Operating globally, Tesla also provides electric vehicle power trains and technologies to partner organizations that are aspiring to make electric alternatives a part of their model lineup (Fleming & Moar, 2014).

A key enabling piece of intellectual property is the ongoing development of lithium-ion batteries, the energy storage system in their vehicles that largely determines the usability and range of their products (ibid).

Another important factor about usability and range of their vehicles is the network of Superchargers. These stations charge more than half of the battery in 20 minutes, allowing drivers to cover long distances. However, Tesla is different from other carmakers, not just for focusing on EVs. They are the only firm to skip the dealership-model of car sales, opting instead to have showrooms around the world that display their model lineup and then complete the actual sales online (ibid). This marketing strategy, has seen a lot of conflict and resistance, especially in North America where the dealership model is well entrenched in the auto industry (ibid).

3.1.1– MISSION

Tesla's vision is to guarantee that "every Tesla and electric vehicle using our technology is a step towards making increasingly affordable electric cars available to the consumer" (Tesla Motors, 2015). In doing this, "Tesla's batteries and power trains will help lessen global dependence on petroleum-based transportation and drive down the cost of electric vehicles. By cooperating

with other car manufacturers, we hope to put more electric cars on the road” (ibid). The firm will accomplish this vision by implementing a four-tiered mission:

1. A Clean Start – Using a Silicon Valley approach, constantly innovating and going beyond traditions and critics.
2. Committed to Electric - Tesla is producing the best EVs in the world, providing a new path to a sustainable energy future.
3. Built around the Driver – Tesla offers a beautiful driving experience (thanks to its powerful drivetrain) in addition to the awareness of being part of one of the most admired company in the world.
4. Sparking the Evolution – “Tesla’s goal is to accelerate the world’s transition to electric mobility with a full range of increasingly affordable electric cars. We are catalyzing change in the industry. Tesla vehicles and EVs powered by Tesla are fun to drive and environmentally responsible” (ibid).

Tesla is achieving its objectives entering at the high end of the market, “where customers are prepared to pay a premium, and then drive down market as fast as possible to higher unit volume and lower prices with each successive model” (Musk, 2006).

Concerning the introduced Silicon Valley approach, “all free cash flow is plowed back into R&D to drive down the costs and bring the follow on products to market as fast as possible. When someone buys the Tesla Roadster sports car, they are actually helping pay for development of the low cost family car” (ibid).

The second point of the mission is focusing in the more environmentally friendly technology in order to build a sustainable energy future. This is done taking into consideration also where energy is provided as Elon Musk explained: “the obvious counter is that one can develop grid electric power from a variety of means, many of which, like hydro, wind, geothermal, nuclear, solar, etc. involve no CO2 emissions. However, let’s assume for the moment that the electricity is generated from a hydrocarbon source like natural gas, the most popular fuel for new US power plants in recent years.” (Tesla Motors, 2013)

Even with this assumption as we can see in table three, you are still more green with a Tesla.

Car	Energy Source	CO2 Content	Efficiency	CO2 Emissions
Honda CNG	Natural Gas	14.4 g/MJ	0.32 km/MJ	45.0 g/km
Honda FCX	Nat Gas-Fuel Cell	14.4 g/MJ	0.35 km/MJ	41.1 g/km
Toyota Prius	Oil	19.9 g/MJ	0.56 km/MJ	35.8 g/km
Tesla Roadster	Nat Gas-Electric	14.4 g/MJ	1.14 km/MJ	12.6 g/km

Table 3 - Roadster's CO2 emissions

Over all, Tesla's vision, mission, and strategic objectives represent those of a firm with excellent alignment and long-term sustainability at the forefront of their operations (Fleming & Moar, 2014).

3.2 – SWOT ANALYSIS

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Strong research and development capabilities are the reason that Tesla exists as a real alternative to traditional gas-powered cars. The “Silicon Valley” will stay at the core of what makes Tesla successful. • A high level of organizational capabilities allows Tesla to leverage their core competencies to generating alternative revenue streams, from acting as an OEM to acting as an energy provider directly to the consumer. • Long-term partnerships enhance Tesla’s long-term sustainability. This is in regards to both Panasonic and the creation of lithium-ion batteries to providing parts to Toyota, Mercedes-Benz, etc. • Tesla skips the traditional dealership sales model, enabling them to completely control all customer-facing components of their brand and allowing them to minimize costs associated with sales. • Elon Musk, co-founder, CEO, and product architect, is the image of the company. Leading the firm as a classic Silicon Valley CEO, he spearheads the brand image with his own unique style. 	<ul style="list-style-type: none"> • Entering the market at the highest level of per unit cost is currently costing the firm, even though it has also enabled it to get to where it is today. It is currently making profitability difficult to obtain. • Shipping costs are now disproportionately high, an extravagance that the bulk of the market will not accept.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Increasingly strict environmental regulatory environment. • Rebounding economy is starting to see an increase in luxury spending. • Technological development is enabling their concept of a feasible electric vehicle to be realistic, from battery technology that allows hundreds of kilometers of travel to an electrically powered drivetrain driven by magnetic fields. • Overall consumer and societal interest in moving away from a reliance on the oil and gas industry for energy gives Tesla the opportunity to establish themselves as the electricity recharging option through their network of supercharger stations. • Big data analysis enabled Tesla to be aware of a shifting consumer mindset when it comes to their automotive carbon footprint. 	<ul style="list-style-type: none"> • By simply existing, Tesla has revealed that it is possible to break into the traditional automotive oligarchy by employing a different and nimble business plan. This also paves the way for an increasing level of competition. • The oil and gas industry is also quite entrenched in the energy sector. As such, they control a huge amount of power and resources that they will likely deploy to fight Tesla’s progress should they become a serious threat in regards to energy provision. • The dealership model of sales in the automotive industry is also under attack by Tesla. Having substantial power and resources themselves to mobilize against Tesla to protect their interest in the industry, Tesla is already seeing them push back in regions like Texas

Figure 13 - Tesla's SWOT analysis

3.3 – VALUE CHAIN ANALYSIS

The value chain of Tesla is mostly internally controlled and managed. In fact, they have control from R&D and manufacturing to dealing with customers. Probably this happens because in

reality the electric vehicle is simpler and has fewer components compared to the internal combustion vehicle. This results in a reduction of the phenomenon that has characterized the automotive industry in recent years, the outsourcing. A phenomenon that may not be good for the manufacturer because of the intrinsic features of the car, whose product architecture is characterized by persistent integrality and in which the carmaker acts as knowledge accumulator of interdependencies between components (Zirpoli and Becker, 2011). However, as we can see in the next figures Tesla has strategic partnerships in order to enlarge its business.

Strategic Alliance Partner (Location)	Types	Equity/Non-Equity or JV alliance	Products/Services Provided
Sotira (France)	Supplier	Non-Equity	Mfg. carbon fiber & sends it to Lotus in U.K.
Lotus (U.K)	Supplier	Non-Equity	Build unique chassis and sends it to Tesla in Menlo Park, CA.
Panasonic, multiple suppliers (Japan)	Supplier	Equity	Battery cells for Tesla's battery pack
Borge Warner (U.S.)	Supplier	Non-Equity	Single-speed gearbox
Panasonic (Japan)	R&D	Equity	Battery cell R&D: working on developing nickel-based li-ion battery cells
Dana Holding Corp. (Canada & U.S.)	R&D	Non-Equity	Heat kills batteries. Designed heat-exchange technology to keep batteries operating at peak efficiency using Tesla's climate control system
Daimler (Germany)	OEM for other auto mfg.	Equity	Daimler integrates Tesla's battery packs and charging electronics into Smart Fortwo development
Freightliner (owned by Daimler); Toyota; and Others	OEM for other auto mfg.	Equity	Develop electric vehicles, power train components, battery packs, charges, parts and production systems and engineering support
Toyota	OEM for other auto mfg.	Equity	Develop electric version of Toyota's Rav4 SUV in Tesla's new Los Angeles, CA. manufacturing plant (former GM-Toyota manufacturing plant); production and sales begins in 2012.
US Government-DOE		Loans	Loans to accelerate production of affordable, fuel-efficient vehicles

Figura 14 – Tesla's Partnerships
(Source: Meherunnesha, 2014)

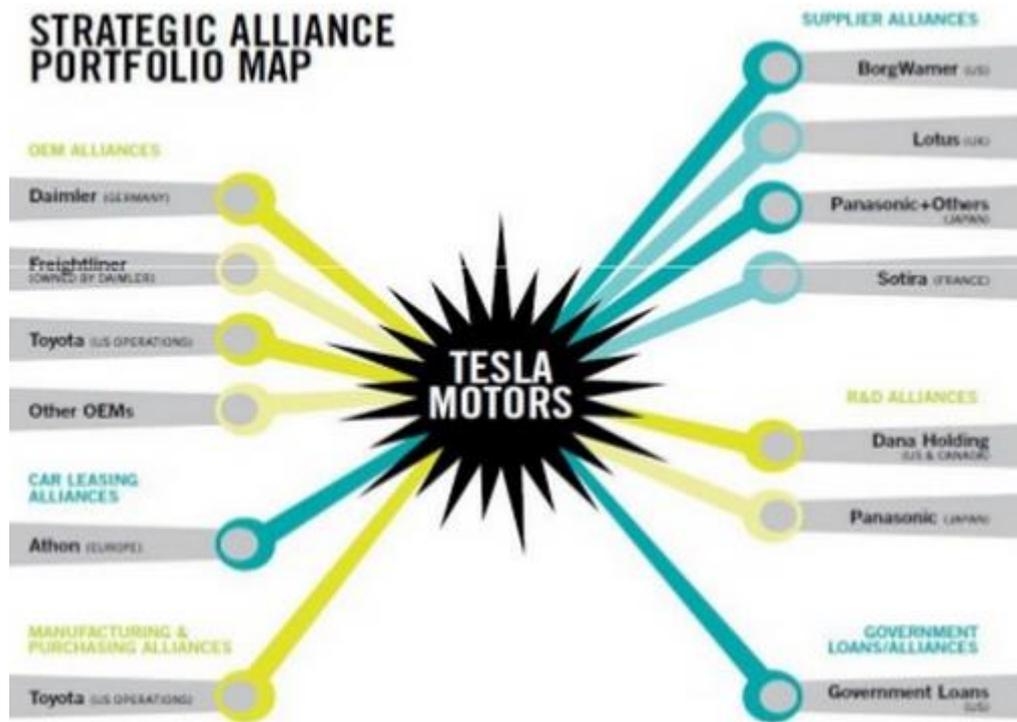


Figure 15 - Tesla's Strategic Alliances
(Source: Meherunnesha, 2014)

The components that compose Tesla value chain are the ones that make difference from the competition. Therefore, policies and operational details are unknown. Not even a stakeholder can have a tour in their factory. This implies difficulties in making the value chain analysis.

PRIMARY ACTIVITIES	
Operations	<ul style="list-style-type: none"> • Tesla takes care of everything from design to tooling, and would therefore have a very efficient system of processes set up with in their single plant. Details are confidential to protect the competitive advantage gained by these efficiencies. • It is known that Tesla relies heavily on robotically automated processes. 160 robots work alongside workers throughout the entirety of the assembly line (Lavrinc, 2013)
Inbound logistics	<ul style="list-style-type: none"> • Single manufacturing plant creates significant shipping costs. This is, however, mitigated by the fact that Tesla entered at the top of the market with a single very expensive model. As they descend to scalable and affordable models, a shift in manufacturing style could occur. • Tesla manufactures vehicles based solely on demand, often not beginning specific production until an order is made. This works because of their top down approach to the market and a consumer willingness to wait. • Rigorous testing procedures are undertaken to ensure than each product is as excellent as it is purported to be. Typical automotive checks are completed in addition to having 1,500 gallons of water sprayed at it to ensure no leaking, road surface tests to check for rattling and squeaking, and 20-mile final run (Jerew, 2013).
Outbound logistics	<ul style="list-style-type: none"> • Final steps of manufacturing are all done in the same plant, minimizing transport costs and enhancing the continuous quality of work. • Product deliveries are done on an individual basis because of the nature of the current business model. When possible, it is likely that vehicle are shipped simultaneously to the general region and then delivered independently.
Marketing & Sales	<ul style="list-style-type: none"> • Tesla's business model approaches the market from the top-down, recognizing a consumer and general societal demand to move the automotive industry away from a reliance on the oil and gas industry. In this and in following a "Silicon Valley" approach to rapid and malleable business development, Tesla is on the cutting edge of market intelligence and effective utilization of big data analytics. • Tesla largely relies on its customers as the main source of promotion. While admittedly not being a great model to base advertising, Tesla is approaching the crossroads of a traditionally bad-for-the-environment industry and a viable environmentally friendly solution. This has generated a lot of hype and consumer awareness to prove that their model is indeed working out quite well for them. • Tesla skips the entire dealership sales model in stark contrast to the rest of the industry. This allows them to maintain complete control over the customer facing experience that the brand as a whole offers by having showrooms to demonstrate and promote their vehicles. Sales are done solely through their online platform, completed with to-the-door shipping, another atypical aspect that make Tesla stand out from their competition.
Service	<ul style="list-style-type: none"> • Tesla's service is nearly unparalleled in the automotive industry. Their unique market approach enables them to have response times and service quality that meets the demands of every customer. Their service is such that the company received the highest rating ever seen from consumer reports: a startling 99 out of 100 complete satisfaction rate (Autoblog, 2013)

Table 4 - Tesla's Value Chain (Primary Activities)

SUPPORT ACTIVITIES	
General Administration	<ul style="list-style-type: none"> An excellent leadership team led by CEO and co-founder Elon Musk spearheads Tesla's strategic management and ensures attainment of overall goals and objectives. They leverage their organizational capabilities to generate more revenue streams than just their vehicles, and they create and maintain excellent relationships with all of the key stakeholders in their network. In relationship management, Elon Musk leads Tesla in a very typical star-CEO fashion that is often seen of Silicon Valley. Comparable peers include the late Steve Jobs of Apple and Sergey Brin of Google. Musk speaks at keynotes just as these other two firms do, hosting fans and customers in an event that looks very much like a rally.
Human Resource Management	<ul style="list-style-type: none"> Employees are attracted to Tesla partly because the firm is on the breaking edge of technological development in the electric vehicle industry and is upsetting the automotive industry as a whole. Employees "work in small, focused teams which, much like (their) products, are agile, efficient, and focused on excellence." Employees are constantly challenged to create solutions that will have a positive environmental impact and create value for the end consumers of their products (Tesla Motors, 2015). Being in Silicon Valley, Tesla's work environment is at the forefront of global innovation in regards to maximizing performance, comfort, and engagement. Employees are incentivized with competitive pay, as is the norm in the region and likely have stock options as well.
Technology Development	<ul style="list-style-type: none"> Tesla is a firm based on the utilization and development of advanced technology. As such, the firm relies on these innovations and employs them through the development, manufacturing, and customer-facing processes. Employees at Tesla work in small, agile, and creative teams to find the recommendations that take care of the problems they are working towards solving. A Silicon Valley approach means taking every employee's thoughts and ideas and actively engaging and evaluating them to determine if they will make it into the product. Every bit of creativity and innovation matters at Tesla and plays a role in the advancement and long-term development of the firm. Employees in the firm are qualified with university degrees in engineering or their related field. Being a highly competitive employment environment in Silicon Valley and being a company that is sought after to work for, Tesla commands an excellent level of overall education in their employees.
Procurement	<ul style="list-style-type: none"> Differentiating Tesla from the rest of the automotive industry is the requirement of high-quality batteries in addition to all of the components that are different in electric vehicles. Tesla takes care of the drivetrain in-house, but outsources the creation of their lithium ion batteries to Panasonic. This relationship is fundamental to the firm and was just extended to increase the capacity of batteries supplied and to move forward to the next generation of battery development. Being a firm that utilizes the newest and best pieces of machinery and robotics, Tesla owns all of their equipment. This ideal for the long-term sustainability that they are aiming to achieve and will help them minimize costs in the long run.

Table 5 - Tesla's Value Chain (support activities)

3.4 – RESOURCE-BASED VIEW ANALYSIS

Tangible Resources

3.4.1 – FINANCIAL SITUATION

Surely, one of the first questions that come to mind when we think about Tesla, is if it is able to obtain profits. As we have seen, this is also one of the most asked questions when we discuss sustainable businesses.

Year over year, Tesla Motors, Inc. has seen their bottom line shrink from a loss of 74.0 million dollars to an even larger loss of 294.0 million dollars despite an increase in revenues from 2.0 billion dollars to 3.2 billion dollars. An increase in the percentage of sales devoted to SGA costs from 14.18% to 18.87% was a key component in the falling bottom line in the face of rising revenues.

Currency in Millions of US Dollars	As of:	Dec 31 2011 Restated	Dec 31 2012	Dec 31 2013	Dec 31 2014 Press Release	4 Year Trend
Revenues		204.2	413.3	2,013.5	3,198.4	
TOTAL REVENUES		204.2	413.3	2,013.5	3,198.4	
Cost Of Goods Sold		142.6	383.2	1,557.2	2,316.7	
GROSS PROFIT		61.6	30.1	456.3	881.7	
Selling General & Admin Expenses, Total		104.1	150.4	285.6	603.7	
R&D Expenses		209.0	274.0	232.0	464.7	
OTHER OPERATING EXPENSES, TOTAL		313.1	424.4	517.5	1,068.4	
OPERATING INCOME		-251.5	-394.3	-61.3	-186.7	
Interest Expense		0.0	-0.3	-32.9	-100.9	
Interest And Investment Income		0.3	0.3	0.2	1.1	
NET INTEREST EXPENSE		0.2	0.0	-32.7	-99.8	
Currency Exchange Gains (Loss)		--	--	11.9	--	
Other Non-Operating Income (Expenses)		-2.6	-1.8	10.7	1.8	
EBT, EXCLUDING UNUSUAL ITEMS		-253.9	-396.1	-71.4	-284.6	
EBT, INCLUDING UNUSUAL ITEMS		-253.9	-396.1	-71.4	-284.6	
Income Tax Expense		0.5	0.1	2.6	9.4	
Earnings From Continuing Operations		-254.4	-396.2	-74.0	-294.0	
NET INCOME		-254.4	-396.2	-74.0	-294.0	
NET INCOME TO COMMON INCLUDING EXTRA ITEMS		-254.4	-396.2	-74.0	-294.0	
NET INCOME TO COMMON EXCLUDING EXTRA ITEMS		-254.4	-396.2	-74.0	-294.0	

Table 6 - Tesla's Financial Statement

(Source: Yahoo Finance)

Tesla Motors, Inc. may have more financial risk than other companies in the Automobiles industry as it is one of the most highly leveraged with a Debt to Total Capital ratio of 73.18%. This ratio actually increased over the last year. However, an examination of near-term assets and liabilities shows that there are enough liquid assets to satisfy current obligations. Accounts Receivable are among the industry's worst with 15.73 days worth of sales outstanding. This implies that revenues are not being collected in an efficient manner. Last, inventories seem to be well managed as the Inventory Processing Period is typical for the industry, at 101.94 days.

Currency in Millions of US Dollars	As of:	Dec 31 2010	Dec 31 2011 Restated	Dec 31 2012	Dec 31 2013	4 Year Trend
NET INCOME		-154.3	-254.4	-396.2	-74.0	
Depreciation & Amortization		10.6	16.9	28.8	106.1	
DEPRECIATION & AMORTIZATION, TOTAL		10.6	16.9	28.8	106.1	
Amortization Of Deferred Charges		--	--	--	14.7	
Asset Writedown & Restructuring Costs		0.0	--	--	--	
Other Operating Activities		6.0	4.8	8.3	5.5	
Tax Benefit From Stock Options		-0.1	--	--	--	
Change In Accounts Receivable		-3.2	-2.8	-17.3	-21.9	
Change In Inventories		-28.5	-13.6	-194.7	-463.3	
Change In Accounts Payable		-0.2	19.9	187.8	-0.2	
Change In Unearned Revenues		4.8	-1.9	-0.5	268.2	
Change In Other Working Capital		16.0	73.7	67.6	342.3	
CASH FROM OPERATIONS		-127.8	-128.0	-266.1	258.0	
Capital Expenditure		-40.2	-184.2	-239.2	-264.2	
Cash Acquisitions		-65.2	--	--	--	
Investments In Marketable & Equity Securities		--	-25.0	25.0	--	
CASH FROM INVESTING		-180.3	-162.3	-206.9	-249.4	
Long-Term Debt Issued		71.8	204.4	188.8	660.0	
TOTAL DEBT ISSUED		71.8	204.4	188.8	660.0	
Long Term Debt Repaid		-0.3	-0.4	-15.5	-460.8	
TOTAL DEBT REPAYED		-0.3	-0.4	-15.5	-460.8	
Issuance Of Common Stock		270.2	242.0	246.4	510.3	
Other Financing Activities		-3.7	--	--	-74.1	
CASH FROM FINANCING		338.0	446.0	419.6	635.4	
NET CHANGE IN CASH		29.9	155.7	-53.4	644.0	

Table 7 - Tesla's Cash Flow

(Source: Yahoo Finance)

From the brief analysis, we can see that the situation is stable, but still there are not gains. However, it is possible to list some reasons why this happens:

- The electric vehicle technology is still in development phase, it has not yet been found a dominant design. The attractiveness is still too low for most automakers: "electric car programs (or programs for any vehicle that does not burn hydrocarbons) at the major manufacturers are small to non-existent, constituting an average of less than 1 to their % of total vehicle sales" (Musk, 2014).
- Tesla has a long-term vision, in fact, as claimed by Elon Musk: "new technology in any field takes a few versions to optimize before reaching the mass market, and in this case it is competing with 150 years and trillions of dollars spent on gasoline cars "(ibid). Furthermore, it is known that Tesla has made a large investment to build the Gigafactory in order to create an electric ecosystem. Nevertheless, to do so it will take some years.

3.4.2 – PHYSICAL AND TECHNOLOGICAL

Tesla Motors Inc's annual net Property, Plant and Equipment (PPE) increased from Dec. 2012 (\$562 Mil) to Dec. 2013 (\$1,121 Mil) and increased from Dec. 2013 (\$1,121 Mil) to Dec. 2014 (\$2,596 Mil) (Gurufocus, 2015). It is half of firm total assets (Yahoo finance, 2015).

Period Ending	Dec 31, 2014	Dec 31, 2013	Dec 31, 2012
Assets			
Current Assets			
Cash And Cash Equivalents	1,923,660	848,901	220,984
Short Term Investments	-	-	-
Net Receivables	226,604	49,109	26,842
Inventory	953,675	340,355	268,504
Other Current Assets	94,718	27,574	8,438
Total Current Assets	3,198,657	1,265,939	524,768
Long Term Investments	-	-	-
Property Plant and Equipment	2,596,011	1,120,919	562,300
Goodwill	-	-	-
Intangible Assets	-	-	-
Accumulated Amortization	-	-	-
Other Assets	54,583	30,072	27,122
Deferred Long Term Asset Charges	-	-	-
Total Assets	5,849,251	2,416,930	1,114,190

Table 8 - Tesla's assets

(Source: Gurufocus, 2015)

This is important because shows that the company believes in a long-term growth.

Vehicles produce by Tesla need “the best facilities with top-of-the-line equipment in a 370-acre factory, 5.5 million square feet of which represent the bulk of the space actually used” (Fleming & Moar, 2014) and an employment of 3000 people. Tesla also owns a hundred showrooms across North America, Europe, Australia and Asia. It has recently achieved the milestone of more than two thousand superchargers.

These physical and technological resources are extremely important to Tesla’s competitive advantages (ibid), because are focused in the electric world. Anybody in the automotive industry has such a PPE. For example, developing a network of supercharger is expensive and takes a huge amount of time. Moreover, the location of these properties is fundamental. Silicon Valley has a boosting effect to company ability to embrace a fast-paced and creative culture (ibid).

Intangible Resources

3.4.3 – HUMAN RESOURCES

The advantage that Tesla has human resources depends mainly by Elon Musk. He is the man behind every important step of Tesla, influencing mission, strategy, and development of the company. It is the face of the company. For example, thanks to him the company was able to survive the debate that was created because Tesla cuts dealerships from the value chain. Moreover, he always allows the company to withstand political and media who would like to see the electric car fail. Mr. Musk is the modern charismatic leader with innovative approach. However, Musk is not new to innovations and sustainable projects. After graduating in 1995 in economics and physics he decided to move to California to pursue a PhD at Stanford University in applied physics and material sciences. After only two days, Musk left graduate school to found Zip2, an online provider of content publishing software for news organizations, with his brother, Kimbal Musk. Four years later, in 1999, computer maker Compaq acquired Zip2 for 341 million dollars (and was in turn acquired by HP in 2002). Not one to stand still, Elon Musk moved on to co-found PayPal, an online payment processor. In 2002, eBay acquired PayPal for 1.5 billion dollars, netting Musk 175.5 million dollars for his 11.7 percent share of the company. Although it was financially lucrative, Musk still harbors resentment about this deal. He feels that letting eBay acquire PayPal sold short the company’s potential, dooming it to a future as a niche tool rather than a launch pad for a full-fledged, online financial institution.

Musk describes himself as an “engineer and entrepreneur who builds and operates companies to solve environmental, social and economic challenges.” He is now leading on three different fronts: electric cars, renewable energy, and space exploration. Two of his three ventures—SolarCity and SpaceX—are profitable.

SolarCity’s goal is to become the Walmart of solar-panel installations. With 2,510 employees spread out over 10 states, it is the number-one provider of residential solar power in California, and growing fast. SpaceX aims to send satellites into orbit at a quarter of the current cost. Since Musk took over engineering responsibilities, he has managed to launch rockets that reach outer space successfully. In May 2012, SpaceX’s Dragon spacecraft attached to the International Space Station, exchanged cargo payloads, and returned safely to Earth. Until then, only governments had accomplished this technically challenging feat. Since October 2012, when it completed its first official mission, SpaceX has begun regular resupply missions to the International Space Station.

Although crowned “2007 Entrepreneur of the Year” by Inc. magazine, Musk feels that his personal ambitions have not yet been fulfilled. Many in California’s venture-capital and high-tech community view Elon Musk as someone who has good ideas and breathes life into risky ventures, but then fizzles out on them. He aims to prove them wrong. As a result, Musk’s dreams for Tesla Motors, the California-based designer and manufacturer of electric vehicles, are big; he wants to leave a legacy through this company.

3.4.4 – INNOVATION AND CREATIVITY

As we have already seen, Tesla is characterized by a focusing on agile and constant innovation, as a typical Silicon Valley approach. In particular, it is known that Tesla has hired at least one hundred employees from Apple (more than from other automakers). This is due also to the prevision of software importance in the future. Concerning Tesla vehicles, I identify four main innovations that are bringing Tesla to success.

Car chassis. Tesla is energy efficient because it is incredibly light, has the structure and body made completely of aluminum in North America. In fact, they applied many of the techniques of design of space vehicles to make the car light despite the large batteries. It also has the lower coefficient of drag between all the cars of its size (Musk 2013).

Battery. Tesla has the most advanced battery pack (more than 6831 lithium ion cells), which provides the opportunity to travel nearly 300 miles.

Software. Tesla is controlled by state-of-the-art vehicle software. Rooted in Silicon Valley tradition, the code is developed in-house and constantly innovating (Tesla, 2015). The system monitors the status of components throughout the car, shares information to coordinate action, and reacts to changing external conditions (ibid).

Regenerative braking. Completely independent of the brake pedal, it creates the feel of traditional engine braking in a gas-powered car (ibid). “The electric drivetrain instantaneously switches from “drive mode” (forward torque) to “generating mode” (reverse torque) based on the throttle position” (ibid).

3.4.5 – REPUTATION

Tesla model S won Motor Trend’s 2013 car of the year outpacing the competition in literally every category (Fleming & Moar, 2014). The safety of the vehicle was particularly notable, with the National Highway Traffic Safety Administration giving “the Tesla Model S a 5-star safety rating, not just overall, but in every subcategory without exception” (Tesla, 2013).

According to Google, Tesla Motors was the No.1-searched for car brand in the United States in 2013 (Elliot, 2013). In 2014 Tesla was the most searched car company in China & Norway. (Topspeed, 2015). Certainly Musk has a great responsibility on those data, because he was the most searched luxury business last year (Perez, 2015).

Moreover, Tesla reputation derived for its important goal of accelerating the advent of electric vehicles: this implies changing the rules of the game of the automotive industry while reducing the dependency from oil and gas industry. Practically is a pure environmental concern, plus the idea that sustainable products can be associated with fun and pleasure.

Third element of reputation is the Silicon Valley approach. Tesla is associated to the image of the region, as a company similar to Google and Apple.



Tesla Reputation

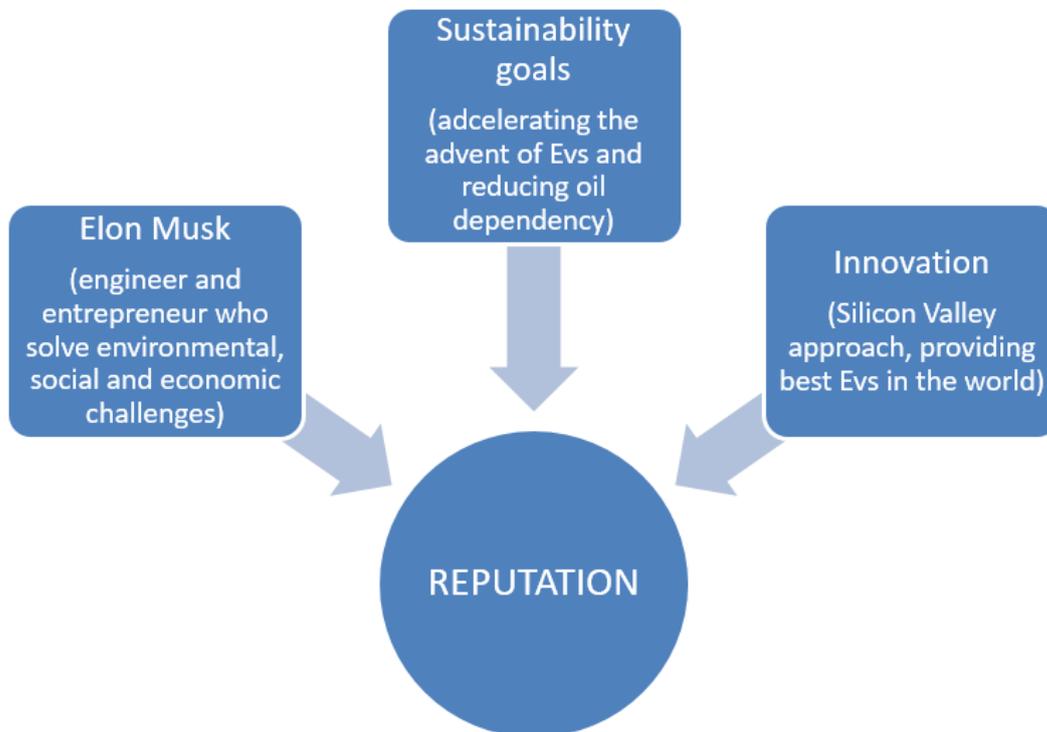


Figure 16 – Tesla's competitive advantage

Reputation is fundamental for a company because research universally shows that a good reputation demonstrably increases corporate worth and provides sustained competitive advantage (Harrison, 2015). A business can achieve its objectives more easily if it has a good reputation among its stakeholders, especially key stakeholders such as its largest customers, opinion leaders in the business community, suppliers and current and potential employees (ibid). This is even more important in a company that has to gain credibility in an uncertain business like EVs, and has to fight against well established carmakers.

Customers prefer to deal with you, word of mouth circulate, supplier trust in your ability to pay and provide fair trading, governments help you and especially your attractiveness to potential employees increase.

3.5 – WHY ELECTRICITY?

Considering that we are still in a period of research and development towards the best energy solution for the car of the future, I want to explain why in my opinion electric vehicle is the best solution. However it is not the purpose of this thesis to find the best energy solution. After many readings I understood that scholars have different opinions on what is the best solution, because there are infinite variables.

First, there is simply a motivation of personal interest towards the Tesla case. In fact, I was immediately impressed by the capabilities of the Tesla model S and I researched more and more information about it.

Yet another reason for which I think it makes more sense to talk about electric vehicles is that they fall more than the other sustainable solutions in the definition of shared value. Obviously, this is because the electric motor is more efficient than any engine. However, it is not only for the last reason, indeed at this point generally people ask: considering that most of the world electricity comes from burning fossil fuels. How can an electric car that plugs into that electricity help?

The reason lies in the wheels to wheels analysis: even if you take the same source fuel to generate electricity in the power plant and use it to charge electric cars, it is still more efficient than use that fuel and burn it into the IC engine. For example, take natural gas that is very easy to find worldwide and burn it into a modern turbine of general electric, we will get 60 percent efficiency. While if we burn the same gas in an IC engine we will get about 20 percent efficiency. In fact, a fixed power plant is able to recover lost heat losses using the principle of cogeneration. One of the "most successful" application of cogeneration is exactly the production of electricity using a combined cycle gas -steam, which has excellent performance. Practically we inject gas with air in the combustion chamber, where this mixture is burned and made to expand, moving the turbine. At this point the exhaust gases with temperatures near 400 -500 C are used in some exchangers in which we produce steam from water. The steam produced is used to power the movement of another turbine. Both turbines are connected to the alternators in order to obtain electricity. These combined cycles dramatically improve efficiency.

The last and more point is that if we have to reach sustainable energy production, then it makes sense for the world to have electric cars as the mode of transport. In fact, the spread of the electric machine can lead to a chain reaction in which the states would agree to find methods of energy production more sustainable. If we think about it is already happening moderately in the countries of northern Europe. Unlike hydrogen, which would require the development of a completely new distribution network, electric mobility can use the existing network and for this

reason it is seen as the ideal alternative to combustion engines for the next twenty years, in pending further development of hydrogen fuel cell technology.

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PART 4. TESLA STRATEGY: SHARED VALUE AND ECOSYSTEM INNOVATION.

INTRODUCTION

Given the potential of Tesla, I will investigate its plan for accelerating the advent of electric transport.

4.1 – HOW TESLA INTEGRATES SHARED VALUE PRINCIPLES

This section will illustrate how Tesla is using shared value principles. I have identified several reasons.

1. **Value.** First of Tesla's mission is: "to accelerate the advent of sustainable transport by bringing compelling mass market electric cars to market as soon as possible". In this definition is implicit people benefit through the research for sustainability. Tesla unlock value from the equation economic and societal benefit relative to cost. The value creation is a joint between community and companies.
2. **Leader.** Another reason lies behind the man who created and runs the company, Elon Musk. A person with the goal of changing the world and improving our lives. He believes in the Internet, creating energy in a sustainable manner and the fact that we will become a multi planet species. He has the ability of influencing overall company's organizational culture.
3. **Agenda.** Shared Value principles are integrated in overall company agenda, they are not a part of the agenda. Sustainability is the way that company is running its business and compete against the others with a long-term view.
4. **Profits.** CSV is integral to profit maximization.
5. **Reconceiving products and markets.** Tesla completely redefine product and markets. He is not involved only in the construction of electric vehicles, but he is using a larger system, created by interconnections among his three companies. For example, Tesla aims to create 100 percent renewable energy source for their public Supercharger stations. Solar City will be the provider of solar panels to the stations. Tesla is additionally aiming to make the solar panels from independent power grid. This would

be accomplished by coupling the solar panels with batteries and since Tesla will be a large producer of batteries with its Gigafactory, this is easy for them to achieve. (Massachusetts Institute of Technology, 2014.) The interconnections expresses how Musk is also using Solar City as one actor of systemic innovating of EVs. Both this is beneficial for the individual companies and to the business system of EVs. The connection with SpaceX and Tesla exists with their similar production materials and techniques: "yeah we have lot of advanced light-weight aluminums and advanced joining techniques, new types of welding That We use in Model S too," Musk Stated in an Automotive World Congress (2015) interview.

6. **Redefining productivity in the value chain.** As we have already seen, Tesla eliminates dealerships from its value chain.
7. **Enabling local cluster development.** Tesla is enabling a local cluster development exploiting its position in the Silicon Valley.
8. **Open Innovation.** Another reason lies in open innovation that we find in the words of Musk "Tesla Motors was created to accelerate the advent of transport sustainable. If we clear a path to the creation of compelling electric vehicles, but then lay intellectual property landmines to inhibit others behind us, we are acting in a manner contrary to that goal. Tesla will not initiate lawsuits against patent anyone who, in good faith, wants to use our technology" (Elon Musk, 2014). Surely, this is more a market move than shared value because interest in the electricity market by major automakers is still poor. However, we cannot not consider it as a gesture that goes to the benefit of all and that could provide a push in the electric car market.

4.2 – IS TESLA DISRUPTIVE?

Certainly, Tesla has attracted worldwide interest. However, is difficult to forecast its future. Will it be able to make the electric car available for everyone? Will it be able to make profits? The answer to these questions is uncertain. Therefore, considering the causality factor, what is possible to do is to understand how exactly is innovating Tesla.

Is Tesla disruptive? In order to try to answer, I will provide the definition of radical innovation. Disruptive innovation is a term coined by Christensen in 1997 in his book "The innovator's dilemma". Christensen used the term to describe an innovation that create new markets by discovering new customers (The Economist, 2015). It does this by using new technologies but also by developing new business model or exploiting old technologies. The new product could

be easier to use or have a lower cost. In practical terms, an innovation is radical if it results in a product that is so superior that existing ones are rendered non-competitive. Otherwise, if the technological knowledge required to exploit it is different from existing knowledge, rendering existing knowledge obsolete. Contrary, an innovation is incremental if it simply improves existing products. Generally, it allows existing products to stay competitive.

Using these definitions, Tesla does not seem a radical innovation. In a report from Harvard Business Review written by Tom Bartman (an associate of Clay Christensen's research group), is provided a framework to understand whether a new firm, like Tesla, will disrupt an old one, like GM or Toyota. The structure consist in five questions:

1. Does the product target over-served customers (i.e., with better value for money) or create a new market?
2. Does the disruptor have incentives to enter higher performance segments while incumbents retreat?
3. Does it have a trajectory for fast, across the board, performance improvements?
4. Does it create a new value network (e.g., sales channel)?
5. Does it disrupt ALL incumbents?

The answers are apparently: no, no, yes, yes and no. That allows Bartman to conclude that Tesla's products are sustaining rather than disruptive (Bartman, 2015). Probably it is still too early to understand if Tesla is disruptive, because it has yet to release its model for the mass market (model 3, expected in 2017). However, innovations are not necessary to be radical for taking the lead of the market. The Henderson-Clark Model explain why new entrants without a traditional radical innovation can outperform incumbents. The starting point is understanding why some incumbents have so much difficulties in dealing with apparently "incremental" innovations. Since products are made up of components connected together, building them require two kinds of knowledge: knowledge of components and knowledge of the linkages between them. The last is called architectural knowledge.

Henderson-Clark Model

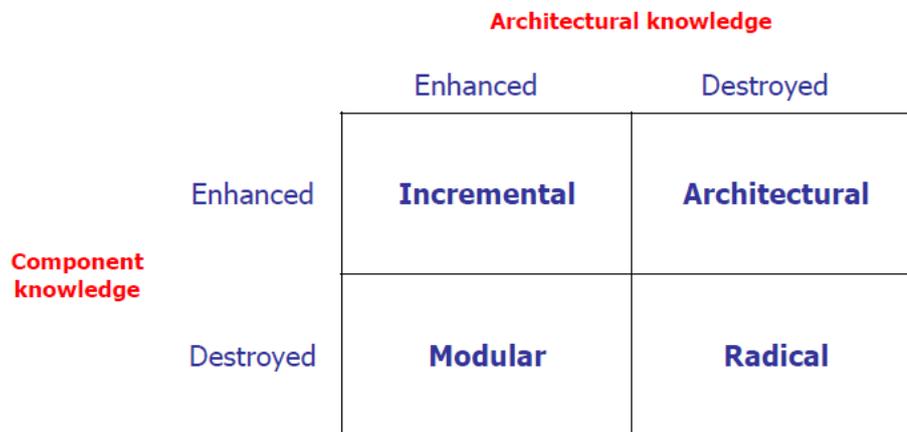


Figure 17 - Henderson-Clark Model

This could be the case of Tesla: more than components innovation, we could have innovation of how these components are combined in a new and different business model. Many people believe it happened for the iPhone. For the latter, Christensen made an initial assessment that he later admitted was incorrect: iPhone is an innovation that improved upon the phones of Nokia and the like rather than appealed to a different sort of customer (Joshua Gans, 2015). Few years later he admitted that his mistake was to consider the iPhone disruptive to phone makers when, in fact, it was disruptive to laptops (ibid). However, the companies that were overcome are all telephone companies. Therefore, something doesn't make sense. Probably Christensen's theory cannot handle the iPhone case. Generally, the path of the theory consist in a poor performer product (on traditional metrics) with a lower price, which then improve and attract customers from well-established firms. However, this seems to be not the case of the iPhone because it was high-end priced from the beginning. For this reason, some authors (as for example Benedict Evans) formulated theories suggesting that this typical in the mobile sector. However, not all the people bought the iPhone, because Apple does not know how to build cheap phones. The perfect example is the iPhone 5C with a 550 dollars starting price. Apple has taken a big portion of the market but this doesn't cause the disruption of incumbents firms. It's a different kind of disruption: the iPhone was made from traditional components but in a different way that is a different architecture. Nokia and other firms produced cheaper and well-

engineered phones, but the iPhone didn't compete in these functions, besides it offered a new way of interacting with a handled device (ibid).

It was a new architecture and to replicate it required essentially a clean slate for innovative teams (ibid). Established firms rarely want to give up development teams that have worked well and this is what leaves the room open for entrants (ibid). The way to see the whole picture is to consider more than one path of disruption, therefore, if Tesla is not radical in the traditional way this does not exclude the possibility of gaining a big portion of the automotive sector, offering a new smart and interactive vehicle with a non-replicable knowledge.

4.3 – THE NEED OF A DIFFERENT INNOVATION

Tesla could be an architectural innovation, as we have seen. However is not diffused in the mass-market. Surely, the production of Model X should help to solve the problem, but I do not think it would change much. Probably the problem is bigger. Something is needed to push the electric vehicle from a niche product to a mass-market product. There is a need to change the whole picture, in other words, is necessary a whole ecosystem reconfiguration for allowing electric car technology spreading.

Contrary to popular belief, Thomas Edison did not invent the light bulb. Twenty or so inventors and labs had already come up with similar designs when he patented his in 1879 (Suskevicz, 2015). What Edison really invented was affordable and accessible electric light. Edison's breakthrough was guided by a fundamental insight: any given product is only as powerful as the system in which it is deployed (ibid). As he set out to design his light bulb, he simultaneously sketched out an integrated set of plans for generators, wiring, meters, light switches, and more (ibid). An electric light bulb without ready access to electricity is a novelty; with it, it is a world changer (ibid).

There is no doubt, that Tesla is showing system thinking. Now is providing a framework to understand its "ecosystem innovation".

4.4 – A NEW FRAMEWORK: ECOSYSTEM INNOVATION

Is possible to find the definition of "ecosystem innovation" in the book of Ron Adner "The Wide Lens". However, browsing the Internet is possible to find also "systemic innovation". These are the most common ones, but there are many others. Terminology differs, but all these terms mean the same thing. An ecosystem is a system composed by two or more interdependent

elements, in which each component affect the whole system. Chesbrough and Teece (1996) are one of the more popular systemic innovation researchers. According to them, the easiest innovations to pursue are autonomous. Autonomous innovations can succeed with their own merits. When an innovation cannot succeed on its own merits, it is systemic: its benefits and success can be met after other complementary innovations are created (Chesbrough & Teece, 1996). Maula et al. (2006) say that systemic innovation is an innovation that requires significant adjustments in other parts of the business system they are embedded in, thus, it does not include only product innovation. The inventor can manage an autonomous innovation; instead, ecosystem innovations need further external innovators taking part of the business system by adding their own contribution for the core innovation success. This requires open innovation, information sharing and coordination through the whole product ecosystem.

4.4.1 – A WIDE LENS PERSPECTIVE

“Choosing to focus on the ecosystem, rather than simply on the immediate environment of innovation, changes everything, from how you prioritize opportunities and threats, to how you think about market timing and positioning, to how you define and measure success” (The Wide Lens, page 6). Steve Jobs was an innovation leader, a creator of a series of successful products. He was not the products it selves revolutionary, besides the way he re-invented the whole ecosystem. Only the iPad was the first of its products entering the market, the others, arrived later than competitors ones. Therefore, he provides an example that innovation is not only about arriving first or building cheaper but also in making sure that, an ecosystem is ready at product launch time.

Using a wide lens perspective it is not changing the goal of the innovation, it is considering partners or external risks as critical to innovation success.

“A narrow lens will leave you focused on execution risk, prone to ignore the implications of co-innovators and adoption chain partners,” Adner says (The Wide Lens).

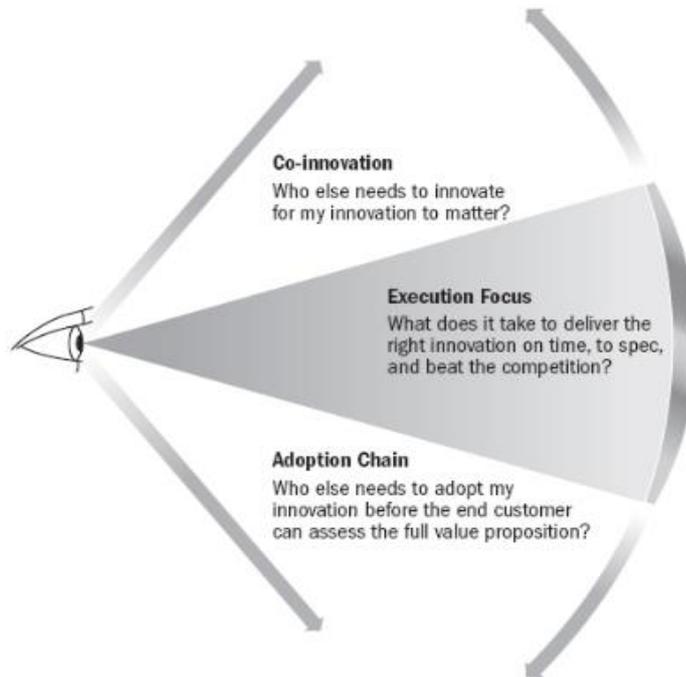


Figure 18 - The Wide Lens perspective

(Source: The Wide Lens, Ron Adner)

“The value blueprint is a map that makes your ecosystem and your dependencies explicit. It lays out the arrangement of the elements that are required to deliver the value proposition; how the activities are positioned, how they are linked, and which actor is responsible for what” (Wide Lens, page 84). Value blueprint goes beyond the mere value chain analysis and consist in mapping out your ecosystem and assessing for each segment or partner the two types of risk associated with innovation ecosystems: co-innovation risk and adoption risk (Mealer, actionable books).

Practically it is necessary to identify who is the final target of the innovation, what is the own project that is deliver, each supplier for the inputs into the project, and every partner who would touch the product or pass it on before or after it arrives the customer (Mealer, actionable books). Of course this is not necessary the order, therefore timing play a substantial role. “Huge allocations of resources and deep wells of talent on their own cannot make up for red lights on the path to success,” writes Adner. “If your value proposition requires multiple parties to collaborate, building a deep understanding of the structure of collaboration is critical” (The Wide Lens).

Value Blueprint

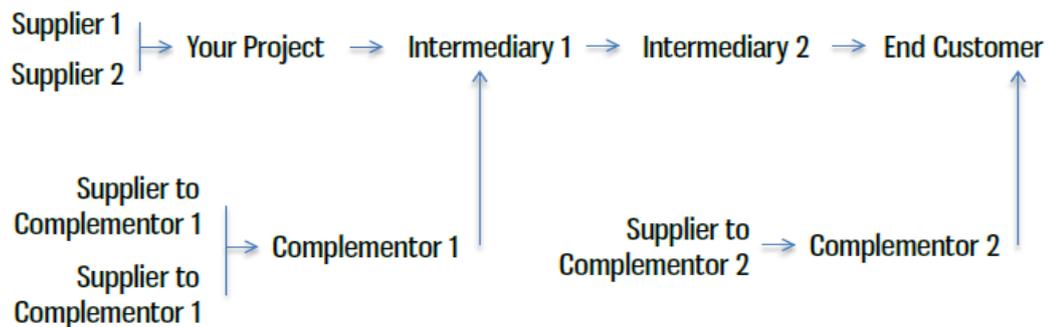


Figure 19 - Value Blueprint example

(Source The Wide Lens, Rod Adner)

“While managers have rich processes in place to assess and manage their own execution challenges, they do not fully understand their dependence on their partners’ co-innovation challenges” (Wide Lens, page 38)

A “wide lens perspective” will help innovators see hidden dependencies which lead to better strategies. It is possible to consider two distinct types of risk that arise within ecosystems:

- co-innovation risk, the extent to which the success of your innovation depends on the successful commercialization of other innovations;
- adoption chain risk, the extent to which partners will need to adopt your innovation before end consumers have a chance to assess the full value proposition (Wide Lens, page 6).

On the value blueprint it is possible to identify the risks throughout the ecosystem for each element and ask questions such as “How able are they to undertake the required activity?” and “How willing are they to undertake the required activity?” (Mealer, actionable books).

To demonstrate the value of co-innovation, Adner cites the example of high-definition TV. In the 1980s, Philips Electronics was the first to develop HDTV, but the company couldn’t capitalize on that innovation. The problem was the lack of co-innovators to develop, among other things, new cameras to provide sufficient HDTV programming to entice consumers to replace their traditional TV sets. Those necessary innovations would come only much later, after Philips had

already taken a 2.5 billion dollars write-down, allowing other manufacturers like LG and Samsung to reap the benefits of HDTV (Mealer, actionable books).

Like co-innovation, adoption chains can play a crucial role. To emphasize that point, Adner describes the failure of Michelin's "run-flat" tire. Initially, the product seemed like a surefire hit. The tire remained functional for 125 miles after being punctured, allowing people ample opportunity to get to a service garage to have it repaired at their convenience. However, even though run-flat tires would have prevented dangerous highway blowouts and eliminated a major cause of emergency pull-overs, they failed in the market (Mealer, actionable books). As it turned out, service garages needed new equipment, tools and training for clamping and calibrating the tires. However, the garages weren't willing to make that investment until the run-flat technology had been widely adopted and consumers wouldn't buy them unless the product could be widely serviced. That chicken-or-egg obstacle in the adoption chain sealed the fate of what otherwise might have been a blockbuster consumer product (Mealer, actionable books).

4.5 – IPHONE CASE STUDY

In January 2007, Apple wanted to enter in the mobile phone market. Smartphones were not a new proposition. There were good smartphones produced by Nokia and Ericsson. Reacting to Apple's January 2007 announcement of the iPhone, Jim Balsillie co-CEO of BlackBerry argued: "It's kind of new entrant into an already very busy space with lots of choice for customers. But in terms of a sea-change for BlackBerry, I would think that's overstating it". Therefore, rivals didn't seem to care.

The iPhone was beautifully designed with a host of new features (multi touch interfaces, new applications). However, although it was highly advanced in some features, the iPhone was well behind the curve from others (a sub-standard camera, inability to record video, and shockingly, though launched after six years of the 3G evolution, the iPhone was a 2G dinosaur). Even more amazingly, the phone was available for only one operator in each country where it was launched. For example in the United States, it was obligatory to make a contract with AT & T network, which was not the fastest nor the one who reach better.

The price was 499 dollars, while there were phones like Samsung's Upstagen (99 dollars) and the HTC Touch (250 dollars) with the same functions. Moreover, Apple didn't allow to unlock the phone from the AT & T network, making it inoperative if you installed a new update.

Under these conditions even the Microsoft CEO Steve Ballmer laughed: "Five hundred billion dollar subsidized with a plan! I said, that's the most expensive phone in the world, and it doesn't

appeal to business customer because it doesn't have any keyboard, which makes it not a very good email machine ... We have great Windows Mobile devices on the market today... I look at the iPhone and I say I like our strategy".

When Jobs launched the iPhone, he not just launched a phone with an iPod. Nor even a phone with an iPod and iTunes software management. Nor even a phone with all these characteristics and wireless access to iTunes. Rather, he launches all these elements of the iPod with one more thing: the entire history of iPod user's, with playlists and albums' cover.

Steve Jobs knew that this ecosystem meant. In fact, of the 22 million iPods sold in 2007 in holiday season, 60% went to buyers who already owned an iPod. The iPhone was not only a new entrant in a saturated industry, it was the evolution of the iPod.

What should be interestingly is that the ecosystem strategy does not lie behind the definition of switching cost or customer locked - in. What do these tactics is to prevent consumers' steps to rival. Rather, the intent of the ecosystem strategy is to participate in a "new value proposition". With the iPhone, however, Apple would reconfigure the ecosystem, adding new elements and redrawing links across the blueprint. It began with exclusivity. Apple would partner with only one operator in any country, offering not just exclusive access to the most talked-about phone in history, but also exclusive access to consumers. It would actively enforce this exclusivity on behalf of the operator by rendering modified phones inoperable through software updates. Not only would Apple deliver the customers to you as the operator, but also they would guarantee to keep them away from your rivals.

Unlike the usual supplier-buyer relationship between handset makers and operators, this was to be a partnership. While there would be a transfer of product from Apple to the mobile operator, there would also be a clear link between Apple and the consumers: they may be using your network, but they are our customers. Signing on as the exclusive operator meant signing away a lot of control over marketing decisions and budgets, over the phone interface, and over the customers.

The two-part secret to the iPhone's early success was not that it was a great phone (it was, but this was not a secret) and not that it had an app store (that came later). First, the iPhone strategy explicitly carried over the iPod ecosystem and with it the iPod users. The iPhone started life with a built-in customer base. True, other firms had introduced new phones for which everyone in the industry had great expectations. However, none of these predecessors had made the conceptual leap from strategizing better products to strategizing better ecosystems. Second, Steve Jobs did more than just carry over his loyal customer base from one market to the next. He leveraged this crucial carryover to reconfigure the ecosystem, shifting his position from

supplier to partner, to secure unprecedented control and an unprecedented deal with the mobile operators.

A year after the iPhone’s launch, Apple extended its ecosystem with the introduction of the App Store, an official platform through which users could finally download applications without fear of incapacitating their phone, and through which eager developers could finally present their programs to the world, and (potentially) profit from them. The App Store was another masterstroke. It made the device an evergreen proposition that could, with the tap of a finger, become ever more useful, more entertaining, and more customized to each individual user. It shifted the basis of smartphone customization from the manufacturer’s design of the hardware to the user’s own choices in selecting software.

Value blueprint of Apple’s iPhone (figure 20) offer showing the carryover elements from the iPod ecosystem and new links that comprised the minimum viable ecosystem followed by the addition of the App Store.

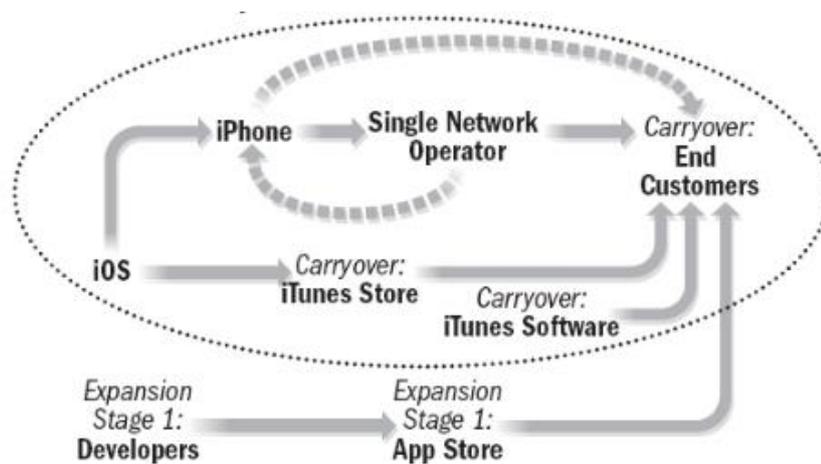


Figure 20 - iPhone ecosystem

(Source: The Wide Lens, Ron Adner)

4.6 – RECONFIGURING ELECTRIC ECOSYSTEM

After this analysis we can deduce that concerning the world of EVs is necessary an ecosystem innovation. Of course, it was already known that problems were not lying only in the vehicle. Many improvements must be achieved, but to “become electric” is necessary to change the rules of the game. However, automakers are not sufficiently motivated to change. They are bound to their consolidated skills. Moreover, they are aware of the difficulties to unlock electric ecosystem. What are these ecosystem challenges? Is possible to identify six major problems.

The first three have garnered the attention of the media, policy makers and entrepreneurs around the world. Interestingly, are the same challenges of electric car of 1908.

- **Purchase price premium** : electric vehicle are more expensive to purchase than IC cars.
- **Limited driving range**: distance driving before exhausting the charge is lower than IC cars.
- **Charging infrastructure**: the infrastructure for recharging batteries is inferior than traditional one, in both availability and time required to charging.

Even if these first three problems were overcome, however, the electric car would remain a niche product. In order to enter the mass-market there are three additional challenges that currently many of the organization that are investing in EVs have to face.

- **Battery resale value**: thanks to investments, battery technology is constantly and rapidly improving. This is great news but only for those who don't already own an EV. The battery is the most expensive part of an electric vehicle, and it is also the part that becomes obsolete the fastest. Moreover, batteries have limited lives, measured in terms of the number of charging cycles they can sustain before their performance degrades below a reasonable level. According to Kiplinger, a key component of a new car's value and attractiveness for a consumer is what it will be worth after three to five years of use. The estimated 15,600 dollars battery in a 2011 EV has a range of a hundred miles. If by 2015 you can have an EV with a brand-new battery, presumably with greater range and longer cycle life for 8,400 dollars, then how much would you be willing to pay for a used four-year-old EV? The inevitable battery improvements mean a four-year-old EV will be obsolete. Suddenly, the calculation of an EV's resale value starts to look more like reselling a used computer than a used car.
- **Limited driving range limits savings**: EV enthusiasts hold to this incontrovertible fact: the real savings from purchasing an electric car comes from avoiding the gas pump. Every mile you drive, you save. However, this matters only if you are traveling great distances. The reality of a limited charging infrastructure means that, for most adopters, the EV will be the "city car" that they drive to work and for local errands. However, in limiting their driving range to short distances, the city car usage case also limits the potential for economic advantage.
- **Electric Grid Capacity**: if suddenly we solve all the problems earlier, more people could buy electric vehicles. However, the electric grid capacity would be exceeded. Although as we mentioned earlier, smart grid technology is available, implementation seems to be expensive and time demanding.

4.7 – TESLA ECOSYSTEM INNOVATING

Tesla approach is not just innovating electric car but rather to innovate the entire ecosystem around electric car.

Model 3 will be sold in late 2017 (when the Gigafactory will be built) at the price of 30.000 dollars. Tesla in this way will enter the mass market, therefore the price problem (1) will be partially reduced. However, considering the whole ecosystem strategy other savings will be available.

Tesla is increasing its network of superchargers, allowing cars to be fast-charged (in less than an hour) at the network, with no payment. In February 2015, there were 2,000 superchargers in 400 stations worldwide. Within the geography, the driving range issue problem (2) and the challenge that the economic advantage of cheaper fuel cost per mile only comes with distance (5), are solved.

Every Tesla produced from 2013 has the option of using the swapping battery technology. Going to a Tesla super charger station, paying the price of a today's filling, there is the opportunity to change the battery in less than a minute. However, this method doesn't seem to have a strong appeal to consumers, who ask themselves why they have to change the battery and pay 70 dollars, when in 20 minutes is possible to recharge more than half of the battery for free, using the super charger network. Therefore, despite the possibility, Tesla didn't provide superchargers of this technology because consumers demand is inexistent. Notice that the idea of the battery switch station can work only if individual drivers do not own batteries, otherwise, they would be concerned with the potential of trading their precious battery for an inferior one. With this technology, problem (4) could be solved, however as I already told Tesla's customers don't like this option, therefore this problem still remains.

Tesla's battery packs are estimated to be the best and cheaper than other EV batteries. Part of that is thanks to the quality of Panasonic's cells, but part of that is also Tesla's continual improvement of the packs and the battery chemistries. Since batteries make up a large portion in the price of Model S, Tesla needs to produce them on a large scale to generate economies of scale. Tesla wants to solve this challenge by creating a Gigafactory to produce batteries. The Gigafactory will be functional in 2017 and aims to produce more batteries in 2020 than all of world's battery producers did in 2013. The Gigafactory will lower the price of batteries at least 30 percent; this means a reduction of problem (1) and (2).

Tesla is starting to sell its Powerwall battery that can be placed at homes or in businesses. Powerwall can store excess energy produced from your own solar generation, so that energy not used at the time will be available later. In addition, it can store power when electricity from

the power grid is at its cheapest rate, off-peak. This can be used during peak hours to lower costs in the household it is installed. The aim is two-fold: to save you money long-term (accepting the initial outlay), but in a wider context, combined with solar power generation, reduce reliance on the power grid and shift your energy to a green source. This can partially solve problem (6). Solar panels without integrated storage are not much more valuable than light bulbs without an electric grid; Tesla Energy, then, is an aggressive move toward creating the energy system of the future (Suskewicz, 2015).

This fact follows the framework provided in previous chapter: some innovations, differently from autonomous one, require new systems in order to disrupt the old ones. Therefore, it requires system thinking which consists in elaborating a value blueprint with all ecosystem’s dependencies. That is what is happening with Tesla, every time Musk announced a new product or a new collaboration, you have a perception that there is a whole picture.

Tesla energy is the missing piece bridging electric cars and large-scale renewable power (ibid). Of course still grid problem remains for the countries where there is enough capacity. However, the point here is that in terms of larger, longer-term systems-level goals, Tesla Energy fulfills a number of preconditions that make such ambitions more achievable (ibid).

“Tesla is not just an automotive company; it’s an energy innovation company” is a statement embracing a larger, more encompassing self-definition powers systems-level ambitions (ibid).

Electric Ecosystem Issues	Tesla
Purchase Price Premium	Partially Solved
Limited Driving Range	Solved
Charging Infrastructure	Solved
Battery Resale Value	Unsolved
Limited Driving Range Limits Savings	Solved
Electric Grid Capacity	Partially Solved

Table 9 - Electric Ecosystem problems vs Tesla



Tesla Ecosystem Innovation

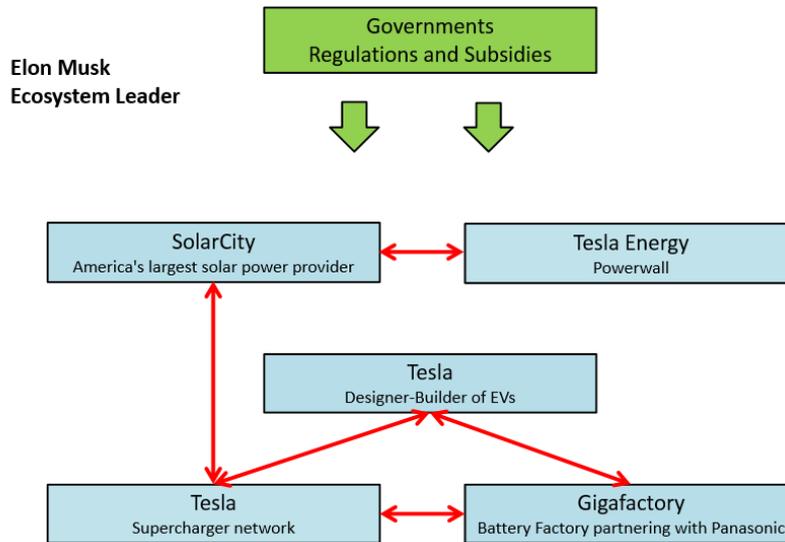


Figure 21 - Tesla Ecosystem Innovation

4.7.1 – TESLA’S ECOSYSTEM CARRYOVER

A transformative vision has to create tangible value; it cannot just be rhetorical (Suskewicz, 2015). One way Tesla Energy does this is by using the batteries to help justify massive investments in the core electric car business. The new products create new markets for the gigantic (well, “giga”) battery factory the company hopes will propel the car business to scale. In much the same way, Edison and his circle developed and sold electric household appliances like the clothes iron to create demand for electricity during the daytime: they were leveraging the system they invented to create new product categories that in turn increased demand for their system in the first place.

More fundamentally, these batteries add value through a software overlay that manages their use and creates, along with the batteries in Tesla’s cars, a network of energy storage devices that will become increasingly valuable first to the existing utilities and eventually as a full-blown renewable energy alternative as it scales. If this works, Tesla will ultimately control a global power network, positioning itself as the utility of tomorrow.

For Tesla, the ability to pursue an ecosystem carryover strategy is twofold:

- the company’s position with existing Tesla car owners, a customer base that offers the attractive properties of high loyalty and high disposable income;

- the power of Elon Musk, Tesla's founder and chairman of SolarCity, the leader in home-based solar-power installation, to pull a Steve Jobs by exciting distribution channels and getting those players to believe that Powerwall will be a big win.

Indeed Tesla is perfect also for future ecosystem carryover. As we have already seen, consumers are changing transportation's habits. They are demanding for smart vehicles connected with internet and most famous applications like Facebook, Twitter, Google drive. Tesla is perfect for an inter-connected vehicle, thanks to its dedication to software engineering. In addition, it is located in Silicon Valley near the most technologies company in the world. If I were Google, a company with a Silicon Valley approach, I would prefer to collaborate with a company who has the same culture and beliefs.

Every day some magazines provide news about companies like Google and Tesla who are developing new technologies like Personal Autonomous Vehicle.

4.8 – WHY TESLA WILL NOT BE ABLE TO SCALE.

After explaining the strategy of innovation that could lead Tesla to change the rules of the game in the electric ecosystem now I will explain main problems.

- 1- **Radical innovation.** Surely as I already written, the fact that it is not a radical innovation. Although in reality this does not preclude success (Henderson - Clark), still could be an important limitation for the mass market.
- 2- **Financial Situation.** Another reason is the financial situation of the company. In itself, the situation is stable, but there are not profits. There are doubts about if it will become a profitable company or it will remain only a research company.
- 3- **Overheads.** Tesla started from the top of a market, selling high-end vehicles at high prices. A company's starting point determines the characteristics of its overhead structure that, barring a major restructuring, it will carry throughout its life (Bartman, 2015). Companies that start at the bottom of the market develop overhead structures that are profitable at low unit prices. When the company moves into a higher-price market, it keeps the lean cost structure, so its margin grows and profits increase. Conversely, firms that start at the top of the market develop costly overhead structures that require high unit prices to support their high service levels. As they grow down the market and each unit is sold at a lower price, there are fewer dollars to pay for high overhead costs, and so margins shrink.

- 4- **Value chain.** Additionally, the incentive structure is misaligned for employees and value chain partners (ibid). Considering a salesperson who has to sell three different model of Tesla. That person will focus on selling the most expensive model because he wants use the time productively. Bartman study on Tesla refer that Tesla wants to focus on the highest margin item, it has to if it is going to be profitable (ibid). This is due to the nature of its sales process. However, Tesla limits this with most part of the sales online.
- 5- **Nature of the priorities.** Another issue is that many persons believe that “Tesla doesn’t know how to do cheap”. It is well known that it never achieved a price target of precedents vehicles yet. An analog is the iPhone 5C, produced with the scope of competing with low-price Android phones; but Apple’s genetics don’t allow to do “cheap”, therefore the phone result in a underperforming expensive phone (550 dollars) and exaggerated over-priced cheap phone,
- 6- **Resource disadvantage.** According to Bartman (2015) the problems with growing down-market are only compounded when competitors begin to respond. Entrants who want to compete in well-established markets have a resource disadvantage, including cash, brands, institutional knowledge and model lineup which is one most important resource in the automotive industry. Of course Tesla is programming to going with three models, however it will not be simple for a small company with limited engineering and money, who will afford the trade-off between focusing on improving Model S or new models. By entering into a high-end niche, Tesla was able to initially avoid this problem and actually competed on a resource advantage: its initial customers strongly prefer electric drivetrains to non-electric platforms (ibid). According to Bartman, (2015) Tesla was the only company with a product in the category and this prevented incumbents to compete. The market is too small to justify an important investment by incumbents, therefore there wasn’t a response.

However, as Tesla grows out of its niche, each new customer it targets cares less about the electric drivetrain and increasingly values other attributes (ibid). This means that each future sale is more dependent on resources for which incumbents have a significant advantage, making each “next sale” more difficult than the last (ibid).

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CONCLUSION

Concerning Sustainability

What emerges from the discussion about the dichotomy business and sustainability is that the latter is increasingly impacting on the former, so that organizations increasingly try to integrate it in their operations and business models.

It derives then that the question “should organizations introduce CSR initiatives?” is already out of fashion. Coercive isomorphism, mimetic processes, normative pressures, contributed to the process.

CSR initiatives are considered to emerge from the need to stay competitive, thus merely from economic issues; this is an argument supported by opponents who criticize the claimed positive impact of such initiatives on the society.

It proves to be difficult to develop a business case about CSR implementation. Many scholars tried to uncover the correlation between CSR initiatives and economic outcomes, whether with the intent to demonstrate a positive relationship or a negative one, so that to put an end on the debate. The myriad of contrasting findings however cast further shadow over the argument.

What the famous CSV framework developed by Porter aims to do is to reconcile sustainability and economic performance as intertwined phenomena. If short-term and long-term horizons are separated, it is possible to find strong positive influence of sustainability on the creation and maintenance of profits and competitive advantage. According to Porter, investing on sustainable initiatives contributes to generate a so-called “innovation effect”, that is the diffusion of an aptitude towards sustainable thinking and acting and the consequences it has on members’ behaviors throughout the organization.

I personally strongly believe that our economic system, and the entire society, should not be based on self-interest. Capitalism has surely contributed to social development, but the contrary is true either: many drawbacks and under-development has followed. I intend progress as the enhancement of the position of all people, which implies a responsible growth.

Mental schemes are the first locus of change, in that they guide our choice (in terms of purchasing, consumption, production); this would be a real “social” innovation, and the basis for all other social innovations. Going beyond profit can and do nonetheless lead to increase profit. A positive correlation between business and sustainability does exist.

It is difficult to weed out the short-term orientation, which leads to prefer solutions yielding rapid economic advantage. What a powerful generation of mindful leaders can do is shaping the

business landscape diffusing sustainable best practice, and thus a different goal orientation and an increased awareness on social issues.

It is nonetheless strategic to start developing a sustainability-oriented group of organizational leaders, processes and business models. Governments are increasingly setting sustainability-related objectives which are mandatory for agents; voluntary and anticipated compliance to certain dispositions before they are imposed by others can result in an advantage at various levels (corporate image, timing, costs, increasing experience accruing, etc.). Besides the healthier environment resulting from responsible growth, developing and implementing sustainable strategies and processes highly increase the chance for innovating, which in turn contributes to further social and economic advantage.

Investing in sustainability yields the double positive effect of improved environment and life, economic aspects included, without negatively impacting on costs (rather, reducing costs and increasing profits).

The result is a new geography of jobs. Companies of well-developed countries are demanding more people able to innovate their business model in a sustainable way, in order to compete against other companies.

Concerning the automakers and their customers

We have seen that the automotive industry has seen a sharp decline in the previous years. Many scholars argued that such decreasing is related to the fact that car is no longer seen as the most rational means of transport. The first reason of this change is the increased “value for the money” of new generations, who wants to spend less. Consumer are demanding more “convenience” in vehicle, especially in its long-term life. In addition to cost and convenience, for Gen Y consumers interested in vehicle ownership, a new set of brand differentiators emerge: vehicle technology (inside and outside of the vehicle), alternative powertrains, and even the customer experience will influence the decision-making process and consumers’ ultimate purchasing decision (Deloitte Review, 2014).

European Union and its SUM policies, plays a fundamental role in that game, developing new concepts of urban mobility and encouraging the development of new means of transport.

If we take London and UK as a model for a possible future in well-developed countries, carmakers should be worry about the “peak car”, since it appears as a change towards a different conception of the use of car. Presently, carmakers’ attention is almost exclusively devoted to

pollution, car-size and, in general, land consumption issues (Stocchetti, 2013). However, this view is simplistic: a real change of urban lifestyle is taking place, and considering that 70% of the European population lives urban areas, automakers have to pay attention.

Those that look at opportunities beyond the traditional business models and sales processes will have the possibility to be disruptive in the industry (Deloitte Revier, 2014).

Concerning Tesla

Personally, I think that Tesla is going into the right direction: firm's mission and vision are aligned with its strengths. Tesla is based from Elon Musk conviction that the future will be electric. In this sense, there is a potential and demand for a shift in the approach to the automotive industry, with the goal of reducing oil and gas dependency. Trying to walk that path, it is changing traditional carmakers' approach to the automotive industry, redefining what it is necessary to be a competitor. As we have seen, it has progressed a lot since the first vehicle produced, the Roadster. Now he aims to sell 55.000 vehicle in 2015, and in this year Model X SUV sales will start. In late 2017, Model 3 will arrive with the goal of achieving the mass-market. The progression is complementary to the diffusion of Supercharger stations, now they are 2871. Tesla think that in the future North-America and China will be the their most important markets, therefore it is generating curiosity especially in the latter through media.

Focus strategy. Certainly, Tesla is producing the best electric cars. In fact, they have been applied many techniques for designing of space vehicles in order to make the car light despite large batteries. Tesla has the lower drag coefficient among all the cars of its size and an exterior body made entirely in aluminum. Consequently, the waste of energy is very low. In addition, it has the most advanced battery pack, which allows you to do an adequate number of kilometers. This is probably due to the fact that Tesla is a Start-up focused only in Electric Cars. It is a company committed to the electric world. That is not the case for most automakers, who use the same architecture of IC cars for produce electric cars. These automakers invest in different powertrains technology in order to meet customer demand and to evaluate which is the better. Innovation technology states that incumbent may be reluctant in investing for radical change because they are deeply involved in their old competences.

Reputation and loyalty. The Value Chain analysis revealed that Tesla doesn't have a marketing CEO: this implies no advertising budget, nor multinational campaigns. This happens because Tesla relies on word-of-mouth and mall showrooms as a marketing strategy to sell its cars. However, this could work if you a strong brand loyalty. In fact, Tesla Motors received the highest

owner satisfaction score in Consumer Reports' annual survey last year (Rutter, 2014). According to the magazine, "Owners of the Tesla Model S gave it the highest owner-satisfaction score Consumer Reports has seen in years: 99 out of 100".

Tesla has identify two enemies, those are IC engine vehicles and main automakers. Many people receive an emotional attachment when they are driving a Tesla: you are using something different from a traditional car, moreover you are affording new tech from a new company. We can find a comparison to Apple, with its ability to target Microsoft as the enemy, while also offering its products as the anti-PC solution and a small user base which identifies with being different (ibid).

Tesla has eliminate dealerships from its Value Chain, making auto dealer associations as an enemy. The latter launched lawsuits against Tesla with the aim of banning the EVs maker from selling vehicles. Tesla wants only to sell cars to its customers, without making profits for servicing. This smart move only strengthens people support to the company. Moreover, people help the company, protesting against legislator and dealers.

According to psychology, this attachment to the company from the customers wouldn't be so strong without an enemy to fight.

Create emotional connection is fundamental, the most recognizable brands today have all this thing in common. Customer support the company for what is representing. Tesla is representing the solutions for sustainable vehicles, powered by extraordinary technology. People feel good with this, because sustainability is an increasingly important cause today, one to which millions of people are committed.

Finally, Tesla has a transparent relationship with customers, thanks to social media. For example in 2013, Tesla was hit by a bad publicity because a Model S fires, but Musk quickly deal the question via social media. In addition, Tesla published the email correspondence whit the man who happened the fire, in this way public understood what happened.

How Tesla integrates shared value principles with ecosystem innovation to build sustainable competitive advantage

Several reasons illustrate how Tesla is exploting shared value principles.

1. **Value.** First of Tesla's mission is: "to accelerate the advent of sustainable transport by bringing compelling mass market electric cars to market as soon as possible". In this definition is implicit people benefit through the research for sustainability. Tesla unlock

value from the equation economic and societal benefit relative to cost. The value creation is a joint between community and companies.

2. **Leader.** Another reason lies behind the man who created and runs the company, Elon Musk. A person with the goal of changing the world and improving our lives. He believes in the Internet, creating energy in a sustainable manner and the fact that we will become a multi planet species. He has the ability of influencing overall company's organizational culture.
3. **Agenda.** Shared Value principles are integrated in overall company agenda, they are not a part of the agenda. Sustainability is the way that company is running its business and compete against the others with a long-term view.
4. **Profits.** CSV is integral to profit maximization.
5. **Reconceiving products and markets.** Tesla completely redefine product and markets. He is not involved only in the construction of electric vehicles, but he is using a larger system, created by interconnections among his three companies. For example, Tesla aims to create 100 percent renewable energy source for their public Supercharger stations. Solar City will be the provider of solar panels to the stations. Tesla is additionally aiming to make the solar panels from independent power grid. This would be accomplished by coupling the solar panels with batteries and since Tesla will be a large producer of batteries with its Gigafactory, this is easy for them to achieve. (Massachusetts Institute of Technology, 2014.) The interconnections expresses how Musk is also using Solar City as one actor of systemic innovating of EVs. Both this is beneficial for the individual companies and to the business system of EVs. The connection with SpaceX and Tesla exists with their similar production materials and techniques: "yeah we have lot of advanced light-weight aluminums and advanced joining techniques, new types of welding That We use in Model S too," Musk Stated in an Automotive World Congress (2015) interview.
6. **Redefining productivity in the value chain.** As we have already seen, Tesla eliminates dealerships from its value chain.
7. **Enabling local cluster development.** Tesla is enabling a local cluster development exploiting its position in the Silicon Valley.
8. **Open Innovation.** Another reason lies in open innovation that we find in the words of Musk "Tesla Motors was created to accelerate the advent of transport sustainable. If we clear a path to the creation of compelling electric vehicles, but then lay intellectual property landmines to inhibit others behind us, we are acting in a manner contrary to that goal. Tesla will not initiate lawsuits against patent anyone who, in good faith, wants

to use our technology" (Musk, 2014). Surely, this is more a market move than shared value because interest in the electricity market by major automakers is still poor. However, we cannot not consider it as a gesture that goes to the benefit of all and that could provide a push in the electric car market.

Tesla approach is not just innovating electric car but rather to innovate the entire ecosystem around electric car. The following tab shows the main problems of the electric ecosystem, which stop the advent of electric car. These are put in comparison to Tesla's achievements.

Electric Ecosystem Issues	Tesla
Purchase Price Premium	Partially Solved
Limited Driving Range	Solved
Charging Infrastructure	Solved
Battery Resale Value	Unsolved
Limited Driving Range Limits Savings	Solved
Electric Grid Capacity	Partially Solved

Model 3 will be sold in late 2017 (when the Gigafactory will be built) at the price of 30.000 dollars. Tesla in this way will enter the mass market, therefore the price problem (1) will be partially reduced. However, considering the whole ecosystem strategy other savings will be available.

Tesla is increasing its network of superchargers, allowing cars to be fast-charged (in less than an hour) at the network, with no payment. In February 2015, there were 2,000 superchargers in 400 stations worldwide. Within the geography, the driving range issue problem (2) and the challenge that the economic advantage of cheaper fuel cost per mile only comes with distance (5), are solved.

Every Tesla produced from 2013 has the option of using the swapping battery technology. Going to a Tesla super charger station, paying the price of a today's filling, there is the opportunity to change the battery in less than a minute. However, this method doesn't seem to have a strong appeal to consumers, who ask themselves why they have to change the battery and pay 70 dollars, when in 20 minutes is possible to recharge more than half of the battery for free, using the super charger network. Therefore, despite the possibility, Tesla didn't provide superchargers of this technology because consumers demand is inexistent. Notice that the idea of the battery

switch station can work only if individual drivers do not own batteries, otherwise, they would be concerned with the potential of trading their precious battery for an inferior one. With this technology, problem (4) could be solved, however as I already told Tesla's customers don't like this option, therefore this problem still remains.

Tesla's battery packs are estimated to be the best and cheaper than other EV batteries. Part of that is thanks to the quality of Panasonic's cells, but part of that is also Tesla's continual improvement of the packs and the battery chemistries. Since batteries make up a large portion in the price of Model S, Tesla needs to produce them on a large scale to generate economies of scale. Tesla wants to solve this challenge by creating a Gigafactory to produce batteries. The Gigafactory will be functional in 2017 and aims to produce more batteries in 2020 than all of world's battery producers did in 2013. The Gigafactory will lower the price of batteries at least 30 percent; this means a reduction of problem (1) and (2).

Tesla is starting to sell its Powerwall battery that can be placed at homes or in businesses. Powerwall can store excess energy produced from your own solar generation, so that energy not used at the time will be available later. In addition, it can store power when electricity from the power grid is at its cheapest rate, off-peak. This can be used during peak hours to lower costs in the household it is installed. The aim is two-fold: to save you money long-term (accepting the initial outlay), but in a wider context, combined with solar power generation, reduce reliance on the power grid and shift your energy to a green source. This can partially solve problem (6). Solar panels without integrated storage are not much more valuable than light bulbs without an electric grid; Tesla Energy, then, is an aggressive move toward creating the energy system of the future (Suskewicz, 2015).

This fact follows the framework provided in previous chapter: some innovations, differently from autonomous one, require new systems in order to disrupt the old ones. Therefore, it is require system thinking which consist in elaborating a value blueprint with all ecosystem's dependencies. That is what happening with Tesla, every time Musk announced a new product or a new collaborations, you have a perception that there is a whole picture.

Tesla energy is the missing piece bridging electric cars and large-scale renewable power (ibid). Of course still grid problem remains for the countries where there is enough capacity. However, the point here is that in terms of larger, longer-term systems-level goals, Tesla Energy fulfills a number of preconditions that make such ambitions more achievable (ibid).

"Tesla is not just an automotive company; it's an energy innovation company" (Musk, 2013).