Driving from Automobile to Mobility: Agile business model innovation

A Master's Thesis submitted for the degree of
"Master of Business Administration"

supervised by
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I dedicate this master's thesis to all the contemporary and enduring traditional families of the world that are the role model agile organization to grow children, inculcate values, and provide the means for livelihood and to the subsequent generations of this MBA program at the Vienna University of Technology.

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S T U

Affidavit

I, **Juan Carlos Legaspi Velázquez**, hereby declare

1. that I am the sole author of the present Master's Thesis, "Driving from Automobile to Mobility: Agile business model innovation", 276 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted this Master's Thesis as an examination paper in any form in Austria or abroad.

Vienna, 28.01.2011

Juan Carlos Legaspi

Signature

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LIST OF ABBREVIATIONS

ABM: Automobile Business Model

ACVR: Automotive Cluster Vienna Region

AMC: American Motors Co.

BAU: Business as usual

BBC: British Broadcasting Corporation

BOF: Basic Oxygen Furnace

BOP: Basic Oxygen Process

BP: British Petroleum

BYD: Build Your Dreams (Chinese IT, Automobile, and New energy company)

CBM: Car sharing Business Model

CD: Compact Disc

CEO: Chief Executive Officer

CFC: Chlorofluorocarbon

CMP: Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol

CNN: Cable News Network

CO2eq: Carbon Dioxide equivalents

COP: Conference of the Parties

CS: Customer Segments

CSO: Car sharing organization

EBSCO: Elton B. Stephens Company

EE: Extended Enterprise®

EIF: External influencing factors

ENEL: l'Ente Nazionale per l'Energia Elettrica (Italian National Agency for Electric Energy)

E.ON: Energy On (Global provider of energy solutions)

EPA: Environmental Protection Agency

GEMA: Global Engine Manufacturing Alliance

GHG: Green House Gases

GM: General Motors

GPS: Global Position Satellite

IBM: International Business Machines

ICE: Internal Combustion Engine

ICT: Information Communication Technologies

IEA: International Energy Agency

KA: Key Activities

LD: Linz-Donawitz process

LP: Listening Post

MITI: Ministry of International Trade and Industry (Japan)

NASDAQ: National Association of Securities Dealers Automated Quotations

NBER: National Bureau of Economic Research

NGO: Non-governmental organization

NPD: New Product Development

NUMMI: New United Motor Manufacturing Inc.

ÖBB: Österreichische Bundesbahnen (Austrian Federal Railways)

OECD: Organisation for Economic Co-operation and Development

OEM: Original Equipment Manufacturer

P&G: Procter and Gamble

PT: Public Transportation

R&D: Research and Development

RS: Revenue Streams

SME: Small and Medium Enterprises

SUV: Sport-utility Vehicle

USB: Universal Serial Bus

URL: Uniform Resource Locator

USSR: Union of Soviet Socialist Republics

VP: Value Propositions

ABSTRACT

The aim of this research is to envisage an agile business model innovation for the automobile industry towards mobility purpose able to keep building value for its customers. Such a study is important in order to provide a stimulating source for current practitioners in the automobile industry and beyond, since it suggests an agile business model innovation with a main value proposition non-based only on automobile ownership. The research approach adopted in this dissertation includes a critical literature review of concepts on agile business model innovation and the institutionalized automobile industry coupled with an abductive approach to case study method, as a research strategy, used to execute the empirical research; sites included international stakeholders of the automobile industry; a convenience sampling technique; a sample size of eleven research subjects; and semi-structured interviews as data collection technique. The findings from this research provide evidence that the institutionalized automobile business model does not observe and cope with strategic risks that break its structural coupling with its customer stakeholders; the established automobile industry represents an institutionalized organization supported by the society; and OEMs were listening to customer short-term fascination needs and appetite for SUVs but not society stakeholder needs. The main conclusions drawn from this study are: the institutionalized automobile business model and its value proposition based on automobile ownership deplete value from the customer with mobility purpose needs; a shift in attitudes and behaviors towards automobiles by younger generations within the socio-political risk driver interacting with the other risk drivers such energy balance and economy could impact by causing that society no longer would support the automobile business model as an institutionalized organization; and the principle that not necessarily by listening to customer will render a value propositions that in fact build value for the customer. Managerial implications of this dissertation indicate that the institutionalized automobile industry should start experimenting with an agile business model innovation to observe and manage the strategic risk that breaks its structural coupling with its customer stakeholders; management of the institutionalized automobile industry should exercise the industry's relevant role to collaborate as an expert in the term of the support formula (Support = Experts x Politicians x Administration) to change the subjacent structure of the city (as a system) that originates the behaviors in that city for automobile dependence; and stakeholders of a wider environment to the organization should not be missing when managing strategic risk.

Keywords: institutionalized automobile industry, mobility purpose, agile enterprise, business model innovation, strategic risk, structural coupling, organic management systems, business model life cycle.

CHAPTER 1: INTRODUCTION

This chapter represents the cyclical opening for this research work. This chapter follows structuring plans and guides provided by Biggam (2008, 17-22, 31-49), Fisher (2007, 317-319), and Glatthorn (2005, 17-30, 163-170). The introduction chapter integrates the following actions along these lines:

- **Provide** background to locate the panorama and explain the circumstance.
- **Describe** the research topic.
- **Clarify** the research topic by providing an overall research aim and enunciating specific research objectives to achieve it.
- **Justify** the added value of this research work.
- **Illustrate** an outline structure of this research work.

The researcher adapts insight by Fisher to structure this chapter using the so-called Watson Box to summarize the research project by answering to the next four questions: What? Why? How –conceptually? How –practically? (qtd. in Fisher 2007, 72). The background, the research focus, and the overall aim and specific research objectives thematically congregate in the question "What?" The value of this research subsection correlates to the question "Why?" The overview of the appropriate literature correlates to the question "How – conceptually?" The research design section addresses the question "How – practically?" Finally, the last section provides the outline structure of this research work.

1.1 Background

The management dilemma is to create value for all its stakeholders, including customers while pairing with its external influencing factors. Then, the management project is to transform the automobile industry into mobility purpose industry. A management response is based on business strategic

differentiation for effective value building related to customer listening, as part of the collection of organization's stakeholders, and the wider environment. The managerial implication is an agile business model innovation for mobility purpose services.

During the recent period from years 2008 to 2010, the automobile industry around the world has experienced without precedent challenging times. The automobile industry has always been characterized by product and process innovation. The challenging aspect for the automobile industry enterprise is to have a corporate culture capable to embrace design targets with people truly passionate and intellectually curious for its core products and its potential mobility purpose services. People motivated to know more about mobility purpose taken as a whole and its new business horizons. Even more, an automobile industry enterprise and its managers interested in the social psychology contributions to achieve these aims. Here is the point, where the mobility purpose industry signifies opportunity in the economy of innovation or the third-wave for knowledge wealth as expressed by Toffler (2007, 45).

1.2 Research focus

A scheme to articulate the research topic up to its problem statement is explained by Glatthorn (2005, 17-30). Reworking that system to this research work, the research topic for this thesis project is the automobile business model. Connected to this research topic is the following research problem: the established automobile business model is not valid anymore, in particular the high visibility of the research problem from the recent performance of the USA pioneer mainstream automobile industry but also seen the effect in other latitudes. The problem symptoms were the recent government bailouts, loans to automobile companies also around the world, and incentive packages to purchase new automobiles. Subsequently, the problem statement is that the established automobile business model does not build value for its customers with mobility purpose needs.

1.3 Overall research aim and specific research objectives

The overall research aim and the specific research objectives to achieve it derive from a central research question and four subsequent peripheral research questions. So, the immediate subsection presents the central and peripheral research questions.

1.3.1 Research questions

The researcher adapts the approach detailed by Biggam (2008, 17-22) to develop this section of the introduction chapter. Returning to the context above described, the applied question expressed as central research question is:

> **Why** the established automobile business model struggles to build value for its customers with mobility purpose needs?

And the four subsequent peripheral research questions are along these lines:

> What is the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value?

> Why could an agile business model innovation for mobility purpose services build value for its customers while pairing with its external influencing factors?

> What are stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation for mobility purpose services?

> What information can be provided to the automobile industry to suggest an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions?

1.3.2 Overall research aim

Based on the previous listed research questions, the transformed expression in connection with the central research question is the following overall aim:

The overall aim of this thesis project is to envisage an agile business model innovation for the automobile industry towards mobility purpose able to keep building value for its customers.

1.3.3 Specific research objectives

To achieve this overall research aim of the thesis project, the four specific research objectives are to:

1. Clarify the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

2. Evaluate critically concepts, theories, and conceptual frameworks significant to the agile business model innovation towards mobility purpose services to build value for its customers while pairing with its external influencing factors.

3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

4. Suggest recommendations to the automobile industry regarding an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

1.4 The value of this research

The value of this research is its feature to envisage for the incumbent and those new collaborative entrants an alternative or complementary agile business model as a mobility purpose service provider for value build. Also, the aspiration is to provide a stimulating source for current practitioners in the automobile industry, since it suggests an agile business model non-based only on automobile ownership. Besides, analogous to Bennis and O'Toole's objective for business schools, the final thesis work will display a balance amid "scientific rigor and practical relevance" (Bennis and O'Toole 2005, 98).

Topic: I am working on the topic of Automobile Business Model.

Why?
Because I want to find out why the established automobile business model struggles to build value for its customers with mobility purpose needs?

So what if I do?
Then, I can undestand what is the misfit with external influencing factors on the automobile industry business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

So what if I do?
Then, I can undestand why an agile business model innovation towards mobility purpose services can build value for its customers while pairing with its external influencing factors.

So what if I do?
Then, I can undestand what stakeholder's insights and experiences are associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

So what if I do?
Then, possibly the automobile industry could use information suggesting an agile business model innovation for mobiliy purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

Synoptic box 1.1. Progression for applied research questions.

Adapted from Turabian (2007, 9).

Therefore, within this context for the development of these thesis' research questions, Turabian proposes an applied research question type: "What must we understand before we know what to do?" (Turabian 2007, 9). This type of question is in the middle point and is neither entirely practical nor entirely

conceptual. Adapted from Turabian editors is the progression illustrated in the Synoptic box 1.1 of previous page.

Besides, the exploration of this research thesis will impart on the researcher useful skills as a professional MBA graduate.

1.5 An overview of the appropriate literature

As Biggam (2008, 74) indicates the first two specific research objectives should address the critical literature chapter of the master's thesis. The thesis opening literature setting results after a search based on research reviews or meta-analysis as recommended by Glatthorn (2005, 27).

Subsequently, using the opening literature setting and having as a reference the aim and objectives of my thesis, the critical literature review will be conducted. Sources selected to form the critical literature review will be in the following significance order: management and academic journal peer review articles, thesis dissertations, journal non-peer reviewed articles, working papers, books, and newspapers in electronic format as well as business magazine articles to search for trends.

Before delineating the conceptual framework to guide researcher's investigation, the following noteworthy definitions associated with the opening literature are presented:

Automobile industry: WordNet 3.0 (2006) by Princeton University provides the following definition: "the manufacturers of automobiles considered collectively". Haugh et al. describe the automobile industry in this way: "The industry is capital intensive, with a relatively high capital-to-labor ratio, and in many countries a large share of the production is exported" (Haugh 2010, 4).

Mobility: According to Knoflacher (2007), mobility shall be defined in connection with purpose. There is not alteration in the number of purposes. Besides the concepts aforementioned, Knoflacher (2009, 60) emphasizes that mobility is clearly an effect of a weakness at one site. In other words, a urban planning issue.

Agile Enterprise: Sherehiy et al. define this concept as follows:

> "in order to be agile the enterprise has to be adaptable and flexible and has to adopt the features of the organic organization such as few levels of hierarchy, informal and changing lines of authority, open and informal communication, loose boundaries among function and units, distributed decision making, and fluid role definitions (Lawrence and Lorsch, 1967; Ashby, 1956; Hatch, 1997; Vecchio, 2006)." (qtd. in Sherehiy et al. 2007, 457-458).

Business Model (BM): Zott et al. (2010, 1) list ten selected business model definitions from several authors. Among them is Magretta, who characterize the BM like this:

> "They are, at heart, stories—stories that explain how enterprises work. A good business model answers Peter Drucker's age-old questions: Who is the customer? And what does the customer value? It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?" (Magretta 2002, 4).

Conway and Steward present a definition according to the type of innovation, in this case business model innovation like this: "Novelty in the 'drivers' of an organization's activities or strategy" (Conway and Steward 2009, 14).

Innovation: Schumpeter defines it in the economical field as "any '*doing things differently* [emphasis added]' in the realm of economic life" (Schumpeter 1939, 1: 84).

Returning the discussion to the outline for the conceptual framework significant to the agile business model innovation towards mobility purpose services, the second specific research objective listed in section 1.3.3 is

associated with the development of it. Fisher (2007, 125) presents three activities needed to develop the conceptual framework: concept definition, outlining the conceptual framework, and generate theory. The last is out of the scope of this master's thesis level. The first two concepts will be discussed in the thesis, particularly in chapter 4.

A structured approach is pursued to develop the conceptual framework. However, the researcher follows theory development process to analogously design the conceptual framework for the research work of this thesis. Anfara and Mertz provide (based on discussions by other scholars such Babbie, 1986; Silver, 1983; and Turner, 1974) relevant detail about theory elements including: "the relationship of concepts, constructs, and proposition to theory." (Anfara and Mertz 2006, xiv-xvi). Fisher (2007, 126-132) explains that interdependencies or relationships can be of seven types: cause and effect, stages in a process, hierarchical relationships, maps and coordinates, pairs of opposites, exchange and equilibrium, and similarity. At this introduction stage in the thesis project, pairs-of-opposites type is being selected to build up and illustrate the conceptual framework. However, in the corresponding chapter for conceptual framework the interdependency type will be confirmed. In summary, the researcher adapts from Fisher (2007, 122, 149) the utility of the conceptual framework serving to the following main purposes: to lead the research project, to analyze afterwards the research material, and to organize the analysis and synthesis of the research material.

1.6 Research design

The third specific research objective challenges the research methodology and methods chapter of the master's thesis. This specific research objective is a practical objective, which calls for empirical research implementation. Prior to start with this section, the researcher needs to indicate the distinction between methodology and methods. Fisher (2007, 40) clarifies that the study of methods is the methodology. On the other hand, methods are the resources to accomplish the primary research, for example interviews.

Biggam (2008, 82-83) explains that as a result of the critical literature review process in search of what is the state of the art about the subject, one finds the

need for empirical data. In our case, it was identified a gap in available literature referring to multiple perspectives and information leading to address the need for a reposition of the established automobile business model and that this reposition in specific by means of an agile business model innovation lacks of empirical research. The next step is to define the research strategy. Basically, this research work seems qualitative primary and not quantitative. Qualitative research centers to exploratory works in which the quality of responses results by asking "**why**" questions (Biggam 2008, 86). Also, Biggam (2008, 85, 87, 92) clarifies that the aggregation of the selected research strategy, the specific research objective, and the data collection technique define the research qualitative in nature (also known as interpretavism/phenomenology).

One research method that will be employed, as a research strategy, to execute the empirical research is an abductive approach to case study (also known as systematic combining). Dubois and Gadde (2002, 555) state that the principal goal of doing research is to challenge the theoretical domain with empirical domain. They argue that this challenging aspect is almost incessant during the research activity in the systematic combining. Dubois and Gadde describe the abductive approach (also known as systematic combining) as follows "During this process, the research issues and the analytical framework are successively reoriented when they are confronted with the empirical world" (Dubois and Gadde 2002, 554). The selection of sites to obtain primary research data makes available research subjects at the extreme of the phenomenon. Thus, at the subsequent stage analysis and synthesis the distinctions between the established automobile business model and alternative ones can better boost. The sites include stakeholders in the automobile industry spread in countries such Austria, Germany, Italy, México, and the USA. Research subjects include management practitioners, scholars, and customer representative. The researcher, as individual investigator, initially selected a sample size in a range between 10 and 15 research subjects. The researcher qualifies this empirical research as one single case study. Convenience sampling is selected based on access on a case-by-case participant.

Data collection delineates how to obtain data. The researcher selects interviewing among other data collection techniques as a vehicle for this

specific empirical research. Other data collection techniques include "secondary data, observation, interviews, and questionnaires." (Biggam 2008, 101). This empirical research obtains data by means of individual and group interviews to stakeholder representatives. For this project, the abductive approach to case study undertakes semi-structured questions for interviews to stakeholders such practitioners and managers involved in the automobile industry and representative customer of the mobility services provider are the more suitable alternative. According to Fisher (2007, 153), an open approach characterizes exploration. However, interviews, like other data collection methods, could be conducted between two extremes: unstructured or structured according to Goodwin (2006, 35). In the middle, the semi-structured interview uses a guide of main topics or themes to be covered during the interview.

Finally, the qualitative nature also know as interpretavism/phenomenology of this research is confirmed by placing together our research strategy, abductive approach to case study method; plus the third specific research objective (Explore stakeholders' insights and experiences…); and as explained before, the "**Why**" characteristic of this research makes use of a data collection technique based on interviews with semi-structured questions.

1.7 Structuring the thesis

The thesis structure is a template combination by Biggam (2008, 26) and by Fisher (2007, 317). The researcher uses guidelines for structuring the dissertation by Fisher (2007, 317) to prepare a thesis structure outline illustrated in Figure 1.1 in the following page.

As part of the writing process for the master's thesis, the researcher needs to mention that this introduction is written progressively as chapters are completed. The researcher writes chronologically the abstract after completion of chapters 1 to 7.

The subsequent chapters 2 and 3 for critical literature review and the institutionalized automobile industry address jointly the first and second specific research objectives. The subsequent chapter 4 for the conceptual framework concentrates on the second specific research objective.

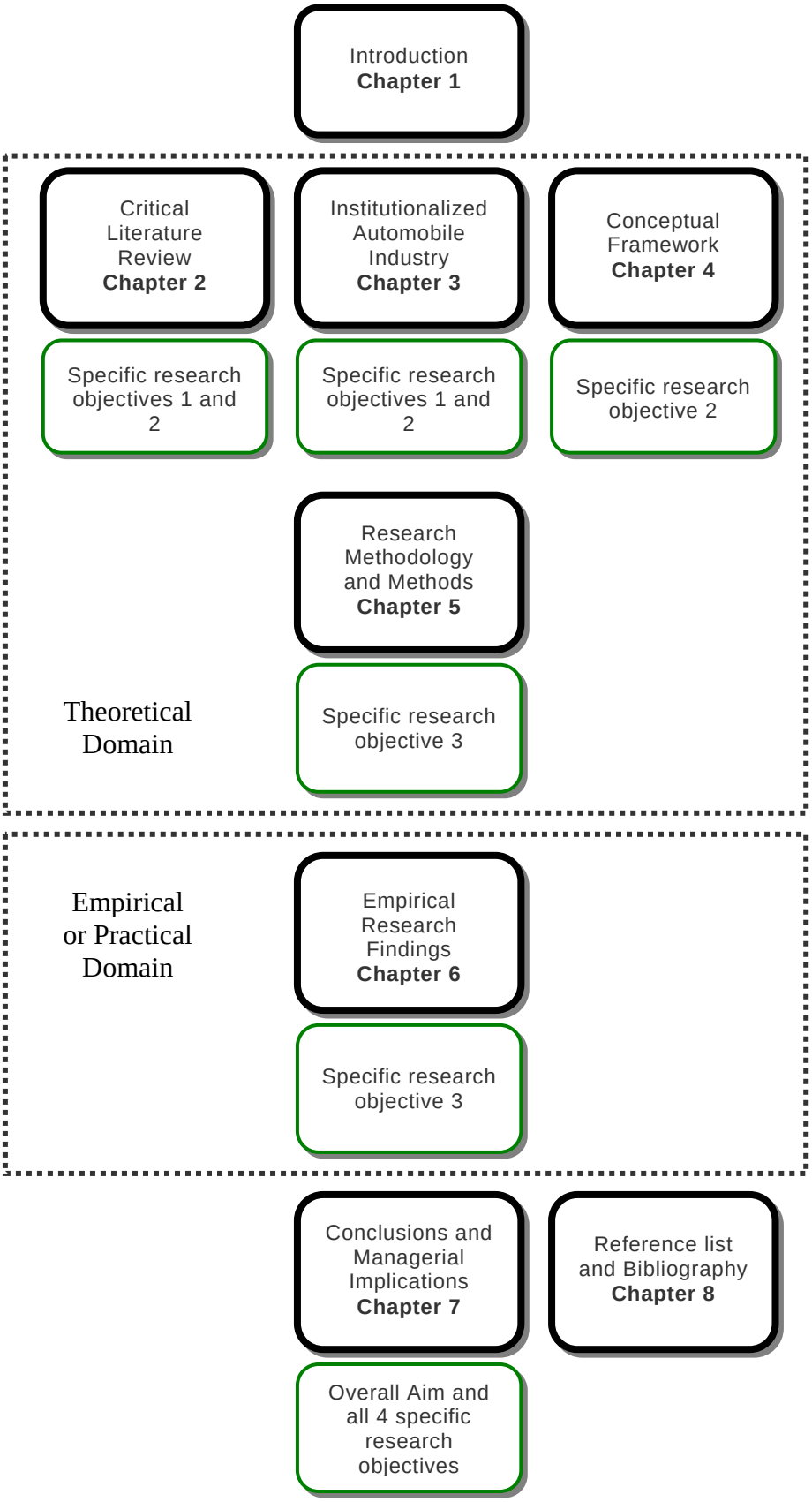


Figure 1.1. Thesis structure outline. Overall aim and specific research objectives cross-reference to thesis chapters. Adapted from Berchicci (2009, 10).

CHAPTER 2: CRITICAL LITERATURE REVIEW

This critical literature review seeks to identify, contrast, and evaluate the concepts and theories for suitability or unsuitability to the aim and the first and second individual research objectives of this thesis deployed in Chapter 1. This chapter uses a combination of structuring plans and guides provided by Fisher (2007, 12; 78-150; 317) and Biggam (2008, 50-78). The critical literature review chapter embraces along these lines:

- **Search** and identify the literature.
- **Describe, abridge, and contrast** the literature.
- **Evaluate critically concepts**, theories, and conceptual frameworks.
- **Generate momentous** to the literature and provide new perspectives to understand the conceptualization and theorization on an alternative future automobile business model.

2.1 Introduction

This chapter in combination with chapter 3 studies the principal matters for the misfit to influencing factors on automobile business model causing to lose its capacity to build value for its customers; and the theoretical literature as well as previous empirical research relevant to the agile business model innovation en route to mobility purpose services. The critical literature review approach anchors theories and concepts to suit the needs for this master thesis. With that purpose in mind, this critical literature review chapter needs to extend to chapter 3 to cover specific concepts of the institutionalized automobile industry.

After the search process and identification section, the business model and business model innovation section describe, abridge, and contrast the literature for fitness to the aim and specific research objectives 1 and 2. Here the researcher clarifies that, with the intention to narrow the scope for this thesis, the business model focuses on four of its so-called building blocks. Part of the reason resides also on the consistency aspect of the business model design that

intrinsically has more enrichment in a business setting when conducted by a cross-functional team (Osterwalder and Pigneur 2010, 143). The chapter ends with a section of relevant issues found from this critical literature review. This means for the reader that this chapter addresses the twin specific research objectives (text blocks in bold font here below) previously formulated in the introduction chapter.

1. Clarify the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

2. Evaluate critically concepts, theories, and conceptual frameworks significant to the agile business model innovation towards mobility purpose services to build value for its customers while pairing with its external influencing factors.

3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

4. Suggest recommendations to the automobile industry regarding an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

After chapter 4 discussion on the conceptual framework, chapter 5 discussion on the research methodology and methods seeks to implement the empirical research and thus to achieve the third specific research objective. Results from achieving these three specific research objectives convey the specific research objective 4.

As a result, chapters two and three generate momentous to the literature in relation to the first two specific research objectives and provide novel outlook to understand the conceptualization and theorization on an alternative future automobile business model.

2.2 Search process

The search process for the critical literature review keeps a balance between academic and practitioner sources with relevance to the overall aim, the first and second specific research objectives of this thesis. The search process guides to identify literature relevant for these aim and objectives. Firstly, academic sources include, according to a significance order, management and academic journal peer review articles, doctoral and master's thesis dissertations, textbooks, and archive papers or notes taken from symposiums and conferences related to the topic research. Secondly, practitioner sources include journal non-peer review articles, working papers, books, newspapers with business section in electronic format, specialized magazines, and website channels for auto industry news. As suggested by Clegg (2003, 195-197), old and contemporary episodes in history of science (most recently in 1999 and 2002) show evidence of "make up your own minds" attitudes by some renowned science journals editors - particularly The Lancet and Nature - as grounds to issue articles that had initially adverse peer review. These attitudes "suggest that peer review is always in danger of suppressing new ideas that don't fit with the current accepted picture of the world – that, worthy though the process is, it naturally operates against the development of truly new ideas" (Clegg 2003, 195-197). By contrast, Fisher (2007, 81) suggests that non-peer review journals can work within a business domain to identify its "trends, fashions [*sic*] and current concerns". Therefore, this balanced approach for the search process guides to identify relevant literature for the thesis aim and its first and second specific research objectives.

An initial search focus facilitates location of the state-of-the-art and classical academic sources for the following topics: Agile enterprise, business model, innovation, and mobility. Note that these topics connect logically to the aim and specific objectives 1 and 2 derive into keywords. This search process starts

using also other keywords such as “journal research reviews” or “meta-analysis”, as recommended by Glatthorn (2005, 27), in conjunction with keywords from the thesis aim and the first and second specific research objectives. The following relational databases provide the main stream of peer review articles, mainly e-journals, for the academic source search: “Elektronische Zeitschriftenbibliothek” (Electronic Journals Library) by The Universitätsbibliothek Regensburg, EBSCO, Emerald, ProQuest, ScienceDirect (Elsevier), and Scientific Commons. Google™ scholar beta search engine provides an alternative approach to locate peer review articles and thesis dissertations. Briefly, this approach induces to find what theoretical research state-of-the-art and classical stands for agile enterprise, business model, innovation, and mobility.

Like the academic sources for this thesis, practitioner sources included searches for the additional keywords automobile industry and economy in archives of electronically available automobile industry media, consultant firms, country organizations, and some government agencies. Searches in the Internet (network) using freely available Google search engine gives the initial clue. Afterwards, the researcher expands the search using the search facility for each newspaper business section, specialized magazines, and website news channels dedicated to the auto industry. Searches on practitioner sources include articles appeared online in media organizations such as BBC, BloombergBusinessweek, CNN, The New York Times, The Wall Street Journal and broadcast interviews in more specialized automobile industry media organizations such as Autolinedaily. Practitioner sources include also searches for reports and working papers from consultancy firms, associations, government agencies, and country organizations. Ultimately, this approach induces to find from the practitioner community what the up-to-date information and industry trends are in the automobile industry and the economy.

On balance, the search process comprises academic and practitioner sources that address the aim and twin specific research objectives of this thesis. This approach ensures to maintain the focus on them and provides foundation to identify the corresponding literature for the critical literature review.

2.2.1 Identifying the literature

This thesis provides in its search process foundation to identify initially the literature subject to the review. Identifying the literature supports afterwards the processes to describe, abridge, and contrast the literature as well as to generate an initial conceptual framework. After the search process of the literature, a deductive reasoning helps to move the general search of literature to the specific identification of the literature. First, readings of journal research reviews and news summaries support the construction of an annotated bibliography list of reading sources. In parallel, the researcher develops an outline of the critical literature review chapter to address the desired aim and specific objectives. Second, keywords from our aim and twin specific research objectives provide the ground to draw a map of the literature detailed in the following subsection. Third, the annotated bibliography list of reading sources and the map of the literature allows visualization of what material to use for this chapter and for the introduction chapter. Finally, the bibliography list evolves to an identified references list subject matter to describe, abridge, and contrast plus to generate the initial conceptual framework.

Mapping the literature

The map adapted from Fisher (2007, 87) presented in the following page Figure 2.1 illustrates the thesis opening literature setting after an early search based mainly on peer review journal research reviews or meta-analysis as recommended by Glatthorn (2005, 27) and practitioner sources.

The green bold oval at the center represents the main corpus of literature based on the aim of this thesis. Satellite blue ovals around this green oval represent significant literature with affinity to the main corpus literature. Fine line red ovals encircle some of the authors. In brief, the visualization map of literature in combination with the annotated bibliography list provides the initial identified references list for the critical literature review.

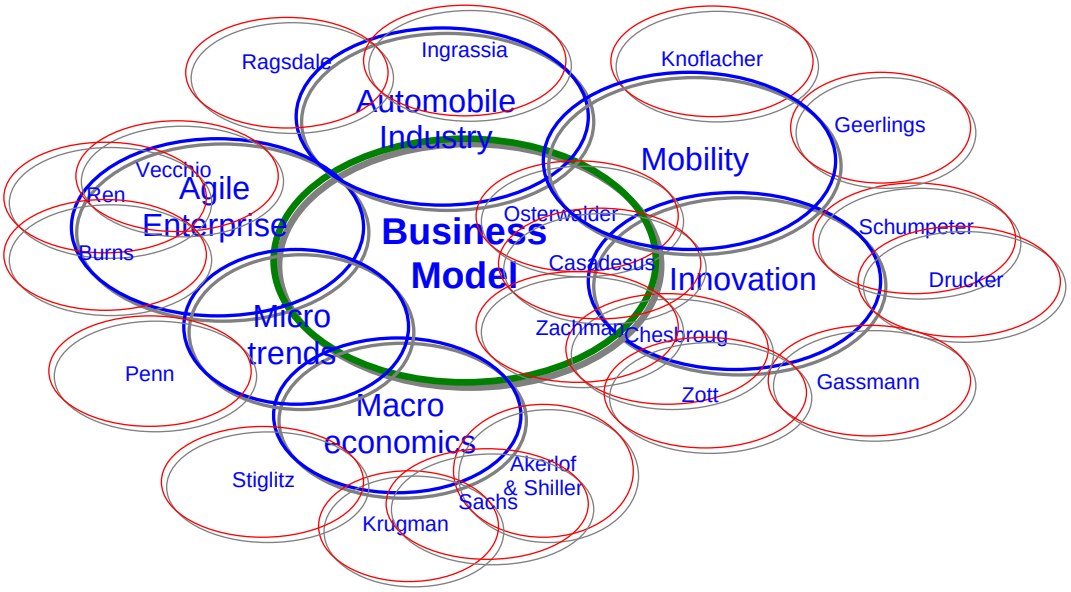


Figure 2.1 Thesis opening literature affinity mapping. Main corpus of literature surrounded by significant literature and corresponding authors. Adapted from Fisher (2007, 87).

All in all, the search process in combination with the identification of literature attempts to keep a balance between academic and practitioner sources with relevance to the aim and the first and second specific research objectives of this thesis. Be that as it may, analogous to Bennis and O'Toole's (2005, 98) objective for business schools, this final thesis seeks to display also a balance amid "scientific rigor and practical relevance".

2.3 Business model and business model innovation

After describing the search process of literature for this thesis, this section attempts to define the general area of study of both concepts: business model and business model innovation. The first and second specific research objectives prompt to identify business model and business model innovation main stances. Hence, the researcher offers insight resulting from comparison and contrast supported by their similarities and dissimilarities of those stances for each concept and theories to suit the aim for this thesis. Ultimately, both definitions dictate the ground to critically evaluate the automobile business model in the subsequent subsection.

2.3.1 Business model

Literature reviews from Zott et al. and Osterwalder et al. provide the initial ground to compare and contrast the business model origin, concept definition, and subsequent application for the purpose of this thesis. As the sub-section develops on this task, further insights from other authors incorporate to enhance according to the needs for this thesis the concept of business model. This business concept evolves, through this chapter, in combination with the concepts of innovation and agile enterprise to end with the agile business model innovation concept. The reader should expect as an output of this subsection 2.3.1 an early business model concept used consistently, but subject to transformation for the rest of this thesis.

Evolving business model

In their 2010 working paper, Zott et al. (2010, 2) corroborate the emergence of the business model concept. They refer to another study by Ghaziani and Ventresca (qtd. in Zott et al. 2010, 2) that illustrates the growth of the usage of the term "business model" in general management articles within the period from 1975 to 2000. A total of 1729 articles contained the term business model. Zott et al. (2010, 2) provided a brief of the results. From this brief of the results the researcher inferred that from that total number of articles: 9 percent appeared in the period between year 1975 and 1994 and the remaining 91 percent appeared in the period between year 1994 and 2000.

Zott et al. (2010, 2-3) conduct an extended similar study on a time wise base up to 2009 and took into consideration academic peer reviewed articles. They found a similar trend to the one reported by Ghaziani and Ventresca: a boom in the use of the term business model in mentioned articles after year 1994. Zott et al. (2010, 4) conclude that three contributing factors caused this increase in interest on business model in the middle of 1990 decade: Internet widespread for commercial purposes, demography regarding the "bottom of the pyramid" or "the lowest layer in the socio-economic pyramid of society" in emerging markets, and technologies for business support to organizations beyond the

incumbent manufacturing domain. They provide evidence to support each one of these three factors they claim.

However, Zott et al. do not warn us based on their extended study that there is indeed down shifts in the rising trend of business model public interest. Particularly, in relation to the first factor of technology (Internet) for commercial purposes, since they do not comment on the bust or decrease in the hits of the term business model precisely through and at the end of the economic downturn (dot.com boom and bust) occurred in the period between March to November 2001 (Isidore 2010, 1). In contrast, Osterwalder et al. (2005, 7) observe how the business model term occurrence trend trails NASDAQ performance index trend. They admit they cannot conclude at this point on this observation, but they seek to indicate that there is a business model association to technology. Besides, Osterwalder (2004, 23) conducts an earlier chronological analytical search of occurrences in scholarly journals than that of Zott et al. (2010, 3) and Osterwalder et al. (2005, 7). His results resemble similar and consistent trends for the term business model as later Zott et al. and Osterwalder et al. find consistently. Osterwalder (2005, 6) also reveals based on a specific search that Jones in 1960 writes one of the first academic articles published with the term business model.

Writing in the topic of faculty education, Jones (1960, 625-6) refers to it in the business context and proposed a “management game” and the understanding of different business functions obtained from it. The proposal advocates preventing faculty members to become specialist considering their area the one unimportant that controls the whole business. This management game essentially works by balancing all interests from different points of view within diverse business areas. He ends his point like this: “I think every business faculty member should play one or more of these games; and during the business student’s academic career he should have the same balancing experience, dealing with a limited *business model* [emphasis added]” (Jones 1960, 626).

Even tough this article pioneers using the term business model the researcher—as expressed also by Santos et al. (2009, 6)—finds neither discussion nor definition of the concept itself within his article. Moving to the

contemporary context, the researcher perceives that further visualization of the business model could boost Jones' concept of management game also at the practitioner context and its balancing experience within the firm. On the whole, Jones' concept of management game and Osterwalder et al. business model association of technology to the term business model tracking NASDAQ performance stimulates additionally the writing process of this work, since coherence exists with the aim of this thesis work precisely through and after the end—from December 2007 to June 2009 (Isidore 2010; NBER 2010)—of the recent great economic recession of USA global hegemony.

Next, the following discussion contrasts several business model concept definitions published mainly in peer review articles, but also in non-peer review articles with the purpose to observe trends. Several scholar authors (Teece 2010, 176; Zott et al. 2010, 9; Santos et al. 2009, 6; Rasmussen 2007, 1; Shafer et al. 2005, 199-200; Osterwalder et al. 2005, 3; Osterwalder 2004, 14; Magretta 2002, 8; Chesbrough and Rosenbloom 2002, 6) coincide on the fact that either business model concept has not a common explicit definition or exists interchange of the concept with other terms like strategy or even that its study has been neglected, since the business model concept based on academic standards is still in an early development stage or immature. Like the scholar authors, executives and management practitioner authors (Buytendijk et al. 2008, 10; Moser et al. 2007, 4; Linder and Cantrell 2000, 2) generally think that when discussing the matter business model still needs term clarification.

Actually, Linder and Cantrell (2000, 1) express like this: "It seems that the executives, reporters, and analysts who use the term "business model" don't have a clear idea of what it means. They sprinkle it into their *rhetoric* [emphasis added] to describe everything from how a company earns revenue to how it structures its organization". Besides, Linder—the same practitioner in the consultancy field—and scholars Shafer and Smith entitle a subsection in their jointly published 2005 article "Desperately seeking definition: Identity crisis of the business model" (Shafer et al. 2005, 200). Therefore, the discussion of business model concepts in this written work contrasts literature from several authors to fit the aim and specific research objectives of the thesis. This

business model definition opens with two literature reviews published in 2010 and 2005.

Business model definition

Two comprehensive and recent literature reviews previously referred serve to open the discussion about definition of the business model concept. Osterwalder et al. (2005, 2, 33) seek to clarify different business model conceptions and its applications for the benefit of the interested community. On the other hand, more recently Zott et al. (2010, 2) have two aims for their study: to provide an update on literature of business models and establish a link for disparity among the diverse business model treatments and analysis.

Osterwalder et al. (2005, 9) propose a business model concept hierarchy that encompasses two levels: conceptual and instance. The conceptual level considers the business model concept by itself and the types of business models and its elements. The instance level includes the applications at company scope, modeled, and actual applications. After discussion of evolution of the business model concept and synthesis of literature, they propose the following business model definition that includes nine components:

> "A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams." (Osterwalder et al. 2005, 9).

In contrast to his previous written works – his doctoral thesis, Osterwalder defined business model in similar fashion but substituted the phrase "the business logic of a specific firm" instead of his previous phrase "a company's logic of earning money" Osterwalder (2004, 15).

On the other hand, the recent working paper by Zott et al. (2010) provide a précis of business model definitions from several scholars spanning on a ten-year time frame from 1998 to 2008. From their précis (qtd. in Zott et al. 2010, 10), the Synoptic box 2.1 retrieves five of those business model definitions. These five business model definitions attract researcher's attention, because at first sight they address at least one element of the aim and twin specific research objectives of this thesis. Besides, Zott et al. in their review condense from several authors some of the basic expressions used to define a business model. The following list presents their findings on business model naming: "statement," "description," "representation," "architecture," "conceptual tool," "conceptual model," "structural template," "method," "framework," "pattern," and "a set." Zott et al. (2010, 9).

"Chesbrough and Rosenbloom, 2002: The business model is 'the heuristic logic that connects technical potential with the realization of economic value' (p. 34)"

"Dubosson-Torbay et al., 2002: A business model is nothing else than the architecture of a firm and its network of partners for creating, marketing and delivering value and relationship capital to one or several segments of customers in order to generate profitable and sustainable review streams (p. 7)"

"Magretta, 2002: Business models are 'stories that explain how enterprises work. A good business model answers Peter Drucker's age old questions: Who is the customer? And what does the customer value? It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?' (p. 4)"

"Shafer et al., 2005: A business model is 'a representation of the underlining core logic and strategic choices for creating and capturing value within a value network' (p. 202)"

"Johnson et al., 2008: Business models 'consist of four interlocking elements that, taken together, create and deliver value' (p. 52). These are: Customer value proposition, Profit formula, Key resources, and Key processes."

Synoptic box 2.1 Business model relevant definitions. Partial summary adapted from Zott et al. (2010, 10).

In essence, Osterwalder and Zott et al. reviews provide a starting point to define the business model concept in earlier literature for the aim and research objectives before referred for this thesis. Due to the aim of both papers, only Osterwalder articulates, after synthesis of literature, a revised business model definition. Separately from these scholars, other two scholars in their 2007 assessment of business model concepts with taxonomical research criteria assess Osterwalder's business model concept among others. They conclude referring to the whole assessment as follows: "The results of our assessment demonstrate that current conceptualizations fare poorly as a model, especially at the elemental level against taxonomical criteria" (Mäkinen and Seppänen 2007, 744).

Mäkinen and Seppänen consider in their assessment two classification levels: system and item. They detail nine criteria for assessment. The first six criteria correspond to the system level or model: "(1) Mode of inference; (2) Level of analysis; (3) Generalizability; (4) Hierarchy; (5) Collective exhaustiveness; and (6) Parsimony." The other three criteria correspond to the item level or objects of the model: "(7) mutual exclusivity, (8) internally (9) homogenous and representational naming" (Mäkinen and Seppänen 2007, 740-41). The same authors conclude that "These models [Osterwalder's business model included in an assessment cluster] fail the test of hierarchy – i.e. they do not present explicit structures of a model or its parts." And they continue in specific to Osterwalder's business model that "lack explicit links to strategies at the first level of the model. In addition, they do they present the relationships between elements." (Mäkinen and Seppänen 2007, 744). In addition, in their summary of the assessment of the business model classify Osterwalder's business model by its mode of inference criteria as a causal representation.

Later, both authors as part of their overall recommendations state "A clear shift towards causal models is needed to ensure that future frameworks can advance our understanding of the interplay between strategy and actions at the operational level. Causal models would also facilitate and further our understanding of strategy implementation issues." (Mäkinen and Seppänen 2007, 745). Based on article recommendations section by Mäkinen and

Seppänen, the researcher decides to use Osterwalder's definition and selects his concept of business model for the aim and research objectives before mentioned for this thesis.

As of writing this thesis, Osterwalder and Pigneur publish in 2010 a book titled *Business Model Generation*. While searching for an up-to-date business model definition by Osterwalder and Pigneur, the researcher addresses this secondary data resource to refer in this thesis. The most recent and concise business model definition included in this resource states (Synoptic box 2.2):

> "A business model describes the rationale of how an organization creates, delivers, and captures value"
>
> Osterwalder and Pigneur's (2010, 14)

Synoptic box 2.2 Business model definition initially selected.
Osterwalder and Pigneur's (2010, 14) business model definition initially selected for the aim and specific objectives of this thesis.

This business model definition resembles that offer by Shafer et al. (2005, 202): "we define a business model as a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network." The researcher reflects that this definition by Shafer et al. could complement Osterwalder and Pigneur's business model definition initially selected by adding the phrase within a value network to express a more specific context. After all, because their corresponding business model concept articulates a causal representation, the researcher adopts Osterwalder and Pigneur's (2010, 14) business model definition. Thus, the business model concept evolves as a result of a versatile literature review looking to achieve the aims and specific research objectives for this thesis.

Business model concept

The business model concept used during this thesis gains from challenging Osterwalder and Pigneur's business model concept for its similarities and

dissimilarities by many-sided business model literature. This multifaceted group of literature consistent with our balanced approach includes peer review articles and afterwards non-peer review articles. Then, the following subsection develops the discussion of the business model concept to undertake the aim and specific research objectives of this thesis.

Osterwalder (2004, 43) provides nine building blocks for a business model concept and afterwards Osterwalder and Pigneur (2010, 15-17) evolves the previous building blocks into the following naming: "customer segment, value propositions, channels, customer relationship, revenue streams, key resources, key activities, key partnerships, and cost structure". While Osterwalder and Pigneur (2010, 15) suggest four business areas which enclose those nine elements: "customers, offer, infrastructure, and financial viability", Demil and Lecocq (2010, 231) assume that a business model includes three core components: "its *resources and competences*, its *organizational structure* and *its propositions for value delivery*." However, they incorporate the customer aspect in their last core component. The researcher prefers at this point to continue aligned to Osterwalder and Pigneur approach suggested, since the customer area is explicit in theirs.

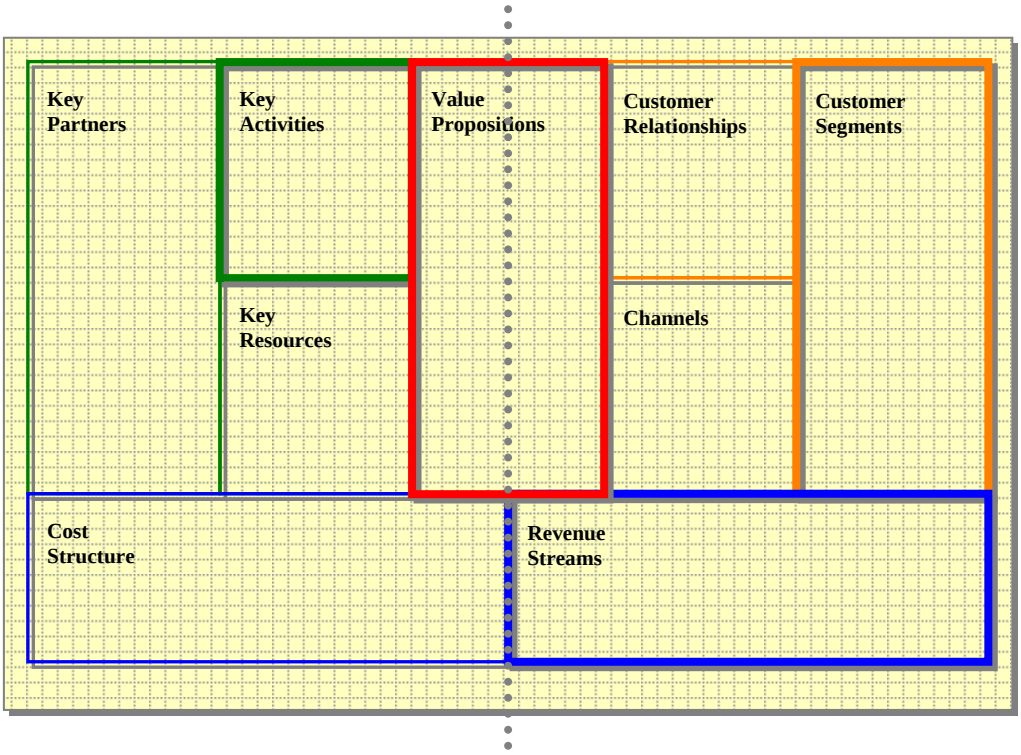
According to Osterwalder (qtd. in 2004, 42), these four areas recall Markides' business strategy and Kaplan and Norton's Balance Scorecard approach. The first three areas correspond to Markides' business strategy questions: **who**, **what**, and **how** respectively. The reader can notice that Osterwalder left the corresponding question for financial viability empty and therefore we attempt to complete it. Like Osterwalder, Magretta (2002, 4) calls attention to questions for her business model concept in her case to Austro-Hungarian born thinker Peter F. Drucker's classical questions: **who** the customer is and **what** values the customer, and she added **how** the business makes money, what the underlying economic logic is that explains how we can deliver value to customers at an appropriate cost.

Referring directly to the quoted source, Peter F. Drucker (2003, 24-27) claims in an excerpt from his 1974 book "Management: Task, Responsibilities, Practices" that the initial and most important question regarding the business purpose is precisely to ask: "**Who** is the customer?", "Where is the customer?",

"**What** does the customer buy?", "**What** is and will be our business?", "**What** should our business be?", and "Which of the consumer's wants are not adequately satisfied by the product or services offered him today". Drucker's questions for the business purpose stand the test of time. Actually, his questions—**What** is and will be our business? and **What** should our business be?—prompt, apparently unintentional, to a search for the business model concept. Now the discussion returns to our argument. The researcher suggests completing the missing corresponding question for the financial aspects business area by using one of the proposed questions by Magretta (2002, 4): **how** the business makes money. Then, the four business areas to use in this thesis end in this manner: customer (**who**), offer (**what**), infrastructure (**how**: deliver services), and financial aspects (**how**: capture value). Furthermore, in the context of strategic choices Shafer et al. (2005, 202) clarify the distinction between business model and strategy. "Pattern, plan, position, or perspective" reflects four directions to see strategy according to Mintzberg (1994) (qtd. in Shafer et al. 2005, 203). These four directions correspond to "making choices" in the past, in the future, for products and services, and about the business conceptualization. Then, a business model represents those choices and the subsequent managerial implications. Therefore, Osterwalder and Pigneur's business model concept with four business areas and nine building blocks also builds on fundamental concepts of the business purpose introduced by Peter F. Drucker.

Osterwalder and Pigneur define the business model canvas like this: "a shared language for describing, visualizing, assessing, and changing business models" (Osterwalder and Pigneur 2010, 8). According to Osterwalder and Pigneur (2010, 42), the business model canvas compromises nine building blocks—customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. The Synoptic Box 2.3 presents Osterwalder and Pigneur's adapted visual representation of the business model canvas. In this synoptic box, the dotted gray line partitions the business model canvas in two imaginary areas. Osterwalder and Pigneur (2010, 48-49) illustrate an analogy to the sides of the brain. Left side of the brain for logic focus resembles left side business

model canvas for efficiency connotation and right side of the brain for emotion focus resembles right side business canvas for value connotation.



Synoptic box 2.3 Business model canvas adapted from Osterwalder and Pigneur's (2010, 44). Business model concept represented by the business model canvas and its nine building blocks. Color code for the four areas addressed by business model canvas: customer (orange), offer (red), infrastructure (green), and financial aspects (blue).

Similarly, Zachman ([1987] 1999, 463) by IBM introduces an early visualization of a framework for information systems architecture that depicts a "model of business" representation. Zachman's visualization considers model of the business as part of enterprise's view in a context of information systems. Even tough Zachman does not attempt to incorporate a strategic planning slant (Zachman [1987] 1999, 454, 470), he based his framework characterized on description types by questioning: what (material), how (function), where (location); and suggested for further development—which actually he has done—these additional three description types: who (people), when (time), and why (motivation). However, remember that the intention of Zachman framework is not the business model concept by itself, but rather the framework in the context of information systems architecture. Also, Linder and Cantrell

(2000, 5) present an "Operating Model Framework" to identify the business model of the organization. In spite of having a different lay out, the model framework resembles the lay out for the business model canvas later detailed and developed (see Synoptic Box 2.3) by Osterwalder and Pigneur. In spite of that, the latter business model canvas results more comprehensive than that of Linder and Cantrell. Therefore, the researcher continues this discussion based on Osterwalder and Pigneur's business model canvas visualization, since this aligns with the aim and specific objectives 1 and 2 of this thesis.

In the section below the researcher critiques four of the nine building blocks of the business model by Osterwalder and Pigneur's (2010, 20-43). These four building blocks selected—customer segments, value proposition, revenue streams, and key activities—map the scope of the specific research objectives for this master's thesis. Besides, each one these four building blocks selected represents each one of the four business areas of the business model canvas. By comparing similarities and contrasting dissimilarities of these four business model building blocks against selected business model literature, the researcher challenges them by the aims and twin specific research objectives of this thesis. Then again, the remaining five building blocks—channels, customer relationship, key resources, key partnerships, and cost structure—demonstrate relevance for the business model canvas. However, they extend beyond the initial boundaries for the thesis scope and its specific research objectives. So, the researcher just mentions the remaining five building blocks, but does not critique nor elaborate on them, to keep focus on the aims and objectives of this master's thesis.

Customer segments

Customer segments identify the objectives of customer sets to focus on and work for (Osterwalder and Pigneur 2010, 20). Other scholars extend more on the customer term in this manner: "'customers' - end consumers, suppliers, complementors [*sic*], competitors or sponsors - particularly in the case of multisided markets" (Demil and Lecocq 2010, 231). Then, with the customer concept now expanded the discussion turns to segments. Regarding segments, Nordhielm (2006, 61) warns of the common confusion, even by some marketing

practitioners, between segmentation and stereotyping and clarifies concisely along this line: “Stereotyping is based primarily on physical characteristics; proper segmentation will focus first on attitudes”. She dedicates in her book a full chapter to segmentation that explains its concepts and elements such as main and dynamic segmentation variables, segmentation criteria, segmentation process steps, segmentation and the “big picture”. The researcher refers briefly later in the subsection for automobile business model. Said that, now the discussion returns to our topic sentence for this building block. To this end, the researcher illustrates in Figure 2.2 the mapping of the business model canvas building block to our twin specific research objectives of this thesis.

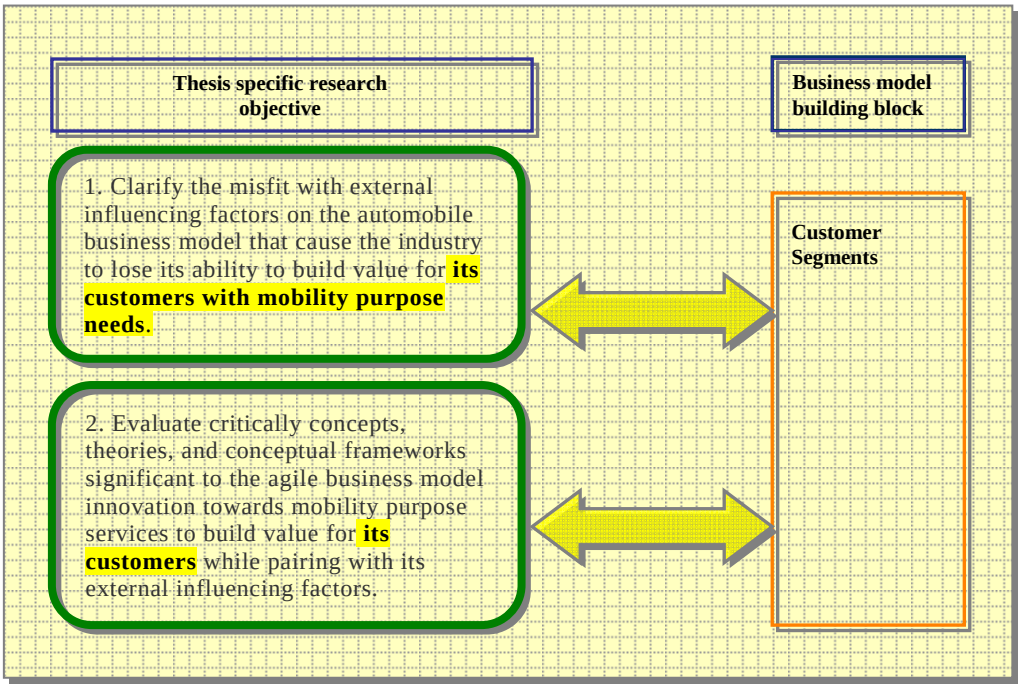


Figure 2.2 Mapping of customer segmentation building block to specific research objectives 1 and 2. Business model area: customer (who).

Osterwalder and Pigneur (2010, 20) advise on the design of the business model with full awareness of “specific customer needs”. Nordhielm (2006, 62-63) suggests demographic variables, but not limited to it—among others stand: behavioral, attitudinal, and “aspirational”—in search of understanding the customer. She also warns that competitors can imitate segmentation strategies addressing only demographic variables. On the contrary, segmentation

strategies addressing also aspirational variables make more difficult for competitors to imitate. Aspirational variables resemble attitudes, but in the future. Consulting practitioners Buytendijk et al. observe concerning recent demographics:

> "Demographics have changed. Customers are very comfortable with technology and are 'always on.' Moreover, a new generation of people—one that has never *not* been connected to the internet [*sic*]—is entering the workforce and moving into management positions." Buytendijk et al. (2008, 3)

Concerning aspirational variables, Mercedes-Benz Trend Scout practitioner Mankowsky (2009, 1) responds to Spiegel-online interview question: What do you do? "About 40 scientists in the research group analyze, what moves people to buy our cars. What they like. What aspirations, concerns and desires they have."

Gassmann and Gaso (2004, 6) identify trend scouts as one of the three kinds, or as they refer "archetypes", of organizations forms for listening posts. They define listening post (LP) like this "a peripheral element of a decentralized R&D configuration with a specific strategic mission and sophisticated mechanisms for knowledge sourcing." (Gassmann and Gaso 2004, 4). They provide two examples of trend scouts within the automobile industry of trend scouts: Dreamworks in Los Angeles, CA. and PAYTO (Palo Alto Technology Office) in Palo Alto, CA. both by BMW and at that time DaimlerChrysler also in Palo Alto, CA. and Tokio, Japan. As an example, in video clip by Mercedes Benz TV website, Mankowsky (2009, 02:45) identifies the coined term for the current trend of "Green Luxury". Judging from his interview responses and the referred video clip, Mankowsky provides practitioner insight on Gassmann-Gaso listening post concept and the intricate complexities a competitor could experience in trying to imitate segmentation strategies based on aspirational variables as expressed by Nordhielm. On the other hand, segmentation strategies aligned mainly to demographic variables become more easily imitable by competitors. Therefore, a combined segmentation should target specific

customer needs. The discussion below continues with value proposition building block.

Value propositions

Value propositions, as business model canvas building block, encompasses the combination of services and products that build value for a previously defined customer segment (Osterwalder and Pigneur 2010, 22). In this manner, building value for customer segment derives from problem solving or fulfilling needs. Company's products and services shall pursue to accomplish the specific customer segment needs. The same authors indicate that value propositions "may be innovative and represent a new or disruptive offer" (Osterwalder and Pigneur 2010, 22). The following elements summary exemplifies some of the kinds of value propositions listed by Osterwalder and Pigneur (2010, 23-25): newness, performance, customization, 'getting the job done', design, brand/status, price, cost reduction, risk reduction, accessibility, and convenience/usability.

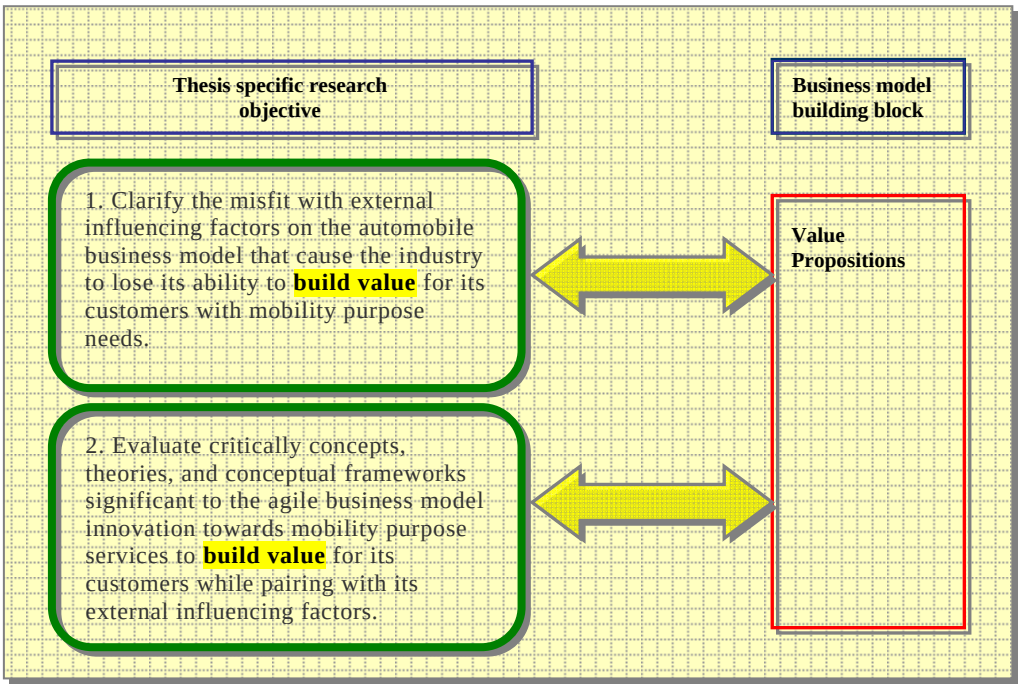


Figure 2.3 Mapping of value proposition building block to specific research objectives 1 and 2. Business model area: offer (what).

Similar to previous building block, the researcher illustrates in Figure 2.3 the mapping of the corresponding business model canvas building block to our twin specific research objectives of this thesis. Within the business model context, the researcher used the term build value instead of create value - found it in plenty of management literature and other fields. The researcher considers that the main meaning of the verb "create" has been misused, perhaps not only in business environments, in reference to the concept of value. Creation derives from create, and creation is related to divinity, theology, macrocosms, cosmos, universe, and existence. In contrast, the verb build has a connotation more akin to human achievement by means of organizations.

The discussion now returns to the topic sentence for this building block. Osterwalder and Pigneur's assertion that value propositions include products and services matching specific customer segment needs resembles to that expressed by Wild (2006). Wild, the then Wal-mart Germany's CEO when announcing closure of 85 stores after just 8 years of being established in that country, states: "If you want to be successful in a foreign market, you have to know *what your customers want* [emphasis added]. That's the most important lesson" and continues "It does not good to force a business model onto another country's market just because it works well somewhere else." This evidence confirms that a value proposition shall address the peculiarities of each market. Therefore, the researcher recognizes also the need for a change business model as expressed by Linder and Cantrell (2000, 10).

Also, Drucker (2003, 25; 1955, 43) elaborates on the question "What does the customer buy?" by providing the example of Nicolas Dreystadt, a German-born former service mechanic who was responsible for Cadillac during the Great Depression time in the 1930s. He was questioned in this way: "Does the man who buys a new Cadillac buy transportation, or does he buy primarily prestige? Does the Cadillac compete with Chevrolet, Ford, and Volkswagen?" He answered: "Cadillac competes with diamonds and mink coats. The Cadillac customer does not buy 'transportation' but 'status.'" Drucker indicates this response attitude rescued Cadillac which was near collapse. Actually, it succeeded by growing its business in a two-year period regardless of the Great Depression. The researcher closes this paragraph by citing the following insight

by Drucker (2003, 20): "What the customer buys and considers value is never just a product. It is always a utility, that is, what a product or service does for him."

As Osterwalder and Pigneur (2010, 22) suggest that conceivable value propositions can represent a newness—or even disruptive— and innovative offer to customers, Gassmann et al. (2006, 47) move farther form this point by making sure that that occurs, since they propose to involve the customer at the front-end of NPD innovation activities. They acknowledge the "open innovation paradigm". This open innovation paradigm approach prompts to interlace customer's and others stakeholders insights towards innovation. With this regard, Danneels (2004, 256) advises "to be careful to distinguish 'lead Customers' and 'lead users'". Lead users not necessarily represent current customers and actually perhaps they are not customers in any way. Therefore, combination of Osterwalder-Pigneur and Gassmann et al. concepts as well as caution by Danneels could contribute to the business model innovation concept discussed in the specific subsection within this thesis chapter.

Like Osterwalder and Pigneur (2010, 23-25), Linder and Cantrell (2000, 2) consider value propositions a component of the business model. They reveal that a business model for one company distinguishes from another mainly on its value propositions. They dissect value propositions for example along these lines: "Less value and very low cost", "More value at the same cost", and "Much more value at greater cost" (Linder and Cantrell 2000, 5). These three examples correspondingly resemble: Price, Cost reduction, and Brand/status by Osterwalder and Pigneur (2010, 24-25). Consequently, the researcher infers from scholars and practitioners, or at least these two references, that they share similarities for value propositions as an influential constituent of a business model. The discussion below continues with revenue streams building block.

Revenue streams

Conceptually, Horngren et al. (2007, G8) define revenue like this "Increases in ownership claims arising from the delivery of goods and services". (Demil and Lecocq 2010, 232) explain that sources of revenue in a more general meaning represent the turnover concept. A margin results by subtracting from the

turnover the cost for running the related activities to generate it. This margin symbolizes the value captured by the organization. Besanko et al. (2007, 27) provide the following expression for enterprise's total revenue, called *TR(Q)* which depends on price charge *P(Q)* times *Q* sold units:

$$TR(Q) = P(Q)Q$$

This simple revenue expression in the context of revenue streams can use, as Osterwalder and Pigneur (2010, 30) explain it, different pricing policies to address the value for different customer segments. They identify two types of pricing: fixed—based on static variables—and dynamic—based on market conditions. In fact, they present the revenue expression in other way by indicating that revenue streams equals earnings plus cost. According to the origin, they identify two types of revenue streams: Per transaction revenues and recurring revenues. Osterwalder and Pigneur (2010, 31-32) provide several means to originate revenue streams like this: asset sale, usage fee, subscription fees, lending/renting/leasing, licensing, advertising and brokerage fees.

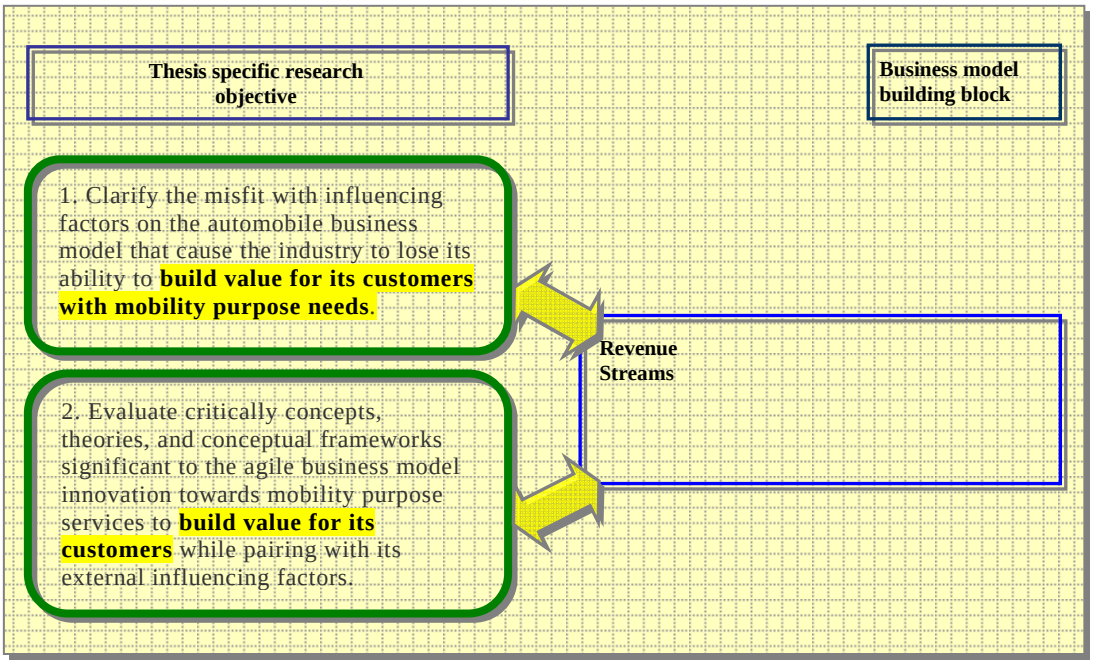


Figure 2.4 Mapping of revenue streams building block to specific research objectives 1 and 2. Business model area: financial aspects (how).

Similar to previous building blocks, the researcher illustrates in Figure 2.4 the mapping of the corresponding business model canvas building block to our twin specific research objectives of this thesis. Here in specific, the influencing factors correlate to revenue streams in the sense that the business model apparently builds value by means of a value proposition but that does not mean value capturing, since influencing factors such as change in the market conditions could prevent that flow of ownership claims.

Like Osterwalder and Pigneur (2010, 15), Shafer et al. (2005, 200-202) provided four principal groups to classify—they used an affinity diagram—the business model components included in their review: "strategic choices, creating value, capturing value, and the value network". Those four groups do not necessarily correlate on a one-to-one basis to those four areas of Osterwalder and Pigneur previously reviewed in the above section for business model concept. In fact, revenue/pricing component as Shafer et al. called belongs to their strategic choices group instead of financial aspects as in the case of Osterwalder and Pigneur. Value creation (building), Shafer et al. warn, does not necessarily warrant value capturing (Shafer et al. (2005, 205-206). In their affinity diagram financial aspects belong to the latter.

In terms of pricing policies, Nordhielm (2006, 148) recognizes two types of skills to develop and implementing them. On one side, quantitative skills need it to customize and deploy a pricing scheme. On the other side, qualitative skills need it to face "strategy and behavior by consumer". These two skills map those two types of pricing provided by Osterwalder and Pigneur before mentioned: fix and dynamic. Nordhielm introduces the concept of surplus, which belongs to the field of economics, and she quotes another scholar (Mankiw 1997) to define surplus as "the total value to buyers of the goods, as measured by their willingness to pay, minus the cost to the sellers of providing these goods" (qtd. in Nordhielm 2006, 149-150). She elaborates more by stating that price paid represents an imaginary partition line of the total surplus. This notion of surplus sources illustrated in Figure 2.5 introduces three kinds of it: producer surplus, consumer surplus, and unrealized surplus.

Nordhielm (2006, 150-151) details that producer surplus increase as a result of an increase in price or a decrease in cost. Consumer surplus estimation

signifies a more difficult task to assess, since it involves the concept of "*perceived value*". Essentially, the range within the perceived value and the price paid represents the consumer surplus. Complexities to estimate this perceived value involve the fact that even the consumer does not know they could pay more above the price they paid, temporality of it, situational factors, and diversity of customers. Unrealized surplus stands for value deliver to customers who ignored it beforehand. This unrealized surplus motivates the emergence of marketing. As suggested by Hochschild (2010) regarding services providers, "need to become '*wantologist*' to help you [customer] find out what you want" and capture value from new services. Unrealized surplus also stands for the gap between perceived value and true value. This overall notion of surplus complements the pricing policies offered by Osterwalder and Pigneur (2010, 30) to achieve the specific research objectives 1 and 2 of this thesis.

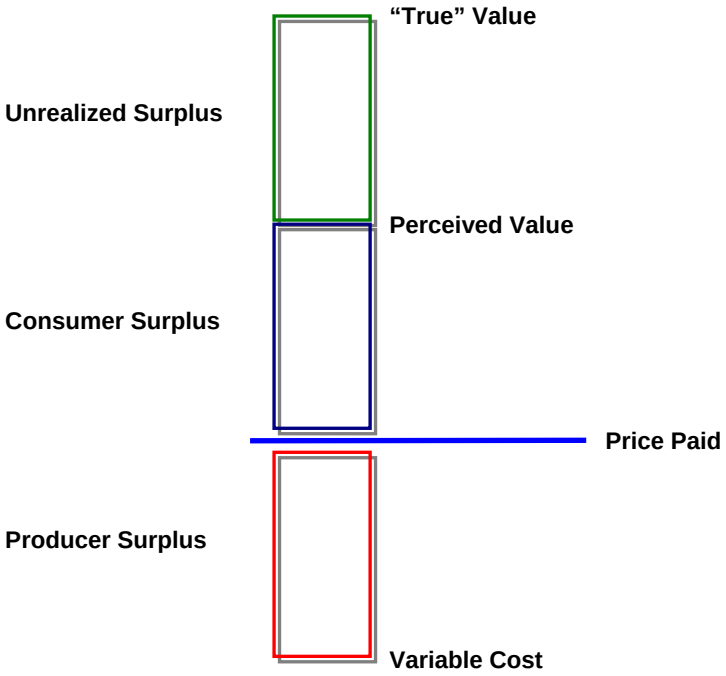


Figure 2.5 Depiction of surplus sources notion. Adapted from Nordhielm (2006, 150).

Concerning the types of revenue streams based on the origin of them, Osterwalder and Pigneur identify two types of revenue streams under this classification: per transaction and recurring revenues. Chesbrough (2010, 257) provides a good illustration of these two types of revenues. He describes that at

some stage, the traditional music recording industry's business model reported a fall in their revenue due to a sales decrease of CD units. Afterwards, this industry witnessed a transition from a sales system based mainly on CD units (per transaction) to an alternative system such as the iTunes (recurring revenues). Also, Demil and Lecocq (2010, 231) refer to the example of the biotech industry which by means of start-ups they affix services (recurring revenues) to their main products (per transaction) to have a diversity of revenue resources. From a practitioner's perspective, Moser et al. (2007, 7) use the concept of "empty revenue" as part of business model life cycles. They explain that business models have a life cycle "from value growth to economic obsolescence". At this end stage of economic obsolescence, the business model eventually starts to lose its business value. They add that in spite of having a substantial market share, revenue could become profitless. Therefore, the researcher could suggest based on scholars and practitioners' perspectives above presented to add dynamics and locate the two kinds of revenue streams by their origin to their position in the business model life cycle. Osterwalder and Pigneur's types of revenue streams plus the position within the business model life cycle address the specific research objectives 1 and 2.

In similar fashion as Osterwalder and Pigneur listed several means to originate revenue streams, Demil and Lecocq refer to sources of revenue as "royalties, rents, interest, subsidies or assets handovers." (Demil and Lecocq 2010, 232). However, Sabatier et al. (2010, 432) introduce the business model portfolio concept to have the business model itself as a source of revenue. They define business model portfolio as "*the range of different ways a firm delivers value to its customers*" to ensure short and long term sustainability. This perspective encompasses not only the product or services to originate revenue streams but also the diversity of business models as another mean to originate revenue streams.

Writing in this topic, practitioners Pohle and Chapman (2006, 34-35) find that business executives search for business model to build differentiation and sustainability. Actually, Pohle and Chapman's survey find also that business executives refer to business model innovation—which will be discussed in the following subsection—has now a similar significance to product-services and

operations-process innovations. Several of these CEOs express that business model represents the approach to escape from commoditization in the marketplace.

Itami and Nishino (2010, 365) provide a practical illustration of one of the so-called profit models of Google in which users of its search engine service do not pay for it. Google obtains revenue streams from advertisement sponsor and offers them more opportunities to cast more advertisement. From this example, the researcher identifies a recurring type of revenue streams, a dynamic pricing based on market conditions, and advertising as a mean to originate revenue streams. Said that, the discussion below continues with the fourth building block—key activities—delimited by the scope of this thesis.

Key activities

Practically, this building block refers to operative actions the firm needs to conduct for its sustainability. Osterwalder and Pigneur (2010, 36-37) explain that key activities differ according to the business model type. Key activities act for building and offering the value proposition, contribute to the distribution channel, promote customer relationships, and bring revenue streams. By category, key activities include: production, problem solving and platform/network. Osterwalder and Pigneur (2010, 37) detail each one of these categories. Production category (e.g. manufacturing organizations) encompasses the design, manufacture, and delivery of goods. Problem solving category includes (e.g. service organizations such consulting and hospitals) provides solutions to customer-specific problems. Finally, platform/network (e.g. software companies, credit card organizations, and internet auctions) supports interactions by means of “platform management, service provisioning, and platform provision.” (Osterwalder and Pigneur (2010, 37,77). Figure 2.6 illustrates the mapping of the corresponding business model canvas building block to our specific research objectives 1 and 2 of this thesis.

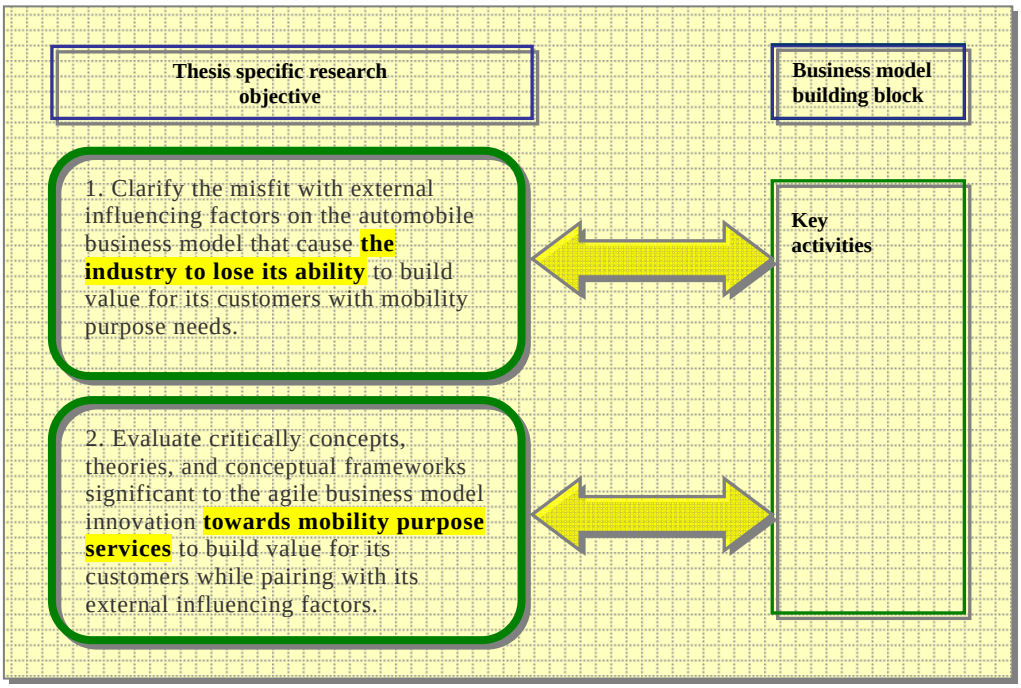


Figure 2.6 Mapping of key activities building block to specific research objectives 1 and 2. Business model area: infrastructure (how).

Writing in the set of activities topic, Morris (2010, 728) states that majority of business model concepts consider the offering of the organization and the activities to make them. He introduces the concept of business model fit and the internal and external consistency of its constituents. External consistency involves suitability of the organization to its environment. Internal consistency means the logical arrangement of key activities. Adding to this point, Tapscott (2004, 4) emphasizes that successful companies remain healthy by concentrating on its essential activities, those difficult to imitate by vertical integrated firms, to the extent of providing evidence of companies which have these capabilities offer supreme goods, lean cost structures, and superior profitability. In this context, McGrath (2010, 251-252) presents the example of Dell Computer and the significance of its key activities for its value propositions delivery. Essentially, Dell introduced its build-to-order concept in which customer ordered and paid in advance to build a computer. This became the key activity in its business model, since its work in process represented monetization for the firm. In view of Osterwalder and Pigneur's key activities categories, Dell's example could be place in a transition from pure production

to a combination of production and problem solving category. Expanding in this context of activities few years ago, Kanter (1994, 103) already refers to successful agreements for collaboration in which the first step integrates joint activities to start on actual work to do among participant firms. Therefore, based on instances presented here, the researcher could highlight the role of having key activities visualized to understand the business model fit, to focus on them, to support the value proposition of the business model, and to engage on collaboration with other firms.

After discussing this fourth building block, the researcher continues with the subsection for business model innovation. In summary, this subsection 2.3.1 provided an account on the evolving business model, a business model definition, and the business model concept. At the end of the following subsection 2.3.2, the reader should expect to notice the second stage of the business model with the innovation concept incorporated or the so-called business model innovation.

2.3.2 Business model innovation

In this subsection, the business model canvas concept will be enriched with the innovation concept. First, the researcher provides a subsection dealing with the innovation concept by itself. Subsequently, the innovation concept assembles to the previously presented business model to illustrate the second stage as business model innovation. This subsection ends with a brief on the business model generation provided by Osterwalder and Pigneur.

According to Drucker (2003, 20) the business enterprise has exclusively "two basic functions: marketing and innovation." In fact he argues, that "marketing is still *rhetoric* [emphasis added] rather than reality in far too many business" and that "Consumerism is the 'shame of marketing'" Drucker (2003, 21). Drucker uses the term consumerism meaning the USA movement early in the 20th century, later in the 1930s, and finally in the 1960s, this time, by Ralph Nader (Kotler and Armstromg 2008, 581) to protect the interest of consumers rather than "conspicuous consumption" concept by American scholar and economist Thorstein Veblen (qtd. in Galbraith 1991, 176). Drucker, and earlier

Levitt, clarifies that marketing does not relate to selling functions. Selling seeks "our products" and "our markets" and asks, "What do we want to sell?" On the other hand, real marketing seeks the customer, his demographics, his needs, his values" and asks, "What does the customer want to buy?" (Drucker 2003, 21; Levitt 1960, 50).

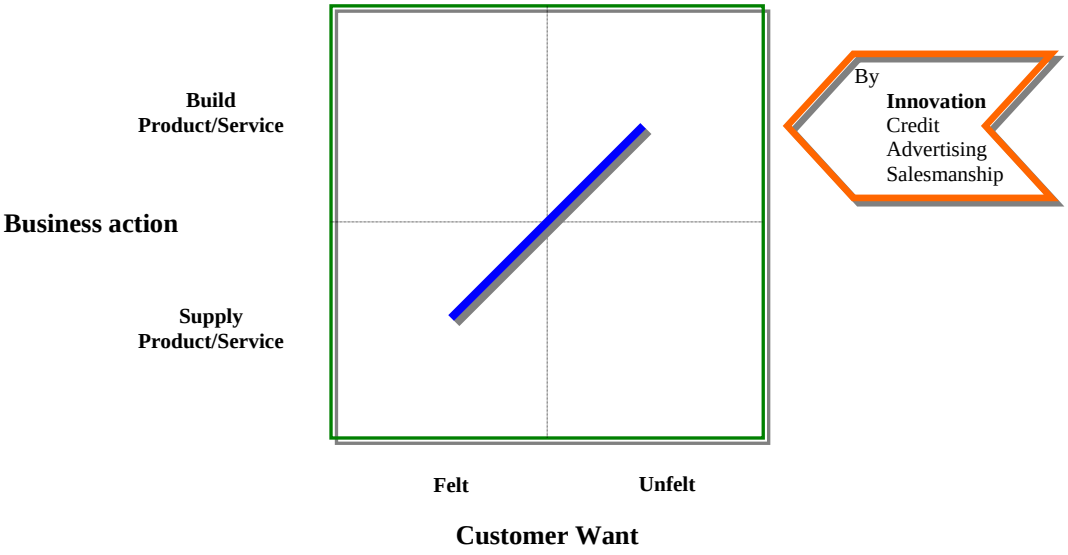


Figure 2.7 Conceptual diagram. Based on Drucker's correlation of business actions to customer wants (Drucker 2003, 20).

Then, Drucker derives from a rationale the innovation function for his business enterprise notion. Drucker's rationale, represented in the conceptual diagram Figure 2.7, explains that business action builds a want—perhaps previously unfelt by potential customer—"by innovation, by credit, by advertisement, or by salesmanship" (Drucker 2003, 20). Before proceeding to the next paragraph, Drucker defines innovation like this: "the task of endowing human and material resources with new and greater wealth-producing capacity" (Drucker 2003, 23). This definition prepares the reader for the following subsection.

Innovation

Innovation signifies a contributing notion interacting with the business model concept previously defined for this thesis. The researcher opens this subsection with a discussion about the innovation concept. Austrian-Hungarian-born

scholar and economist Joseph A. Schumpeter presents an influential discussion of innovation. Despite the time he wrote, his arguments have validity. Schumpeter defines innovation in his classic book Business Cycles as "any '*doing things differently* [emphasis added]' in the realm of economic life" (Schumpeter 1939, 1: 84). He typifies five instances for innovation: new commodity offer; production technology change; start of new supply source and new market; improving work productivity and material handling; and the establishment of new business organizations. In a previous work, Schumpeter refers to the concept of development consisting of "(1) The introduction of a new good", "(2) The introduction of a new method of production", "(3) The opening of a new market", "(4) The conquest of a new source of supply of raw materials", and "(5) The carrying out of the new organization in any industry" (Schumpeter [1911] 1963, 66). Schumpeter evolves his last set by adding Taylorization of work or improving work productivity as innovation example.

Later on, Drucker indicates that in every business could exist three kinds of innovation: "product innovation", "social innovation", and "managerial innovation" Drucker (2003, 34). He explains each type of innovation respectively in its relation to service or product; marketplace, consumer behavior and values; and abilities and activities required to produce those services and products and carry them to the marketplace. Now the discussion returns to Schumpeter insights. The researcher presents an illustration *ad hoc* to the aim and specific research objectives 1 and 2 of this thesis. Synoptic box 2.4 presents an excerpt from his work Business Cycles.

He explains that an innovation occurs in business situations with objective needs to satisfy and objective conditions. However, these objective conditions not always exclusively determine the type of innovation that will emerge to satisfy those objective needs. Schumpeter expresses that when conditions demanded for automobiles to appear, they have no logic to an economical study. The prevailing system of economic values did not have the automobile need as one of its elements. Actually, the industry built—the other way around—the need in terms of economic logic. On the other hand, Drucker (2003, 18-20) provides an unintended rationale for the researcher to Schumpeter's statement provided in the Synoptic box 2.4. He states that to build a customer epitomize

the business enterprise purpose. Also, he states that businesspeople build markets. This concept moves beyond the boundaries of the company and in particular up to society.

As Schumpeter (1939, 1:85) illustrates "It might be thought that innovation can never be anything else but an effort to cope with a given economic situation. In a sense this is true. For a given innovation to become possible, there must always be some 'objective needs' to be satisfied and certain 'objective conditions'; but they rarely, if ever, uniquely determine what kind of innovation will satisfy them, and as a rule they can be satisfied in many different ways. *Most important of all, they may remain unsatisfied for an indefinite time* [emphasis added], which shows that they are not in themselves sufficient to produce an innovation. The rise of the motorcar industry may serve as an example. The sense in which it may be true that motorcars emerged when conditions called for them is not relevant to an economic inquiry. For any 'need' for them that may have existed was [*sic*] certainly subconscious and not an element in the then existing system of economic values. The '*need*' as far as economically relevant, *was created by the industry* [emphasis added], *and people could obviously have gone on without any motorcars* [emphasis added]."

Synoptic box 2.4 Schumpeter explains innovation with the automobile industry case. Objective needs and objective conditions for innovation.

As an illustration of this two insights combined, the researcher portrays and advertisement from the early days of Ford Motor Company. This Model "A" excerpt of its first advertisement evidences Henry Ford real salesman genius rather the much-quoted production systems pioneer:

> "Our purpose is to construct and market an automobile specially designed for everyday wear and tear--business, professional, and family use; an automobile which will attain to a sufficient speed to satisfy the average person without acquiring any of those breakneck velocities which are so universally condemned; a machine which will be admired by man, woman, and child alike for its compactness, its simplicity, its safety, its all-around convenience, and--last but not

> least--its exceedingly reasonable price, which places it within the reach of many thousands who could not think of paying the comparatively fabulous prices asked for most machines." (Henry Ford [1922] 2006, 62).

The researcher could add that this sales capability still prevails and is widely generalized in the automobile industry.

Before ending this subsection, Conway and Steward (2009, 10) provide an abstract expression to define innovation per the European Commission to encompass a broad range to sectors including private; for-profit and non-for-profit; and public:

"innovation = invention + bringing into common usage"

They also provide similarities and dissimilarities between innovation and invention that intrinsically have different meaning. In sum, from this subsection the reader obtains innovation concepts from several perspectives in preparation for the subsequent subsection focused on business model innovation.

Business model innovation concept

Conway and Steward present a contemporary list with eight types of innovation. Among them, they define business model innovation like this: "Novelty in the 'drivers' of an organization's activities or strategy" (Conway and Steward 2009, 14). Management practitioners Pohle and Chapman define business model innovation as "Business model. Innovation in the structure and/or financial model of the business." (Pohle and Chapman 2006, 36). Besides, Osterwalder and Pigneur state that one of the following objectives produce a business model innovation: "(1) to satisfy existing but unanswered market needs; (2) to bring new technologies, products, or services to market; (3) to improve, disrupt, or transform an existing market with a better business model; or (4) to create an entirely new market." (Osterwalder and Pigneur 2010, 244). The reader would notice these objectives resemble 100-year-old valid notions on innovation by Schumpeter and afterwards borrowed by Drucker.

Drucker suggests, “Increasing, technology depends on business enterprise to become ‘innovation’—that is, effective action in economy and society” (Drucker [1974] 2010, 37). He clarifies that “innovation is not a technical, but social and economic, term.” (Drucker [1974] 2010, 40). Therefore, the researcher suggests that this insight provides elements to analyze the business model innovation as a social and economic organization entity. Drucker continues by saying that “The great task of business can be defined as counteracting the specific ‘law of entropy’ of any economic system: the law of the diminishing productivity of capital.” (Drucker [1974] 2010, 47). Drucker explains that “The innovative organization requires, above all, that every product, every process, every activity, be put ‘on trial for its life’ periodically—maybe every two or three years.” (Drucker [1974] 2010, 48). He continues his explanation “the innovative organization, while organically a part of the ongoing business, needs to be structurally and managerially separate.” (Drucker [1974] 2010, 49).

From a practitioner’s perspective, management consultant Berkun (2007, 98-100) warns us on the conflicts of management and innovators. He refers to management as a profession with inherent capabilities for optimization and control. Therefore, he suggests from the perspective of innovation to reconsider the purpose of management and he advises that when innovation challenge arises the goals should change and the methods shift accordingly. Besides, Chesbrough (2010, 356) offers the spinoff notion (further detail found in Chesbrough (2002, 15)) of 3Com from Xerox as an illustration of business model innovation. He refers to the intrinsic characteristic of the business model innovation as trial and error before the fact and some adaptation after the fact. Therefore, the researcher identifies Chesbrough’s spinoff and trial and error notions supporting those by Drucker before quoted. Also, Chesbrough (2010, 359-360) refers to Osterwalder (2004) and IBM (initially developed by Zachman [1987] 1999) business model mapping tools to understand their processes behind. However, Chesbrough (2010, 360) reveals that these mapping tools miss the organizational process dimension to initiate the experimentation. The organizational process allows to managers to conduct experiments with business models and take actions from the results. Thus, the organizational

process becomes a problem residing on the "co-existence" of established and new business model and subsequently to make decisions regarding timing to switch from established to the new business model. He calls for a strong organizational culture.

In an early work, Chesbrough and Schwartz refer to the notion of open business models as this: "advances the idea of innovating the business model itself, not just the technologies that feed into the model." (Chesbrough and Schwartz 2007, 55). They proceed by indicating that in fact the business model innovation prospective by means of co-development decreases the R&D expense. The 2003 joint venture experience of P&G and Clorox using an equity-based model represents one example of co-development. In this view, Pohle and Chapman quote a response from an interviewee CEO regarding strategic partnerships: "We need to develop a business model based on strategic partnerships that creates value not just for our company, but also for the industry as a whole. We cannot do everything in this era of specialization." (Pohle and Chapman 2006, 37).

Before proceeding to present the evolving business model innovation at this stage, Casadesus-Masanell and Zhu (2010, 28) explain the scenarios for the incumbent and the entrant in terms of their differentiation based on business model innovation and the competitive imitation by either. They indicate that the implication of their study refers to the competitive outcomes before disclosing a business model innovation.

Said that, Figure 2.8 illustrates the second stage for our preliminary business model innovation. This business model canvas includes Chesbrough's organizational process concept. Moser's business model life cycle concept, previously presented in the revenue streams building block, supports Chesbrough's spinoff and trial and error notions. This model includes in the value proposition Gassmann et al. concept of customer at the front-end and the Gassman and Gaso trend scout notion within the customer segment building block.

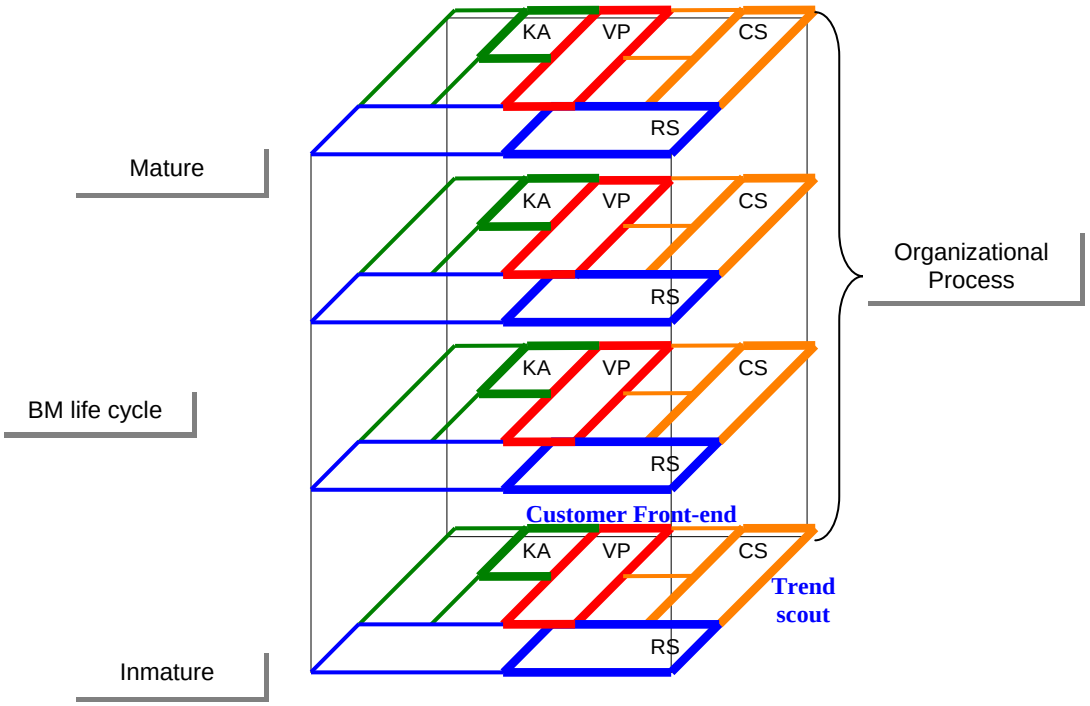


Figure 2.8 Business Model Innovation. Adapted from Osterwalder and Pigneur's (2010, 44) business model canvas with innovation concepts incorporated.

Next, the researcher summarizes in the following subsection concepts, techniques, and tools for the business model generation provided by Osterwalder and Pignuer.

Patterns, design, strategy, and process

In addition to the four building blocks borrowed from those nine denoted by Osterwalder and Pigneur previously presented, this subsection abridges useful concepts, techniques, and tools for Osterwalder and Pigneur's business model generation. The researcher needs to keep the focus for this thesis. Therefore, this useful collection concepts, techniques, and tools will apply as guide but they will not be fully pursued.

Osterwalder and Pigneur (2010, 55) refer to patters to the collection of similar business models. The similarities among the collection of business models reside in terms of their characteristics, configurations, and behaviors. Business model patterns available in a standard format represent their justification. Besides, business model patterns function as a first place to start

designing the business model canvas for a particular application. Osterwalder and Pigneur (2010, 55) present five types of business model patterns: unbundling business models, the long tail, multi-sided platforms, free as a business model, and open business models. For this thesis, the researcher will focus on the open business model pattern out of these five refers. Open business model pattern builds and captures value, based on Chesbrough theory, by "systematically collaborating with outside partners" (Osterwalder and Pigneur 2010, 109).

Accordant with Osterwalder and Pigneur (2010, 125), design techniques and tools for the business model include: customer insights, ideation, visual thinking, prototyping, storytelling, and scenarios. The business model will refer to the ideation technique. Even though, that the specific research objectives of this thesis call for the customer term, ideation business model design technique allows for the expansion beyond customer insights. According to Osterwalder and Pigneur, ideation refers to idea generation and subsequent synthesis.

The same authors reinterpret strategy based on their business model canvas. They denote four strategy areas: "the Business Model Environment, Evaluating Business Models, a Business Model Perspective on Blue Ocean Strategies, and how to Manage Multiple Business Models within an enterprise." (Osterwalder and Pigneur 2010, 199).

Finally, Osterwalder and Pigneur (2010, 244) provide a generic business model design process that integrates the concepts, techniques and tools to suit specific enterprise case. Therefore, as expressed at the beginning of this subsection, this collection of concepts and tools for patterns, design, strategy, and process will serve as illustration guide for the aim of this thesis, but will not be fully applied.

CHAPTER 3: INSTITUTIONALIZED AUTOMOBILE INDUSTRY

The name of this chapter serves in brief as an illustration of the automobile industry from the perspective of organizational structure and dynamics. As denoted previously in the introduction of chapter 2, the critical literature review chapter needs to extend to chapter 3 to cover specific concepts of the institutionalized automobile industry. Therefore, the institutionalized automobile industry develops as follows:

- **Describe and characterize** the automobile business model.
- **Abridge** the automobile business model history.
- **Analyze** external influencing factors on the automobile business model.
- **Conduct** a problem analysis to find the cause for the institutionalized automobile business model depleting value from its customers.
- **Summarize** emerging issues and need for empirical research.

3.1 Introduction

This chapter describes the automobile business model followed by a brief account of the business model history. The main purpose of both discussions convey the need to document reference points to boost future comparisons within this research work between a suggested business model and the current and past business model. This prompts to get also a characterization of automobile business model from multiple stakeholders' perspectives. Then, the reader will find a comprehensive exercise to identify and elaborate on external influencing factors on the automobile business model and the subsequent section will attempt to find the most probable cause, using Kepner and Tregoe problem analysis, for the established automobile business model to deplete value from customers with mobility purpose needs. This chapter ends with a section with the emerging issues and need for empirical research. Subsequently,

chapter 4 for the conceptual framework design will develop. This means for the reader that this chapter 3 continues addressing the twin specific research objectives (text blocks in bold font here below) previously formulated in the introduction chapter.

1. Clarify the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

2. Evaluate critically concepts, theories, and conceptual frameworks significant to the agile business model innovation towards mobility purpose services to build value for its customers while pairing with its external influencing factors.

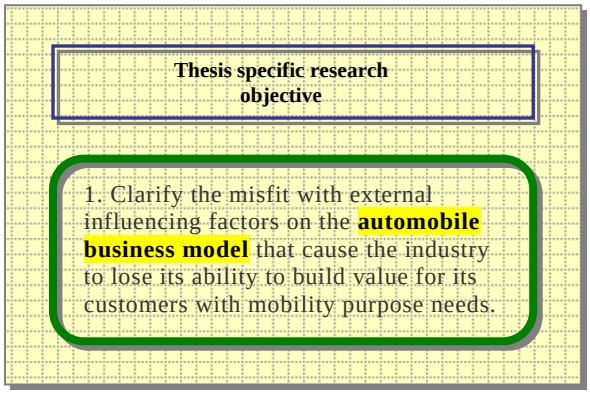
3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

4. Suggest recommendations to the automobile industry regarding an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

3.2 Describing the automobile business model

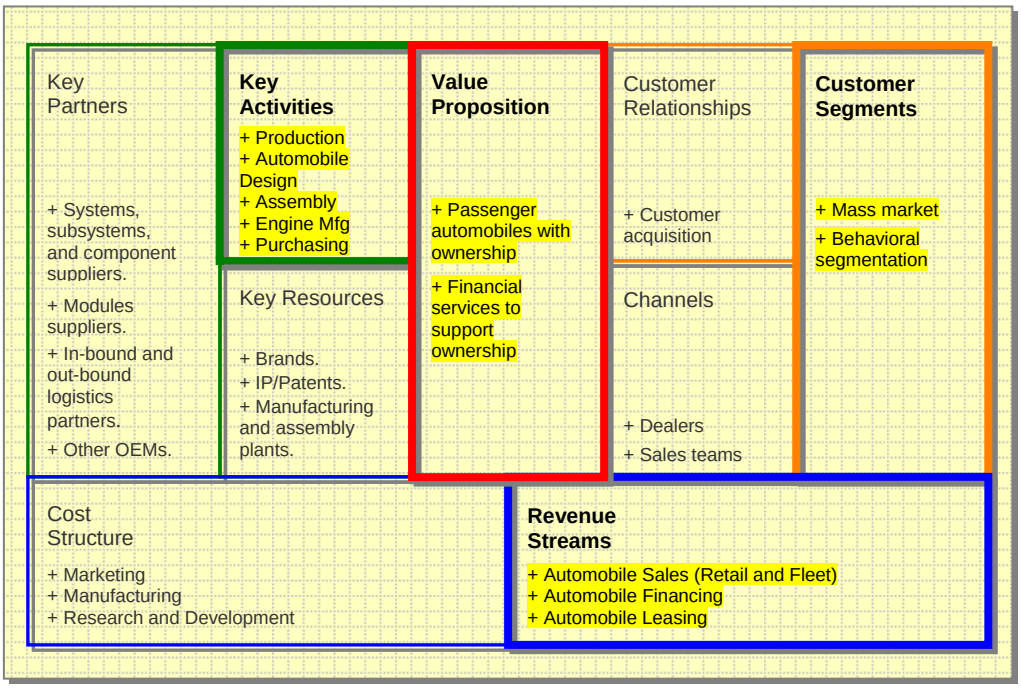
This section describes the established automobile business model using Osterwalder and Pigneur's business model canvas. After presenting the established automobile business model, the researcher provides a brief history account from the business model perspective and characterization both of the established automobile industry. This characterization includes practitioners' insights in books specialized in the automobile industry. Besides, this section contains information from working papers, white papers, studies, and reports from economic organizations and consultants. Synoptic box 3.1 illustrates the

mapping of the automobile business model topic to the twin specific research objectives of this thesis. Placing this figure helps to concentrate on literature pertinent for the stated objectives and prevent uncorrelated discussion.



Synoptic box 3.1 Mapping of the automobile business model topic to the specific research objective 1. Visual aid helps to concentrate on pertinent literature.

The section includes comparison and contrast of the information obtained to construct a conceptual automobile business model (the incumbent).



Synoptic box 3.2 Automobile business model canvas adapted from Osterwalder and Pigneur's (2010, 239). This automobile business model concept portrays in bold font the four building blocks scope of this thesis.

This includes four building blocks, illustrated in the Synoptic Box 3.2 in bold frame, previously selected from the business model canvas—customer segments, value proposition, revenue streams, and key activities—map the scope of the specific research objectives for this master's thesis.

3.2.1 Automobile industry business model history in brief

The focus on the history of the automobile industry from the business model innovation perspective discovers the common and fundamental value proposition offered by the industry. This account does not include product nor process innovations, which exist plenty of them as role model for other industries (e.g. Copeland [2001] mentions agile software development so-called Extreme Programming XP at Chrysler), within the automobile industry. Therefore, the researcher opens this subsection placing an often-quoted statement remarked by Henry Ford in the year 1909 in the occasion of his Model "T" introduction:

> "Any customer ***can have a car*** [emphasis added] painted any colour that he wants so long as it is black." (Ford [1922] 2006, 83).

This statement conveys the essence of the value proposition—automobile ownership—still offered by the automobile industry nowadays as a credit-supported product. Actually, scholar Seabright could agree in certain way when revealing that Ford recognized that by reducing variation at part and process level, "he could make so much more with his workers and his machinery that ownership of a motorcar could be brought within the reach of the ordinary working family." (Seabright 2004, 159). Besides, Levitt (1960, 51) judges that Henry Ford behavior has been applauded for the incorrect virtue as production genius instead of marketing genius. Similarly to Levitt, Koch highlights the concept that "Henry Ford was not a production-driven troglodyte: he was a creative genius who did signal service to ordinary citizens." (Koch 1998, 101). Thinking in the context of Ford early times, as Ingrassia denotes "the car that had put the country on wheels, bringing mobility to the masses and freeing multitudes of American farmers from the drudgery of rural peasantry."

(Ingrassia 2010, 4), perhaps Levitt's judgment was right in the USA economic context of year 1909.

To vary scenarios from theories and concepts by scholars and management practitioners, now the researcher provides examples selected by convenience of business model innovations implemented in the automobile industry. These examples all share the same value proposition based on automobile ownership and the channel to sell the automobile, supported by credit, either to private or fleet customers. So, the automobile industry, no matter where do we refer, still relies on automobile ownership and its purchase with intrinsic credit support as value proposition and channel respectively: Divisionalized organization structure introduced by Alfred Sloan at GM (Hamel 2006, 4); Establishment of credit companies such former General Motors Acceptance Corporation (GMAC) (Deutsche Bank 2002, 138), Chrysler Financial, Ford Motor Credit Co., VW Credit, and others; acquisition of rental car companies such Hertz by Ford Motor Company, Thrifty Car Rental and Dollar Rent a Car by Chrysler; Extended Enterprise business model or Japanese-style buyer-supplier partnership by Chrysler (Hirakubo 2000, 187); OnStar by GM (Barabba et al. 2002); Join ventures such former DaimlerChrysler AG (in fact this later known as Daimler acquisition of Chrysler), Hyundai Motor Co. and Mitsubishi Corp. (GEMA 2005) to produce the a so-called world engine by the Global Engine Manufacturing Alliance (GEMA) plant in Dundee MI or the alliance of GM and Toyota with the NUMMI (New United Motor Manufacturing Inc.,) Fremont, CA plant (Liker 2004, 74-75; Shook 2010, 62-68); Partnership of incumbent and new entrants such Renault and Better Place (Arthur D. Little 2010, 1,3); and the equity-based model first by Nissan and Renault and later Daimler joining the model to form a new triad (Jolly 2010a).

Besides these examples, Klepper (1999, 7, 37-39) provides a detailed account of four types of entrants within the period from 1895 to 1966: experienced firms, experienced entrepreneurs, spinoffs, and inexperienced firms around Detroit area that developed into the big three oligopoly. In this context, Ingrassia (2010, 4) states that Detroit's manufacturing apparatus supported the USA to succeed in the World War II and afterwards strengthened USA dominant economy.

Above all, the early statement pronounced by Henry Ford evidences the fact that the fundamental value proposition by the established automobile industry business model concentrates on automobile credit-supported ownership. Contrary to what Drucker (2003, 20) advises, the automobile industry value proposition shifted from utility—a need to move from A to B—to the product by itself. In different perspective, Lovins et al. (1999, 146) reveal an approach called "natural capitalism". A shift towards "solutions-based business model" represents one of the changes in business practices for this approach. They explain that established manufacturing firms rely on sales of products, while the solutions-based business model value proposition relies on "flow of services."

In brief, the history of the established automobile industry demonstrates that the industry business model has relied fundamentally on sales of a credit-supported product. The following subsection provides more characteristics of the automobile industry business model.

3.2.2 Automobile industry business model characterization

This characterization explores different perspectives from stakeholders in the established automobile industry. Similar to the previous subsection, the following discussion pursues, in this case, a characterization with the business model innovation in mind.

According to a World Bank working paper by Sturgeon and Van Biesebroeck (2009, 2-3) and another paper by Sturgeon et al. (2009, 9-10), the automobile industry from the complex economic geography is not completely global but encompassing a collection of clusters; it is not attached—like service industries—to specific country geography; and its assembly plants spread due governments demands for local manufacture, increasing number of automobiles, and the full supply of the market. Sturgeon and Van Biesebroeck (2009, 2-3) add that the automobile industry holds its different levels inside a global organizational structure; the largest extend of global integration corresponds fundamentally to buyer-supplier links; design and vehicle development focuses in regional design clusters such: Detroit, Cologne, Rüsselsheim, Wolfsburg, Stuttgart, Paris, Tokyo, and Nagoya; and production focuses at national or regional level. However, the researcher could add that from the perspective of

the worldwide automobile industry business model, this centers its value proposition mainly on automobile ownership.

In related perspective, Lovins et al. (1999, 151) warn that similar to the typewriter industry was jeopardized by personal computers and word processors, the established automobile industry is susceptible for substitution by other business configuration. Particularly, as reveled by Reed (2010) recent demographics shows early signs of shift in attitudes towards automobiles. Lovins et al. continue and define the established automobile industry as "capital intensive" with long product cycles. Overall the established automobile industry has an inefficient and costly infrastructure. Even tough, the automobile industry becomes very profitable in bonanza times (e.g. SUVs sales), it can suffer huge losses in economical crisis times (recent constrained credit crisis). They add referring to the automobile industry that "Its convergent products compete for narrow niches in saturated core markets at commoditylike prices." (Lovins et al. 1999, 151).

In another view, Haugh et al. (2009, 6) reveal that overall for 2006 in the OECD countries economies, the automobile industry value added and employment signified little contribution. However, from the perspective of the automobile supply network the employment contribution grows. Also, total exports correspond for similar OECD countries around 15%. Like Lovins et al., Haugh et al. (2009, 8) coincide in describing the automobile industry as capital intensive with an elevated proportion of capital-to-labor. Besides, they mention that mergers and acquisitions had prevailed to achieve advantages for economies of scale. Also, they denote that market saturation among others in OECD countries causes movement of production from OECD countries to non-OECD countries particularly in Asia.

The capital-intensive characteristic could lead to sunk costs effect. According to Besanko et al. (2007, 434-436, 590) sunk costs effect induces companies not to innovate. The rationale of sunk cost effect explains that companies adhere to its current technology or product offer, despite that maximization of profit starting from zero would lead to select other new technology or product offer or, the researcher adds, a new service. A classical example of this sunk costs effect is the shy implementation of the Austrian converter, developed by Voest's Linz

plant, and also so-called BOF (Basic Oxygen Furnace) or BOP (Basic Oxygen Process) by American steel conglomerates in the 1950s. However, today the relevance of this technology is supported by figures indicating that around 66% of the world's steel production volume uses this process known also as "Linz-Donawitz (or LD) process." (Smith 2008, 188).

Recently and very often, electric vehicles and electrical mobility news have been appearing in all kinds of media discussing on the future of the established automobile industry. However, as Levitt (1960, 52) reveals several companies or dozen of firms already in year 1960 were working on projects for alternative energies such hydrogen fuel cells, efficient battery technologies, and solar cells. Electrical or other alternative energy powertrains can be still categorized just as a niche which in combination with car ownership does not produce acceptable energy efficiencies figures from the scope of personal mobility purpose nor new value propositions for its customers. Later discussion with more details will follow in the subsection for external influencing factors on the established automobile business model.

From a broader perspective of organizational structure and dynamics, according to Vecchio, the automobile industry corresponds to an "institutionalized organization form" Vecchio (2000, 336). Vecchio continues by stating that provided that goods and services of institutionalized organizations have widely support from society, the organization will represent a vital constituent of the society. Similar role as institutionalized organization enjoyed the railroad in the USA around the year 1885. In his column "Trains and the Mind of Man." (1960, 21 qtd. in Levitt 1960, 56) American historian Jacques Barzun describes the **railroad** as this:

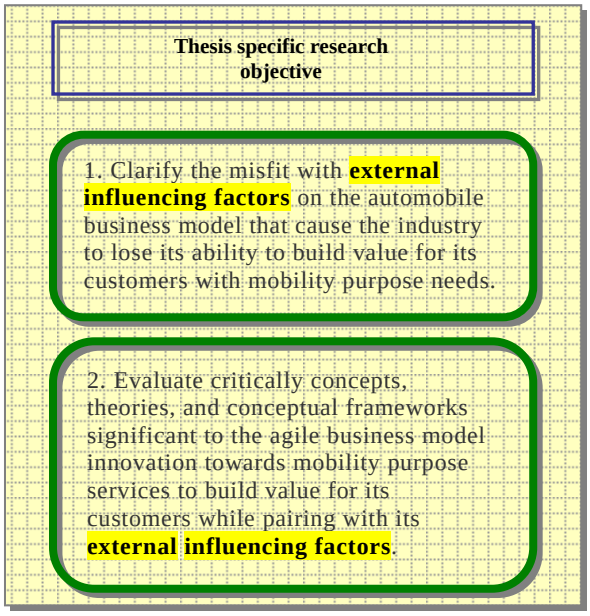
> "By the turn of the century it was an institution, an image of man, a tradition, a code of honor, a source of poetry, a nursery of boyhood desires, a sublimest of toys, and the most solemn machine- next to the funeral hearse-that marks the epochs in man's life"

Then, the automobile industry as an institutionalized organization makes parallels to the fascination aspects of other institutionalized transportation modes that once were generally supported by society.

Concisely, the established automobile industry, per the sources here discussed, has the subsequent characteristics: institutionalized organization with different levels inside a global structure at national, regional, or cluster scope; capital intensive; narrow niches in saturated markets; and recent high visibility of the industry pursuing alternative energy powertrains for automobiles—yet business as usual (BAU) attitude prevails in terms of energy efficiency for personal mobility purpose, at least for the past 50 years.

3.3 External factors influencing the automobile business model

The automobile business model described in the above sub-section serves as a construct coupling with a wider environment risk drivers. Repercussions for the business model building blocks: customer segments, value propositions, revenue streams and key activities will arise as the discussion proceeds. Apart from it, the reader would notice that this section uses the term environment, unless specified, in its general meaning in the context of surroundings of the business model, but not meaning *per se* the term environmentalist and its connotations.



Synoptic box 3.3 Mapping of external influencing factors on the automobile business model to specific research objectives 1 and 2. Visual aid helps to concentrate on pertinent literature.

Besides, the researcher reflects on the interaction or overlaps of the external influencing factors and divides these in sub-sections as part of a linear structure.

Each sub-section adds input from trends and facts reported or analyzed in newspapers and magazines. The sub-section ends with an illustration of the automobile business model focus on four building blocks with three factors as part of a wider environment risk drivers assembled. Synoptic box 3.3 illustrates the mapping of the external influencing factors on the automobile business model to the twin specific research objectives of this thesis. Placing this synoptic box helps to concentrate on literature pertinent for the stated objectives and prevent disassociated discussion.

First of all, the researcher recognizes that the case on hand of identifying the external influencing factors on the established automobile business model represents a complex matter. According to Moldoveanu and Martin (2008, 43; 2007, 5), current complex environments call for what they named "Integrative Thinking™" which depends on a tacit dimension. As contrasted by Nonaka and Takeuchi (1995) referring to:

> "[T]acit knowledge is personal, context specific, and therefore hard to formalize and communicate; explicit knowledge is that 'which can be articulated in formal language including grammatical statements, mathematical expressions, specifications, manuals and so forth [and] thus can be transmitted across individuals formally and easily" (qtd. in Holden 2002, 68).

This tacit dimension or skills matter to the solution of so-called "wicked problems" (Moldoveanu and Martin 2008, 43-44). Writing in the topic of mastering the mess, Denning and Dunham define wicked problems, also known as messes, like this "intransigent social situations that people want to exit but feel stuck in" (Denning and Dunham 2010, 339). Said that, the researcher proceeds to use a heuristic approach (Ellet 2007, 14) to pursue the discovery and understanding of the external influencing factors on the established automobile business model to complement the business concepts and theories for this thesis.

Hoverstadt proposes a systemic approach with the purpose to identify and detecting strategic risk. He introduces the term "structural coupling" from

natural sciences to explain that strategic risk represents a potential condition to break with it. Structural coupling portrays a "relationship" established between "organisms form" with their environment to guarantee a "fit" to endure and "co-evolve" together (Hoverstadt 2008, 173). He continues detailing that the "structural coupling model is nature's answer to the problem of strategic risk and it also applies to organizations" (Hoverstadt 2008, 173).

Adapted from Hoverstadt, Figure 3.1 represents a depiction of the strategic risk concept applied to the business model canvas selected for this thesis. Stakeholders encompass (ASCOI in short for): actors, suppliers, customers, owners, and interveners (competitors and regulators included) that form the first structural coupling with the established automobile business model canvas. Hoverstadt (2008, 174) defines stakeholder as the individual who has a stake in the organization. Missing stakeholders could cause risks for the organization. After identifying stakeholders, the subsequent step is to understand the nature of key relationships by identifying its risk drivers, between the organization and its stakeholders, to understand the "nature of structural coupling." (Hoverstadt 2008, 175). A wider environment and its risk drivers enclose the ring of stakeholders.

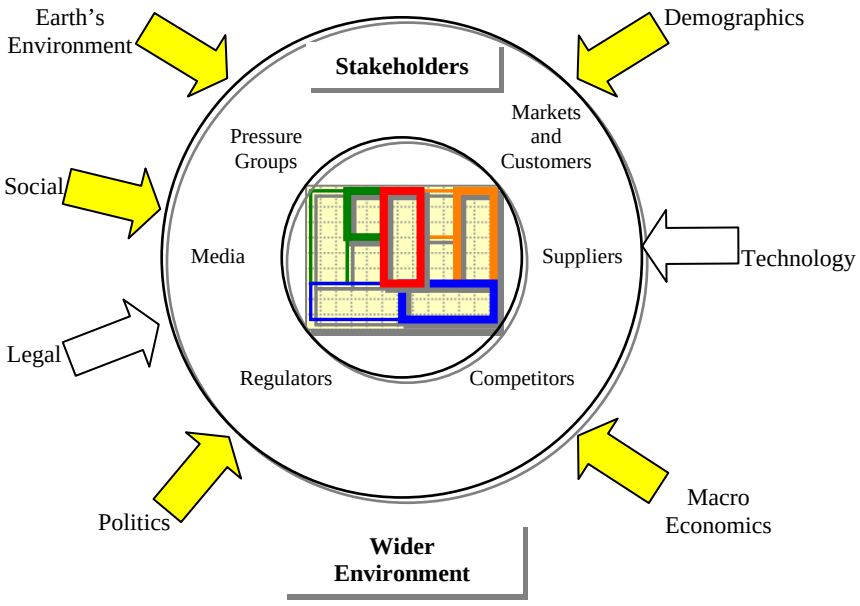


Figure 3.1 Strategic risk: Wider environment risk drivers and structural coupling with stakeholders. Adapted from Hoverstadt (2008, 175).

For the specific research objectives of this thesis, the researcher grouped five risk drivers suggested by Hoverstadt in three external influencing factors on the automobile industry business model. The three groups include energy balance, economy, and socio-political factors. Energy balance factor encompasses Earth's environment risk driver and energy issues. Economy factor includes macroeconomics risk driver. Socio-Political factor consists of demographics, social and politics risk drivers. Legal and technology risk drivers will not be pursued for this discussion due to the following reason. Relevance of the legal risk driver, considering the global organization of the automobile industry, is very specific to national and regional legal frameworks. With regards to technology, this risk driver becomes more independent of the three influencing factors selected here as per Drucker's insight presented in Synoptic box 3.4

> Drucker ([1974] 2010, 47) predicted "In the next twenty-five years, when the world will have to grapple with a population problem, an energy problem, a resources problem, and a problem of the basic community, that is, the city, this function [technology] is likely to become increasingly more critical—independent, by the way, of the political, social, or economic structure in a developed economy, that is, independent of whether the 'system' is 'capitalist,' 'socialist,' 'Communist,' or something else."

Synoptic box 3.4 Drucker predicts on technology preponderance for the innovative organization. Technology is independent of political, social, and economic structure.

In similar view, Denning and Dunham denote that "social consequences of pushing technology beyond its limits; their resolution lie in the social domain." (Denning and Dunham 2010, 318). Again, from different perspective Vecchio's notion on institutionalized organization endorsed by society confirms the characteristic of the established automobile industry. Said that, the following three influencing factors represent the approach to analyze risk drivers in a wider environment on the established automobile business model.

Energy balance factor

This subsection evaluates this external influencing factor on the current automobile business model from a broader sense as energy balance to pursue the equilibrium condition. According to Austrian-born Nobel Laureate in chemistry Walter Kohn (2010, 264), the general consensus indicates that two current crucial energy issues are a decrease of natural gas and oil extraction and the increase of green house gases (GHG). Consequently, the reader will notice that climate change and ecological issues fit into this influencing energy balance factor on the automobile business model.

Long ago, Peter F. Drucker ([1972] 2010, 21) expressed "Everybody today is 'for the environment'." Even, he noticed, the extensive and spread notion at that time looked for ending society reliance on technology. In fact, he clarifies that actually technology plays a big role to solve Earth's environmental issues. He continues by indicating that consumers and producers should assume the real cost to solve Earth's environmental issues by price increase or by tax increase. In fact he claims that profit and industrial activity reduction to compensate the "environmental bill" represents a fallacy (Drucker ([1972] 2010, 24).

On the other hand, he argues that disciplinary regulations will not effectively promote clean environment. Instead, he proposes to provide stimulus to conserve and "improve" the environment (Drucker ([1972] 2010, 27). He ends his essay by making clear that environmentalist already accomplished the task of awareness for Earth's environment and he suggests continuing the effort on more difficult endeavors like these: to inculcate society stakeholders to tolerate the alternatives to confront, and to support a global attempt to stand the consequences (Drucker ([1972] 2010, 35).

Extrapolating his almost forty-year-old suggestion to the context of contemporary society and the established automobile industry, the reader could notice that these two suggestions have proved a huge challenge. Specially, when comparing Drucker's first suggestion to the observed boom trend before the year 2008 for sport-utility vehicles (SUV) and light trucks that according to some authors (Diekstra and Kroon 2003, 262; Ingrassia 2010, 5) users hardly ever take them to off-road terrains. Financial journalist and author Ingrassia (2010, 99-100) observes that the SUV ("proverbial gas hogs" as he describes

them) trend started when Chrysler, under Lee Iacocca leadership, bought American Motors Co. (AMC) and its Jeep brand in 1987. In the USA, Environmental Protection Agency (EPA) requires inferior fuel-economy standards for SUVs, minivans and pickups, since they are classified as "light trucks". Ingrassia adds that by 2001, Americans bought "8.7 million minivans, pickups, and SUVs compared to just 8.4 million sedans, coupes, and station wagons" (Ingrassia 2010, 116).

Same SUVs topic but moving from fuel consumption to emissions, Inderwildi et al. (2010, 28) indicate that considering single passenger occupancy 4x4 SUVs could discharge up to 320 g CO_2eq (Carbon Dioxide equivalents) per kilometer making them to operate poorer than other transportation modes. This means the environmental initiatives have not achieved yet a change in the mindset of society—including consumers, producers, and other stakeholders—by means of education to tolerate the alternatives to confront and to support a global crusade to overcome the consequences.

Thinking in terms of energy consumption, for example the traffic congestion in urban conglomerates represents an illustration of extreme energy waste. Actually in this view, Lovins et al. elucidate the following energy consumption breakdown:

> "Only 1% of the energy consumed by today's cars is actually used to move the driver: only 15% to 20% of the power generated by burning gasoline reaches the wheels (the rest is lost in the engine and drive-train) and 95% of the resulting propulsion moves the car, not the driver." Lovins et al. (1999, 151).

This extreme condition becomes worst if traffic congestion results from road demand at specific peak-time periods with underutilized automobiles—so-called single passenger occupancy, drive alone, single car driver, or car driver. This self-evident condition can be witnessed and applies in urban conglomerates in either developed and less developed countries. In the same fashion, an extreme non-realistic rather hypothetical measure could be to stop suddenly private automobiles usage as a way to radically reduce carbon dioxide emissions and balance energy consumption. Majority of stakeholders affected would judge

correctly as radical nonsense. As, it will be presented in the social-political factor subsection. However, this radical line of thought assumes the same established infrastructure, city planning not only roads and parking space but also public transportation and cycling paths over former pedestrian sidewalks (invaded by cyclist, in-line skates, roller skates, skateboards, etc.), designed around the priority of automobiles on the street. As expressed by Knoflacher (2005, 4), inferring grounds on Forrester (qtd. in Markides and Oyon 2010, 32), a city is a system and the subjacent structure of the system causes the behaviors in that system. Referring directly to the quoted source, Forrester ([1968] 1971, 1-1, 1-5, 4-2) details that a system means a set of components that function jointly towards a common intent. The system can be a feedback system meaning that the system has a closed loop structure. Inside its internal structure, dynamic (changes with time) behaviors originate.

Also, in spite of all efforts and solutions already provided by the established automobile industry relative to technology for emissions reduction—as of year 2000, new vehicles pollutants have been reduced 95% within a 30 year period (Folz 2000, 3)—, fuel economy, and recently retaking with more impetus alternatives to internal combustion engine (ICE) powertrains for vehicles, the low passenger density in automobiles during street traffic congestion still prevails in a self evident manner anywhere in the world in either developed or less developed country cities—in other words the car driver alone. In this view of automobile occupancy, Inderwildi et al. (2010, 28) provide a contrasting estimation of a compact automobile (87 g CO_2eq per kilometer) with single occupancy yielding CO_2 (Carbon Dioxide) total emissions—included congestion emissions—which do not compete against with high-speed rail considering high occupancy.

According to the OECD/IEA (2010, 9), two-thirds of the global CO_2 emissions corresponded in 2008 to a combined sector share of electricity and heat generation and transport. OECD/IEA report details like this:

> "Generation of electricity and heat was by far the largest producer of CO_2 emissions and was responsible for 41% of the world CO_2 emissions in 2008." (OECD/IEA 2010, 9).

Also, the same report details transport sector share as this: “Transport, the second-largest sector, represented 22% of global CO_2 emissions in 2008. CO_2 emissions in this sector also remained stable between 2007 and 2008” (OECD/IEA 2010, 9). In similar view, Machiba and Olsen (2009, 62) reveal that automobiles, having passenger occupancy between 30 to 40%, represented 7% of global CO_2 emissions. Therefore, his figures provide judgment grounds for “what is” and “what is not” in terms of higher potential improvements on emissions by the automobile industry. Although it does not represent a perfect analogy, in terms of total CO_2 emissions well-to-wheel, Paraguay, which depends a 100% on hydropower (The Economist 2010, 57), or Brazil (OECD/IEA 2010, 20) would be more suitable for automobiles with electric powertrain, but not China (OECD/IEA 2010, 24) Poland, South Africa, nor Estonia which depend mainly on coal for electricity generation (The Economist 2010, 57).

In accordance with ECMT/OECD (2007, 16), world’s climate change could deteriorate irremediable if emissions from greenhouse gases, in specific CO_2, persist intensively then boosting the greenhouse effect. This organism confirms that the United Nations Framework Convention on Climate Change (UNFCCC) purpose focuses on reduction of human generated, also known as anthropogenic, CO_2 emissions. The Kyoto Protocol denotes the most known document originated by this convention as a result of its 3rd meeting of country members in 1997. The basic and most important function of this agreement stands for the introduction of targets to reduce emissions in the named “first commitment period” from 2008 to 2012 (ECMT/OECD 2007, 16). The Protocol developed into binding in 2005 when 55 Parties ratified it.

From a broader view, the recent United Nations Climate Change Conference Cancun - COP 16 & CMP 6 (UNFCCC, 2010) taking place in Cancun, Mexico, from November 29 to December 10, 2010 has the goal to confer the subsequent commitments for government nations in the Kyoto Protocol. In the same year, Mexican-born Nobel Laureate in chemistry Mario Molina (Molina 2010, 156) provides a comparison of two approaches the international community embarked to address critical global environmental concerns.

First, he makes an account to the approach that the international community embarked in global collaboration under the Montreal Protocol to solve successfully the Earth's ozone layer depletion problem—initiated with seminal article on "photo dissociation of the chlorofluoromethanes in the stratosphere" leading to the damage of ozone (Molina and Rowland 1974, 810). Second, he contrasts the approach the international community under the Montreal Protocol with the Kyoto Protocol which still addresses the current climate change problem and the challenges currently the discussion encounters. He summarizes that while the Montreal Protocol has the mechanisms for the ozone layer depletion well established and reproducible, the Kyoto Protocol has to fight against skepticism because changes seem to be natural. Few industries were subject to overall CFC phase-out actions. On the contrary, GHG mitigation involves not only industries but also changes to society behaviors. Therefore, effective actions require collaboration among stakeholders, use of technologies to decrease GHG by means of increasing efficiency of energy consumption, apply sources of renewable energy, and secure CO_2 from electricity generation plants using fossil fuels.

Besides, Nakicenovic (2010, 256) calls for new systems and services oriented to reduce CO_2 emissions of the global economy. Perhaps, as Lovins et al. (1999, 146) suggested a flow of services—as previously presented in the section 3.2. They recommend a shift towards an alternative solution-based business model for manufacturing firms.

In brief, the collection of authors' perspectives here above discussed provides insight on the energy balance driver of strategic risk for the established automobile business model. The nature of this risk can be described as follows: 1) High visibility of the automobile industry as a contributor to global warming in spite other sectors such coal utilities have a higher share on CO_2 emissions; 2) Due to this visibility, customer base demands more technology towards lower GHG emission but not change in behaviors towards efficient use of energy by society; 3) Interacting with the socio-political risk driver, customer eventually could realize that the combination of automobile ownership and urban setting added to traffic congestion, emissions, automobile occupancy, and inefficient use of energies is not a mobility purpose solution. The overall impact could be

that customers could start shopping for mobility purpose alternatives from service providers. These might happen when moral and regulatory commitments prevail in society and policy makers. Before proceeding to the next paragraph, from the above insights the reader could notice also the interactions or overlaps among these three factors referred early in the opening of this section.

Economy factor

The common generalized claim blames on the recent economic credit crisis for the economic disasters witnessed in the global automobile industry. However, writing on this topic, management practitioners Russo et al. (2009, 7) suggest from a different perspective that the recent economic credit crisis just put in evidence the transformation need it in the overall automobile business model of the 21st century. From this insight, the researcher suggests that the recent economic crisis 2007-2009 (Isidore 2010; NBER 2010) acted as an influencing factor on the current fundamental value proposition of car ownership based on credit of the automobile business model, but maybe not the cause for the economic disaster of the automobile industry.

Besides, Akerlof and Shiller (2009, 1, 3) advise that to comprehend the way economies function one must keep in mind the thinking process that motivates human thoughts and emotions also known as animal spirits (or *spiritus animalis*)—a combination of inner self and mind or life and mind as referred by Eccles (1994, 167). In another book, Shiller (2005, xii) warns that several assessment reports on financial crisis do not integrate the understanding of social psychology. De Cremer et al. (2006, 6) refer to a traditional definition as a "scientific attempt to understand and explain how the thoughts, feelings, and behaviors or individuals are influenced by the actual, imagined, or implied presence of other human beings" (Allport (1954, 5). (qtd. in De Cremer et al. 2006, 6).

From another view, futurist and author Alvin Toffler (2007, 45) explains that after year 1960 in developed economies of the world appeared new means of economic activity based on knowledge. He called the third-wave wealth and represents the ultimate history stage after industrial economy, agrarian economy, and nomadic hunting. Toffler (2007, 45) details that contrary to the

second-wave for industrial wealth that was characterized by physical labor, assembly lines, and mass production, the third-wave for knowledge wealth signifies removal of the mass concept from production, markets, and society. However, he emphasizes that contemporary economics discussions center on industrial age expressions such money.

From a broader sense, Sachs (2009b, 12) confirms that the conclusion of the extreme poverty, the steady world population, and the ecological balance represent the major contemporary economic and political quest. Supporting this ecological balance notion, US American Nobel Laureate for Economics Joseph E. Stiglitz (2007, 172) contrasts attitudes of USA Detroit automobile industry during two oil prices shocks. During the 1970s oil price quadrupled. US citizens shifted to purchase Japanese fuel-efficient automobiles. Instead of shifting also its design and production of more fuel-efficient automobiles, Detroit lobbied to prevent USA government to obligate them to do so. Then, after invasion of Iraq led to a gasoline price increase of 114 percent (within the period from 2002 to 2006), shares of the big three collapsed. In terms of oil price trend, Shaheen et al. (2009, 35) update and indicate that oil energy prices rose from 24.09 USD per-barrel in 2002 to 140 USD per-barrel in 2008 and gasoline rose from 1.34 USD per gallon to 4.07 USD per gallon in similar period. Stiglitz (2007, 172) criticizes Detroit strategy of disregarding global warming to sell high profitable "gas guzzlers" (SUVs previously referred by Ingrassia [2010, 116]) and describe it as "immoral" and paradoxically unprofitable.

This strategy critique remains another insight regarding management responsibility. Drucker (2003, 52) refers to "management's responsibility for the social impacts of its organization" and explains that it is not defense to indicate "But the public doesn't object" because later society will see those impacts as an aggression to its integrity and place high demands for not searching for a solution to the issue. However, knowing that the automobile industry represents an institutionalized organization, the researcher could dear to argue that in that immoral strategy, society shared also responsibility.

At certain point in line with Stiglitz' critique to the big three strategy, Bazerman and Malhotra (2006, 277) explain from the social psychology side that overemphasis only on economic assumptions could yield disaster. They

refer to the economic assumption that free markets represent a problem-solving venue to economic issues. The free market economic assumption misses the individual psychological tendency to excessively "discount the future" (Bazerman and Malhotra 2006, 277). This psychological tendency explains that managers underestimate future cost effect and respond in the short-term yield but calamitous in the long-term.

Writing on twelve factors that caused the market bubbles, Shiller (2005, 33, 36, 55) refers in his discussion of one of those factors—The Capitalist Explosion and the Ownership Society—to USA president George W. Bush when he called the new society the "ownership society." This statement summarizes the factor by itself. Discussing another factor—Cultural and Political Changes Favoring Business Success—Shiller denotes that studies in contemporary culture show an increase in materialistic values during the last generation. Narrowing both notions to the prevailing automobile ownership, a recent OECD report refers to the following estimates on automobile ownership and its potential implications in the world:

> "Global automobile ownership is presently estimated at about 900 million vehicles and is expected to exceed 1 billion vehicles in 2010. If this trend continues, the number of vehicles could reach 1.5 billion in 2020 and be of significantly greater concern to the planet's health as well as to issues related to congestion and traffic accidents (Schipper, 2007)." (qtd. in OECD 2009, 63).

Therefore, the ownership society statement in line with materialistic values extends beyond homeownership to include also automobile ownership. The USA automobile ownership trend, as previously denoted by Ingrassia (2010, 116), mirrors the global trend here above presented.

Recounting on a new era thinking of the 1950s and 1960s decades, Shiller (2005, 115-117) indicates that between 1953 and 1955 the USA market, in real figures, boosted 94.3 percent and very small inflation in the mid-1955s. Families grew larger and in the very intensive prosperous economy use-of-consumer credit grew also. In fact, Galbraith (1974, 167-170) confirms that between year 1952 and 1956 the entire consumer debt in the USA, not

considered real state loans, grew 53 percent or from 27.4 billion USD to 41.7 billion USD. Installment credit for automobiles grew 100 percent and overall 63 percent. In a subsequent period from 1956 to 1967 consumer debt grew 133 percent or from 42.5 billion USD to 99.1 billion USD. Installment credit for automobiles grew 117 percent and overall 146 percent. However, quite remarkably, "in a period of general prosperity" automobile assembly plants suffered a noticeable degree of unemployment between 1955 and 1956.

Galbraith (1974, 170) proceeds to explain as this: In 1955, for the US American family the median income before taxes represented 3,960 USD and the automobile market was particularly subject to an "urgent persuasion". To the point that automobile credit contracts extend the installment repayment period from 24.5 months in 1954 to 28 months in 1955. But the market had a significant increase in the retail price of new automobile purchased. The down payment stayed without change. The average credit approved per installment sale grew from 1,960 USD to 2,240 USD. Consequently, the overall volume of automobile installment credit not yet paid grew by 3.6 billion USD. Then, the outcome of this uncertain trend, in spite of the relief of credit conditions, the pace of growth for volume of automobile installment credit collapsed. Despite that the disposable income of consumers uninterruptedly grew, automobile sales decrease 27 percent from 7.9 million passenger automobiles in 1955 to 5.8 million passenger automobiles in 1956.

The researcher brings for consideration this episode in the USA economy to compare and contrast with recent constrained credit crisis in the period from 2007 to 2009. According to Haugh et al. (2010, 8), automobile sales in the majority of OECD country members decreased on average more than 20 percent in the five-month period from September 2008 to January 2009. Also Haugh et al. (2010, 9) report that econometric assessments demonstrate that at the closing of 2008 more than 80 percent of automobile decrease in sales in the USA and Canada were attributed to credit restrictions or no credits granted at all. So, new automobile purchases were pushed back.

These two episodes, within periods 1954-1956 and 2007-2009, help to highlight first the following similarities between them: 1) automobile market was subject to a previous generalized persuasion; 2) a value proposition offered

based on automobile ownership by credit-supported purchase; 3) a collapse of automobile sales, more than 20 percent; and 4) a significant erosion of employment at automobile assembly plants. Then, next the researcher provides dissimilarities between these two episodes: 1) in the first episode the economy was prosperous and automobile credit was ready available, contrary to 2) the second episode in which the economy suffered a great recession, the unemployment was generalized and credit was restricted or not credit available at all. Thus, no matter that the revenue streams building block have credit available or not to finance automobile sales (to monetize), automobile sales collapsed. This fact provides signaling that the established automobile industry should reevaluate a genuine mobility purpose value propositions offer.

Writing on the assumption of information, Levitt and Dubner (2005, 67) discuss the issue of a one-day-old automobile. They assure that the very first moment an automobile is taken out of the dealer premises the automobile depreciates up to 25 percent of its original value. A customer who paid 16,000 USD for a new automobile could not resell it for more than 12,000 USD. The associated rationale behind relates to the notion that the customer who wants to sell that new car with very few kilometers or miles in the odometer could be the one person who found a "lemon". The lemon noun refers to an artifact, particularly an automobile that is unsatisfactory or non-conforming. On the side of the potential buyer, this person assumes that the automobile is a lemon still is not. Thus the buyer punishes the seller. The economics notion of information asymmetry explains this phenomenon in which in every transaction one individual has superior information than the other individual. Supporting this notion, Seabright (2004, 100) refers to the concept of "The Market for Lemons" by George Akerlof when discussing the subject of the used automobile market. Akerlof explains that sellers cannot obtain fair price for its product except they convince of the integrity of their product. Seabright (2004, 101) indicates that this notion has been studied more and resolved that building trust represents the ultimate approach for long-term benefit counts more than short-term.

In similar discussion on the intrinsically decrease in value of a new automobile, management practitioner Ragsdale (2010, 11-13) sheds light on the negative equity concept. Negative equity denotes the negative gap between the

amount the customer owes to the financial institution and the actual cash value of the automobile. According to him, this is the most dominant issue in the automobile market today. Actually, he refers to reports by Edmunds.com showing that by first quarter of 2009 the consumer's negative equity reached 4,700 USD, while in year 2005 the average reported was 3,500 USD. Ragsdale (2010, 59-65) recommends two alternative solutions. By paying in cash for the new automobile, the transaction will leave the customer free of the interest part but still remains the depreciation. On the other hand, financing represents the other alternative divided in two instruments: leasing or "balloon-note financing". Leasing represents his preferred recommendation and the shortest the leasing plan the better to avoid major maintenance expenses. Besides, he provides some mathematics to demonstrate that lease allows capturing the negative equity at the first lease period and among others at the end of the lease the customer does not have to trade the used automobile. Balloon-note financing refers to refinancing the residual at the end of the lease if case the customer wants to keep the used automobile. Therefore, as presented in this discussion the value proposition based on automobile usage rather than ownership by means of leasing has the customer benefit of protection from automobile market depreciation. In terms of revenue streams building block, leasing signifies the transition from per transaction to recurring revenues.

Finally, Sachs (2009b, 25-27) indicates that world's population will reside more in urban areas instead of rural areas. By 2008, the share of world's population was 50 percent for urban areas and 50 percent for rural areas. Developed countries reached this condition in 1950 and currently urbanization represents 75 percent in those countries. On the contrary, less developed countries will achieve 50 percent urbanization by 2017 from a 44 percent currently. Consequently, the automobile needs to reconsider this trend when designing the value proposition for its customer based on automobile ownership. As listed by Inderwildi et al. (2010, 35), congestion charge already initiated in urban locations such Norwegian toll rings, Stockholm congestion tax, Singaporean electronic road pricing and the most known London congestion charge confirms that mobility purpose and not ownership of the automobile should be the base for an alternative value proposition. Added to this, another

attribute to consider when designing the value proposition relates to automobile occupancy, since some metropolitan areas around the world already apply high occupancy toll lanes.

In summary, several perspectives discussed in this subsection provide brainwave on the economy driver of strategic risk for the established automobile business model. The recent credit crisis served as a huge signaling to the automobile industry to update its business model. The nature of this risk can be described as follows: 1) The current value proposition limits its general scope to automobile ownership in spite of the negative equity for the customer; 2) From a broader view, episodes in economics history presented here demonstrate that the established automobile business model can erode employment even in prosperous economy periods; and 3) When reviewing free market economic assumptions, interactions with social psychology need to be considered and its management implications. Particularly, on the notion of discounted future that explains why short-term gain is preferred against long-term benefit. Thus, management's responsibility for the social impacts of its organization gains relevance. The overall impact could be that customers place grounded demands for change in the automobile business model from a stand-alone tangible products (new automobiles) provider to a combination of products and services provider in the setting of the knowledge wealth economy. These might happen when the constant transition trend from rural to urban areas could be more generalized. Finally, as noted early the economy factor interacts and overlaps with energy balance and socio-political factors and the discussion of them in separate becomes rather conceptual.

Socio-Political factor

Vecchio (2000, 335-336) refers to the population ecology perspective—in which organizations look for a niche with intense competition to survive—explains how organizations interact with its environment. The population ecology perspective uses biological natural selection views. He details the three phases of an organization change process like this: "variation, selection, and retention". Variation implies that organizations continually appear. They have specific characteristics to interact with particular environments. These

organizations will sustain if they adapt to its environment, otherwise they will fail. Then, a selection phase happens. From a collection of several organizations found every year only a few subsist. Retention implies "institutionalization" of demonstrated "adaptive organizations". Provided that "the larger society" supports the goods or services produced by the organization, the "organization will be a critical component of the society" Vecchio (2000, 336). He provides examples of these institutionalized organizations: "state governments, educational institutions, and automobile manufacturers" Vecchio (2000, 336). Therefore, according to the population ecology perspective endurance of the automobile industry, as an institutionalized organization, depends on two vital factors: the degree of change in the environment—here the connotation of surrounding—and "the organization ability to adapt to such change." Vecchio (2000, 336).

In this view, society denotes a driver within a wider environment for the automobile industry. Actually, the Canadian scholar Marshall McLuhan "explored":

> "Although it may be true to say that an American is a creature of four wheels, and to point out that American youth attributes much more importance to arriving at driver's-license age than at voting age, it is also true that the car has become an article of dress without which we feel uncertain, unclad, and incomplete in the urban compound" (McLuhan [1964] 1994, 217).

He proceeds in his exploration by stating that the "age of automation" the going-to and coming-from work pattern will change. Actually, he predicts the following scenario: "The car as vehicle, in that sense, will go the way of the horse. The horse has lost its role in transportation but has made a strong comeback in entertainment." (McLuhan [1964] 1994, 218). It appears that these attitudes towards automobiles start to change for recent generations particularly in the so-called USA Generation X, population born between 1965 and 1976, and USA Generation Y, baby boomers' offspring born between 1977 and 1994 (Kotler and Armstromg 2008, G-4). Actually, the researcher could dare to say that McLuhan's predictions for the role of automobile and transportation in

combination to Vecchio's preconditions for institutionalized organization perpetuation started to appear as per evidence presented in the following paragraph.

In this view, management practitioner Brook (2004, 4) identifies USA and European demographics for members of car sharing organizations. A car sharing organization encompasses a diversity of business models (for-profit, non-profit, and cooperative) to share vehicle usage for mobility purpose (from A to B) without ownership cost of the vehicle that is different from car-pooling or ride sharing transportation alternatives. His findings revealed that members of car sharing organizations have an average age of 35-year-old, or in other words, members of the Generation X type of population group.

To vary scenarios from USA to Germany, Reed (2010) reveals from a 2009 survey by a German telecoms industry group, "97 per cent of people aged 14 to 29 said they could not imagine life without a mobile phone". Reed (2010) adds comment from a 25-year-old student in Ulm, Germany "I think a car is important but a mobile phone is more important," and continued as this "You can get by more easily without a car than without a mobile." Then, Reed (2010) warns that young consumer attitudes towards automobiles embody both an opportunity and a threat for established automobile industry business model, since recent generation groups place automobiles in a lower priority for purchase as their parents placed on them. He refers also to the attitudes ("enthusiasm") trend, in a number of developed nations, for automobiles among younger generations declines still prior to the recent economic crisis before referred (Isidore 2010; NBER 2010) as shown in Japan's automobile sales decrease "among younger people" Reed (2010).

Consequently, the researcher could state that demographics by age group evidence an early warning trend for established automobile industry related to a shift in attitudes and behaviors towards automobiles. This shift in behaviors perhaps could influence the institutionalized organization characteristic of the established automobile business model, since larger society support of goods produced by the automobile industry started to decline among younger generations.

Said that with regards to the social factor, now in view of the political factor, management practitioners Russo et al. (2009, 7) suggest that collection of stakeholders as well as national governments concern for their local automobile industry competitiveness in international markets have the obligation to actively participate in reshaping the automobile business model.

In contrast, the researcher exposes the cycle witnessed several times in the past. In the so far witnessed cycle national governments, per automobile industry lobbying groups request, supported during economic crisis bailouts, rescues, or "purchase subsidies for consumers" in behalf of the corresponding manufacturing jobs in the short-term mindset (Sturgeon and Van Biesebroeck 2009, 16-23). Haugh et al. (2009, 11-15) present evidence in a précis of a collection of "Principal measures to support the automobile sector" by some OECD countries during 2009. Also, other sources refer to similar actions taken in France, Germany, Canada, USA, Mexico, and China (Jolly, 2010b; Bunkley, 2010; Sturgeon and Van Biesebroeck 2009, 16-18). Think of redirecting automobile industry lobbying groups to request national and local governments participation and collaboration in the transformation opportunities of the established outdated automobile business model. According to Miles et al. (2005, 40) collaboration, similar to cooperation, denotes a relationship process where parties involved operate to attain common outcomes. However, they claim that exist dissimilarities between collaboration and cooperation regarding motivations. While collaboration is intrinsically motivated, cooperation is extrinsically motivated Miles et al. (2005, 37). Therefore, collaboration denotes a trust-based relationship rather than a contractual relationship such cooperation.

The following episodes in world history—in the former USSR, Japan, and recently in Canada, and in the USA—demonstrate the consequences of unilateral or cooperation approaches to induce society attitudes—either negative or positive—towards automobiles.

Drucker illustrates an episode of extreme government intervention based on misperception of customer values and expectations and its consequences for the market. Drucker's account referred to Khrushchev visit to the USA in 1956. At that time, Khrushchev declared that "Russians will never want to own

automobiles; cheap taxis make much more sense." Drucker becomes extended saying that automobiles do not only mean "transportation but freedom, mobility, power, romance." (Drucker ([1986] 1993, 64). Drucker upholds that Krushov misperception caused fierce entrepreneurial occasion with the automobile scarcity in Russia for the major vigorous "black market" (Drucker ([1986] 1993, 64). The researcher could add that perhaps Khrushchev's approach denoted a focus on the pure utility concept for transportation disregarding the necessary co-modality transportation alternative infrastructure and the fascination mindset attached to the automobile that cannot be reoriented just by mandate.

"MITI, the powerful Ministry of International Trade and Industry has, since 1960 or 1961, steadily opposed expansion of the automobile industry—in large part because it views the private automobile as 'self-indulgence' and as the opening wedge of the 'consumer society' which a puritanical MITI abhors. There was also, at least in the early years, considerable skepticism about the ability of untried Japanese automobile manufacturers to compete against the likes of GM, Ford, Fiat, and Volkswagen. And there was, and is, great fear that a large automobile market in Japan will provoke irresistible demands to open Japan to foreign imports—the one thing MITI is determined to prevent. But MITI also held—and quite sincerely—that expansion of the automobile industry would have an adverse, indeed a deleterious, effect on Japan's balance of trade, on its ability to earn its way in the world economy, and on its productivity altogether. The more successful the Japanese automobile industry, MITI economists argued, the worse the impacts on Japan. The automobile, they pointed out, requires the two raw materials that are in shortest supply in Japan: petroleum and iron ore. It also requires diversion of scare resources, both of food-growing land and of capital, to highways and highway construction. What MITI wanted was massive investment to upgrade the railroads' freight-handling capacity.

There are plenty of diehards around—and not only at MITI—who still maintain that to let the Japanese automobile industry expand was a serious mistake. The industry's export earnings, the diehards will argue, are only a fraction of what the automobile costs Japan in foreign exchange for petroleum and iron ore imports, even with record automobile sales to North America and western Europe. A small part of the sums spent on highways would have given the Japanese railroads the freight-carrying capacity which the country needs and still lacks. Yet, though enormous amounts have been spent on roads, it has not been nearly enough to build an adequate highway system—thus resulting in trucks clogging the inadequate roads, in high transportation costs for Japanese industry, in unhealthy concentration of people and factories around a few already overcrowded port cities such as Tokyo, Yokohama, Nagoya, Osaka, and Fukuoka, and in growing air pollution.

MITI lost its fight against the automobile, despite its reputation as a kind of economic superman. It was defeated in part by the automobile industry, which forged ahead despite MITI's disapproval. In large part MITI was defeated by the infatuation of 'Nabe-san,' the Japanese 'man in the street' (and of his wife) with the motor car, despite its high costs, despite the lack of places to park, despite the traffic jams which make commuting a nightmare in every Japanese city, and despite air pollution, about which no one complains louder than 'Nabe-san,' sitting in the driver's seat." (Drucker [1981] 2010, 169-170).

Synoptic Box 3.5 Japanese MITI offered opposition to expansion of Japanese automobile industry. This box serves to illustrate an episode by Japanese government attempt unilaterally to reorient attitudes towards automobiles.

The next episode is illustrated in the previous page Synoptic box 3.5. This account on Japanese government MITI provided by Drucker summarizes another instance of a unilateral approach attempting to change drastically society attitudes towards automobiles. No matter existing issues of parking space availability, traffic congestion, and emissions societal automobile obsession still prevails.

Then, in the year 2008 Canada Industry Minister Tony Clement said: "The idea is not bailout, of course, but the idea is how can the federal government be helpful in the long-term transformation of an industry so that we in Canada are building the cars that people actually want to buy?" (CTV.ca, 2008). Here the discourse develops to support the institutionalized organization concept for which society endorses its outputs such automobiles. This reminds us previous insight above provided by Vecchio. As a consequence, for the short-term Canadian government (federal and provincial) owned, due to loans (Haugh et al. 2009, 18), a share in GM and Chrysler after bankruptcy process.

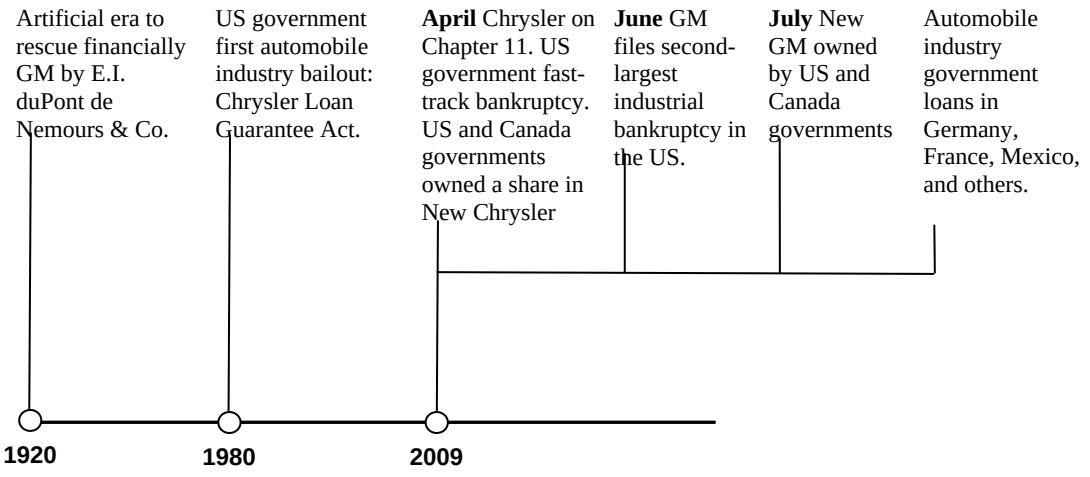


Figure 3.2 Timeline with private and government bailouts to automobile industry. Adapted from Ingrassia (2010, x-xi?).

Finally, legal policy practitioner Grossman (2008, 5) argues that "For years, America's [he likely refers to the United States of America not to one continent] automakers have been operated without vision by managers more focused on their ties to Washington than on their relationship with consumers." Furthermore, from Grossman's perspective he reasons that if the three American

automobile companies did not have ready cash, it revealed, "their business models have failed" (Grossman (2008, 6-7). Ingrassia (2010, x-xi?) provides a graphical account of such bailouts to the USA automobile industry from which the researcher presents an abridged and adapted version in Figure 3.2 for the focus of this thesis.

Also, scholar Sachs realizes that "U.S. society, politicians and the Big Three are finally waking up to the imperatives of energy security and climate-change mitigation." (Sachs, 2009a). Therefore, society and its interaction with policy agenda set the pace for economic and energy balance factors on the automobile industry. However, as expressed by former Austrian President Thomas Klestil "Don't just say what is popular, but try to popularize what is necessary" (qtd. in Monheim 2003, 84). Monheim indicates that politicians considered Klestil's demand "political suicide" when confronting supporting pro-automobile civic society (Monheim 2003, 84). This "political suicide" critique remains the discounted future notion in psychology previously presented in the economy factor applied to management behaviors. Here in this case could apply the concept to the majorities within stakeholders of the automobile industry including politicians, public and private sector, and the society as a whole looking for short-term benefits.

In any case, different horizons discussed in this subsection furnish the inner nature of the socio-political driver of strategic risk for the established automobile business model. The recent bailouts and government loans to automobile firms around the world confirm the extent to which society and politicians support the established automobile business model. The nature of this risk can be delineated as follows: 1) The established automobile industry represents an institutionalized organization supported by the society; 2) Two relevant factors preserve the established automobile industry: the degree of change in the environment and its ability to adapt to such change; 3) Government interventions and bailouts have became more frequent as timeline presented; and 4) Demographics, particularly last generations, show a shift in attitudes and behaviors towards automobiles. The overall impact could be that interaction of demographics within socio-political risk driver and others such energy balance and economy occur, society eventually could no longer support the established automobile business model as an institutionalized organization.

These might happen when customers including society, eventually as younger generations move into decision-making positions, could lead a change in the wider environment of the established automobile business model. Lastly, as noted early the socio-political factor interacts and overlaps with energy balance and economy factors of precisely a wider environment.

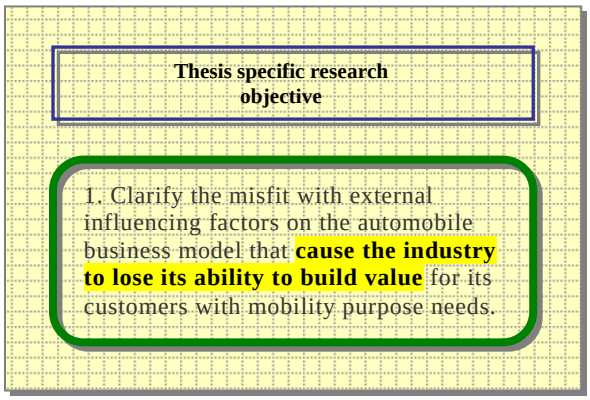
Overall, external influencing factors on the automobile business model were presented in this section. As discussed, energy balance, economy, and socio-political drivers represent risk drivers of a wider environment that could break the structural coupling between the established automobile business model and its stakeholders. These external influencing factors capture the scope for the specific research objectives 1 and 2 of this thesis. Before proceeding to the next section, the researcher needs to conclude this section with an insight from Vecchio. He indicates that organizations could modify its external factors by means of two strategies: “establishing favorable linkages with critical elements in the external environment” and “controlling the environmental domain” (Vecchio 2000, 337-338). Linkages with critical elements in the external environment include the following examples: acquisition of other organization via merger or direct acquisition to achieve vertical integration, hiring practices, and advertisement and public relations. On the other side, controlling the environmental domain include this instances: buying or selling a product line, forming conglomerates using Japanese “*keiretsu*” concept over different industries, and joining in cooperation other organizations under strategic alliances.

From Vecchio’s insight, the researcher suggests that in either one way or the other the established automobile business model have pursued in the past these two strategies to modify its external factors (refer to previously presented section 3.2). In the following section of causes for the automobile industry to lose ability to build value for its customers, the reader will notice that in spite of that with very rare exceptions (via policy lobbying with national governments; Nissan and Renault; Hyundai and Kia) the automobile business model have been losing its ability to build value for its customers. Even the fact that customers can postpone in economic recessions credit-supported-new-

automobile purchase (automobile ownership), the mobility purpose need still prevails.

3.4 Cause for the automobile industry to lose ability to build value for its customers

The first specific research objective inspires the development of this section. Synoptic box 3.6 illustrates the mapping of the cause the industry to lose its ability to build value to the specific research objectives 1. Placing this figure helps to focus on this activity for the stated objective and avoid disunited discussion.



Synoptic box 3.6 Mapping of "Cause for the automobile industry to lose its ability to build value for its customers" section to specific research objective 1. Visual aid helps to focus on this activity.

Instead of bounding directly to list causes as a result of a deductive "brainstorm" exercise for the automobile industry to lose ability to build value, the researcher borrows Kepner and Tregoe (1997, 30-47) approach to problem analysis to find the root cause. This problem analysis (Tables 3.1 and 3.2) reconstruction circumscribes its scope to the structural coupling between the automobile business model organization and its customer stakeholder. Building value represents the performance goal for this problem analysis.

The problem statement represents the first step to define the problem itself. This problem statement consists of an object and its malfunction or performance deviation. Therefore, the case on hand consists of the following object and deviation:

Object: The established automobile business model.

Deviation: Depletes value from customers with mobility purpose needs.

Thus,

Problem statement: The established automobile business model depletes value from customers with mobility purpose needs.

	Specifying Questions	**IS—**Performance deviation	**IS NOT—**Closest logical comparison
What	What specific object has the deviation?	Established automobile business model (ABM).	COULD BE but IS NOT car sharing business model (CBM).
	What is the specific deviation?	Depletes value from customers with mobility purpose needs.	Builds value from customers with mobility purpose needs.
Where	Where is the object when the deviation is observed (geographically)?	Worldwide in urban and rural areas.	COULD BE but IS NOT in 22 countries mainly developed economies and prevails in urban areas.
	Where is the deviation on the object?	At the value proposition building block that focuses on automobile ownership by credit-supported.	COULD BE but IS NOT at the value proposition building block that focuses on automobile usage.
When	When was the deviation observed first?	1920.	COULD BE but IS NOT after 1987 (Shaheen and Cohen (2007, 82).
	When since that time has the deviation been observed? Any pattern?	Periodic in 1955, 1973, 1980, 2005, 2008, 2009.	Continuous in 1994, 2002, and 2007.
	When, in the object's history or life cycle, was the deviation first observed?	During mature ABM life cycle.	During immature CBM life cycle.
Extent	How many objects have the deviation?	All established automobile business models.	Mobility, Mobility Carsharing, Zipcar.
	What is the size of a single deviation?	Combination of automobile negative equity (around 20 percent price tag); missing mobility purpose offer; and low passenger occupancy per automobile.	Could be but is not a negative equity; a missing mobility purpose offer; and a low passenger occupancy per automobile.
	How many deviations are on each object?	1	N/A
	What is the trend?	Stable.	Increasing.

Table 3.1 Problem Analysis. Describe the problem section.

	Distinctions	Changes	Possible Causes
What	The established ABM supplies a product and financing; the CBM provides a service.	Early in 1940 and later in 1987, new entrants such as car sharing offered solution-based services instead of credit-based product offer.	1. Established ABM depends mainly on product sales and has not a portfolio to offer mobility purpose services besides products. (+)
	The ABM involves cost of ownership and depreciation; The CBM involves as-need fees.	Since years ago, customer incurs in ownership costs that can be avoided by as-needed service fee.	2. Customer needs for mobility purpose postpones ownership costs. (+++)
Where	The ABM applies to developed and less developed countries in urban and rural areas; The CBM applies currently to developed countries in urban areas with convenient public transportation systems.	After 1950, customer mobility purpose needs in growing urban areas (50 percent of population in developed countries) started to alter demand for services as-need instead of ownership of the automobile.	3. Customers in current urban areas started to challenge the cost of ownership against other available transportation services instead. Therefore, customer postponed credit-supported automobile purchase. (++)
	Value proposition: ABM focus on automobile ownership by credit-supported; CBM focus on automobile as-need usage.	For years, ABM focuses on selling its credit-based product instead of solutions-based service alternative.	4. In spite of changes in the market for mobility purpose, the established ABM does not offer alternative services. (+++)
When	In 1920, ABM faced first crisis causing to change its strategy from producing to selling automobiles (Kennedy 1941, 115,138); In 1987, CBM first start up for-profit.	After 1920, revenue streams at ABM originated per transaction revenues by means of credit-based asset sale instead CBM originated recurring revenues by means of usage fee.	5. Customer prioritizes mobility purpose alternatives and avoids (per transaction) purchase of automobile via credit. (++)
	ABM subsequent sales decrease due to overpricing, oil crisis, or credit constrains; CBM market new entrants increased.	Customer deferral of credit-based automobile purchase persists particularly in every oil crisis and recently in credit constrains.	6. The institutionalized ABM does not observe and cope with strategic risks that break its structural coupling with its customer stakeholders. (++++)
	ABM identified as mature; CBM still immature business model life cycle.	As of 1920, the established ABM transformed from value growth to economic obsolescence. CBM started to show value growth.	7. ABM economic obsolescence relies mainly on profitless revenue from automobile ownership as value proposition. (++)
Extent	Majority of ABM deplete value from customer; CBM builds value for customer.	Since 1987, CBM substituted automobile ownership and its negative equity by as-need service fee in urban areas.	8. ABM has not addressed BM alternatives to customer automobile ownership interacting with current urban setting dynamics, negative equity, and generational shifts in attitudes towards automobiles. (++)
	Automobile ownership represents negative equity for its customers; Automobile usage represents value build.	By 1987, CBM replaced key activities from production to problem solving and customer segments from attitudes to aspirational.	9. The size of the customer value depleted—negative equity, missing mobility purpose offer, urban setting dynamics (traffic congestion, parking availability, and corresponding tolls), and passenger occupancy—forces customer to challenge automobile ownership and postpone purchase. (+++)
	N/A	N/A	N/A
	N/A	N/A	N/A

Table 3.2 Problem Analysis. Identify possible causes section.

Next step, the researcher evaluates possible causes (listed in Table 3.2) in opposition to the IS and IS NOT column described for each specific question raw. Kepner and Tregoe (1997, 41,52) denote that managers should not have the right answers but what is expected from them is to ask the right questions. Then, the possible causes were evaluated using the template question: "If *possible cause candidate* is the true cause of *deviation*, why is the IS affected but not the IS NOT?" Resulting from this evaluation, the possible cause number 6 becomes the most probable cause for our problem statement. Then, the statement by Russo et al. (2009, 7) that "The failure of automotive companies is the consequence of not transforming the 20th-century industrial paradigm to a 21st century global environment." is in similar line of thought with the most probable cause (presented in Synoptic box 3.7) derived from researcher's problem analysis here before developed and notions on strategic risk by Hoverstadt (2008, 170, 172):

> The institutionalized automobile business model does not observe and cope with strategic risks that break its structural coupling with its customer stakeholders.

Synoptic box 3.7. The most probable cause for the established automobile industry to deplete value from customers with mobility purpose needs. Kepner & Tregoe problem analysis led to find the most probable cause.

The value depletion from customers represents the overall effect of this most probable cause. The strategic risks drivers, discussed before as external influencing factors, contribute to break the structural coupling as follows: 1) from the energy balance factor: products of ABM as contributors to GHG and current urban setting dynamics in combination with automobile ownership; 2) from the economy factor: automobile ownership and its associated negative equity; and 3) from the socio-political factor: younger generations show a shift in attitudes and behaviors towards automobiles. Besides to these direct value depletion to customer stakeholders, indirectly as taxpayers have contributed to sustain the established automobile business model highly visible in recent times via government bailouts. However, bailouts, as an artificial era to rescue the

automobile business model, do no limit to those coming from public sector such government but also from private sector via financing by affluent manufacturing companies such E.I. duPont de Nemours & Company (Kennedy 1941, 98).

Therefore, with this most probable cause for the value depletion of customer with mobility purpose needs obtained in this subsection, the first specific research objective for this thesis has been achieved. Now the discussion in the following section develops the conceptual framework relevant for the agile business model innovation.

3.5 Emerging issues and need for empirical research

As expressed in the introduction of this chapter, this chapter ends with a section of emerging issues and need for empirical research that evolved from the institutionalized automobile industry chapter as an extension of the critical literature review. The critical literature review emphasizes the need for a transformation of the established automobile business model towards an agile business model innovation. Particularly, the established automobile business model needs a diversification of its value proposition offer. Therefore, instead of being a provider of mobility mode product (the automobile), the established automobile business model should add to its portfolio a value proposition offer based on mobility purpose services (as an example car sharing). Expressed in another manner, the established automobile business model needs to shift the value proposition offer from automobile ownership to automobile usage for example.

The study of relevant literature on external influencing factors rendered the strategic risks drivers. These selected strategic risk drivers—energy balance, economy, and socio-political—break the structural coupling by depleting value from customers as follows: institutionalized automobile industry's products connotation of contributors to GHG, current urban setting dynamics in combination with automobile ownership, automobile ownership and its associated negative equity, and not recognized via new service offerings that younger generations show a shift in attitudes and behaviors towards automobiles. In addition to the direct value depletion from customers as stakeholder, indirectly as taxpayers have contributed to sustain the established

automobile business model highly visible in recent times by means of government bailouts.

In fact, the specific problem analysis conducted on the institutionalized automobile business model in combination with notions on strategic risk by Hoverstadt (2008, 170, 172) suggests that the most probable cause for depleting value from its customers with mobility purpose needs resides in not observing and coping with strategic risks that break its structural coupling with its customer stakeholders. This structural coupling between the institutionalized automobile business model and its customer breaks with the depletion of value from them. However, other stakeholders—such regulators, civic society, academia, media, partners, and suppliers to list some of them—should collaborate in the same effort, since collaborative actions could render benefits for society as a whole. This line of thought implies the transformation from a mechanistic to organic organization form within the automobile industry. Therefore, this justifies the need to explore stakeholders' insights and experiences associated within the established business model including motivations and obstacles to an agile business model innovation.

The critical literature review and the institutionalized automobile industry chapters accentuates the need to discover generalized misconceptions around the established automobile industry listed like this: 1) The institutionalized automobile industry creates jobs and its relevance to the economic activity; 2) the institutionalized automobile industry has pioneered in product and process innovations but little in terms of business model innovation; 3) the novelty of ICE alternative technologies 4) electric powertrain on automobiles as the optimal alternative to reduce GHG; 5) established automobile industry and regulators represent the major stakeholders to reduce GHG an urban mobility purpose issues such traffic congestion and low automobile occupancy; and 6) city planning focus on people activities.

However, the institutionalized automobile industry chapter clarifies those misconceptions and the salient points can be listed in similar order like this: 1) episodes in history demonstrate that even in economic bonanza the established automobile industry eroded jobs like in the period 1954-1955 in the USA and scholar Schumpeter, early in 1939, revealed a rationale challenging the

automobile ‘need’ as far as economically relevant, was created by the industry; 2) the established automobile industry actually has pioneered also in business model innovation (one example among several represents GM OnStar business model innovation)—yet always having the automobile ownership at the center of the value proposition; 3) scholar Levitt early in 1960 cited developments by the automobile industry in hydrogen fuel cells, efficient battery technologies, and solar cells as ICE alternative technologies; 4) electric powertrain on automobiles need an assessment for efficient alternative to reduce GHG in face of the well-to-wheel concept meaning the integrated life cycle from energy source (coal for example) for electricity generation to its distribution grid and procurement of rare earth elements to build the batteries and electrical motors. Besides, all these technologies move around the same value proposition of automobile ownership that depletes value from customer with mobility purpose needs; 5) besides the established automobile industry and regulators as the major stakeholders to reduce GHG, society needs to collaborate in shifting behaviors towards automobile ownership and urban mobility purpose issues such traffic congestion and low automobile occupancy. Otherwise, the automobile industry technological progress in fuel efficiency and GHG reduction in parallel to regulators legal frameworks will keep doing little progress on ***that*** world crusade; and 6) city planning actually has been focused on automobile spatial priorities, since automobiles appeared. The critical literature review renders these clarifications because intrinsically their corresponding misconceptions could become part of the discourse or even rhetoric to place barriers or represent risks preventing the needed transformation of the institutionalized automobile business model.

Another salient point from this critical literature review and the institutionalized automobile industry chapters relates to the customer segments building block of the business model canvas. In particular to the specific customer needs and the established business model responding with the attitudinal variables. Avant-garde OEMs take advantage of the trend scout listening post to design segmentation strategies relying on aspirational variables. Aspirational variables are more difficult to imitate. This segmentation strategy takes a step further from the current attitudinal variables generalized in

the established automobile industry. Aspirational variables within customer segmentation building block apply no matter the value proposition focuses on a product or a service. Services do not have to be lifeless. As a matter of fact, three of the OEMs—Daimler, BMW, and Peugeot—are already exploring or piloting the car sharing service business model. By organizational design, Daimler and BMW also have trend scouts (one of the archetypes of listening post) within its organizations.

Concisely, the two specific research objectives are covered from multiple perspectives that become linked with their individual notions and theories by the sections of this critical literature review and the conceptual framework. Also, the critical literature review generates momentous to the literature and provides new perspectives to understand the conceptualization and theorization on an alternative future automobile business model. Bonded chapters 2 and 3 identify a gap in available literature referring to multiple perspectives and information leading to address the need for a reposition of the established automobile business model and that this reposition in specific by means of an agile business model innovation lacks of empirical research. The following chapter of this research details a conceptual framework used to guide and analyze the research work to achieve the aim and the second specific research objective.

CHAPTER 4: CONCEPTUAL FRAMEWORK

This conceptual framework chapter seeks to identify concepts, build constructs and the relationships among them, and outlining the conceptual framework for the agile business model innovation to build value for customers with mobility purpose needs. This chapter attempts to achieve the aim and the second research objective of this thesis deployed in Chapter 1. The conceptual framework chapter looks to:

- **Identify and add** concepts and theories to ultimately build the conceptual framework.
- **Combine** agile plus business model innovation theories.
- **Present** the initial conceptual framework to lead and analyze the research work.

4.1 Introduction

The researcher follows theory development process to analogously design the conceptual framework for the research work of this thesis. Anfara and Mertz provide (based on discussions by other scholars such Babbie, 1986; Silver, 1983; and Turner, 1974) relevant detail about theory elements including: "the relationship of concepts, constructs, and proposition to theory." (Anfara and Mertz 2006, xiv-xvi). The same authors Anfara and Mertz (2006, xv) explain that **concepts** signify names attached to physical phenomenon. Concepts help to differentiate among others and also among different time periods. Groups of concepts form **constructs**. At the next plane of generalization one finds propositions. **Propositions** represent relationships of various constructs. Actually, the relationship of propositions forms theory. Theories facilitate discernment of perceived reality.

Thus, the above rationale guides the researcher first to identify and add concepts relevant to the agile business model innovation. Afterwards, the researcher combines the agile and business innovation model concepts and

others previously identified or added for the conceptual framework (constructs). Finally, the initial conceptual framework for an agile business model innovation to build value for customers depicts propositions its constructs and its concepts. All this insinuates to the reader that this chapter addresses the second specific research objective (text block in bold font here below) previously formulated in the introduction chapter.

1. Clarify the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

2. Evaluate critically concepts, theories, and conceptual frameworks significant to the agile business model innovation towards mobility purpose services to build value for its customers while pairing with its external influencing factors.

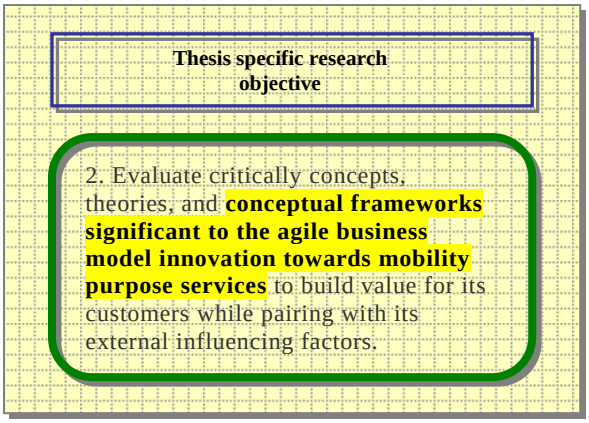
3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

4. Suggest recommendations to the automobile industry regarding an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

4.2 Conceptual framework significant to the agile business model innovation to build value for customers

The critical literature review and the institutionalized automobile industry chapters provides majority of elements to build or to design the conceptual framework functional for the specific research objectives of this thesis. **Functional** means in this context that the conceptual framework is not necessarily correct. This section deals with two broader phases. First, the

construction of elements for the conceptual framework subsection identifies and adds concepts and groups them to form constructs based on its relationships and linkages. Second, the last subsection presents an initial conceptual framework depicting propositions in the context of the specific research objectives of this thesis.



Synoptic box 4.1 Mapping of "conceptual frameworks significant to the agile business model innovation" to chapter 4. Visual aid helps to focus on this activity.

To begin with, in the Synoptic box 4.1 depicts the second specific research objective by mapping it to this chapter four associated with the development of the conceptual framework. Fisher (2007, 125, 133) presents three activities needed to develop the conceptual framework: concept definition, outlining the conceptual framework, and generate theory. The last activity is out of the scope of this master's thesis level. The first two concepts will be discussed in this section. A structured approach is pursued to develop this conceptual framework. Fisher (2007, 126) indicates that the conceptual framework consists of concepts and their interdependencies. These interdependencies can be of seven types: "cause and effect, stages in a process, hierarchical relationships, maps and coordinates, pairs of opposites, exchange and equilibrium, and similarity." Fisher (2007, 127-132). At this point, exchange and equilibrium type better illustrates interdependences for nature of concepts, constructs, and propositions for the conceptual framework. In summary, the researcher adapted from Fisher (2007, 122, 149) the utility of the conceptual framework serving to the

following main purposes: to lead the research project, to analyze afterwards the research material, and to organize the analysis and synthesis of the research material.

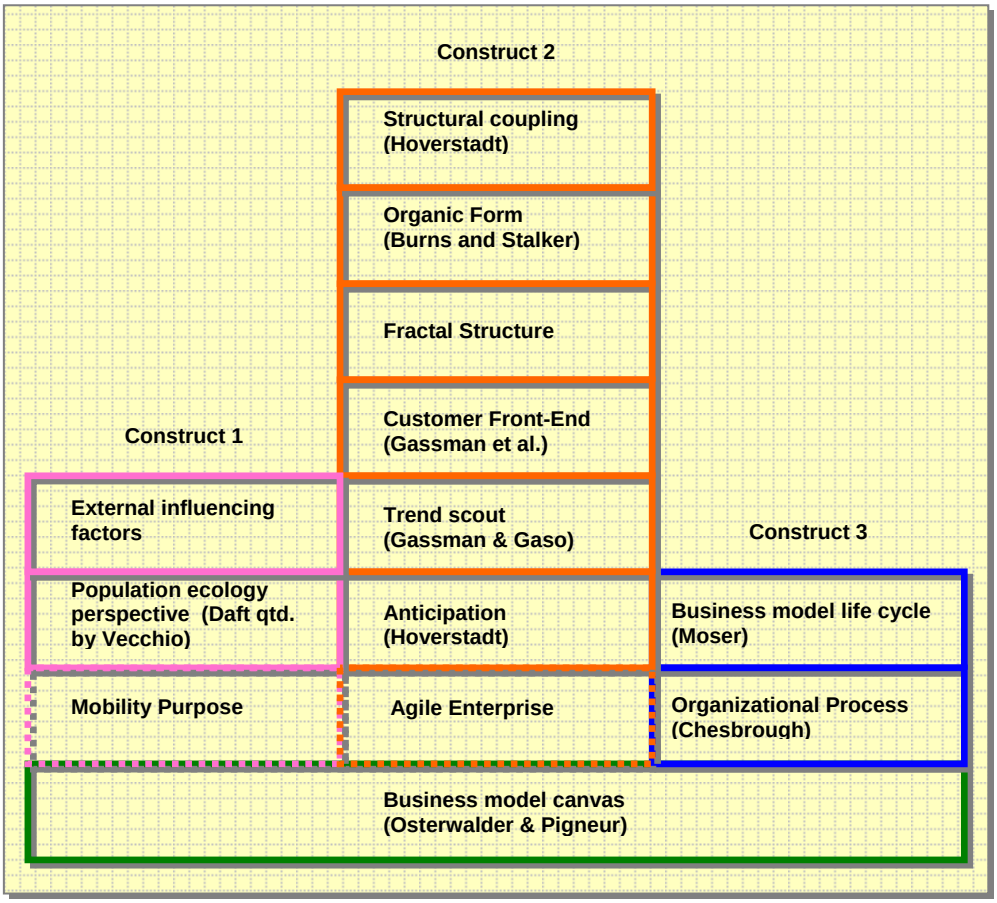
4.2.1 Constructing elements for the conceptual framework

So far, the researcher discussed in chapters 2 and 3 the business model innovation concept; the institutionalized automobile industry including its business model; the external influencing factors on the automobile business model; and the most probable cause for the established automobile business model to lose its ability to build value for its customers with mobility purpose needs. In the subsection here below, useful constructing elements (concepts) encountered will be identified and added to later define its interdependencies among them.

Identifying the constructing elements

The constructing elements represent concepts previously described and discussed to challenge its suitability for the specific research objectives of this mater's thesis. The Synoptic box 4.2, in the next page, presents a summary of them.

In addition, the researcher discusses two relevant concepts for the completeness of the conceptual framework: mobility purpose and agile enterprise. This Synoptic box 4.2 denotes these two concepts inside doted line blocks. Once the **concepts** were identified, three groups of concepts or **constructs** were defined. These three constructs orientate the business model to: the external influencing factors; the structural coupling; and the business model cycle. Expressed that, now the discussion returns to the two additional relevant concepts for the unity of the conceptual framework: mobility purpose and agile enterprise.



Synoptic Box 4.2 Identifying the constructing elements. These elements represent concepts to build the conceptual framework.

Mobility purpose

According to Knoflacher (2010; 2009, 60-61), hypothesis of the established transport world assumes that there is a growth of mobility. However, Knoflacher emphasizes that the reality is that there is not such growth of mobility (Knoflacher 2009, 60-61), since "usually the total number of trips over time remains the same -only the mode of travel changes" and he adds that mobility purpose has not being altered, except the mobility kind (Knoflacher, 2007). The researcher infers from Knoflacher that four are the main mobility purpose (trips): home-work; home-shopping; home-leisure; and return-home (Knoflacher 2009, 158). Given that, the researcher reviewed literature on mobility in general automobile industry media and academia. Effectively, the researcher finds that is very often confused the concept of mobility mode (which changes) with mobility purpose (which does not change). Therefore, it

will be helpful for the focus of this research thesis to distinguish the two concepts. Consequently, the mobility to be referred in this research thesis will be of mobility purpose.

The scholar Monheim (2003, 84) compares attitudes towards automobile dependence in two oil crises. First of all, the 1973's oil crisis caused for the first time to think about dependence so far on the automobile. Then, containment actions such "car-free" Sundays allowed the experience of alternative mobility modes. Contrary to this first experience, the 2000's oil crisis caused automobile lobby to appeal for presumable low fuel price entitlement considering the "urban and economic system". Automobile lobby attempted this action in favor of the urban and economic system that depends more on the automobile—regardless of a substantial amount of voices against. Knoflacher (2010) reveals the support formula to modify the subjacent structure of the system (city) that causes the behaviors in that system:

Support = Experts x Politicians x Administration

If one of the terms is zero, no support will be provided to modify the subjacent structure of the system.

In the previous section, an alternative business model called car sharing that provides mobility purpose served as comparison reference to find the most probable cause for the established automobile business model to deplete value from customers. According to Shaheen et al. (2009, 35) and Shaheen and Cohen (2007, 81) car sharing concept appeared for the first time in 1948 as a cooperative in Zurich, Switzerland under the name "Sefage" (Selbstfahrergemeinschaft). Shaheen and Cohen (2007, 82) indicate that later, car sharing programs started in Lucerne, Switzerland in 1987 and Berlin, Germany in 1988.

Besides, Bergmaier et al. define car sharing organization (CSO) like this: "Car sharing organisations can be specifically designed to enhance sustainable modes of transport, by filling a 'mobility gap'. Modes such as walking, cycling and public transport are complemented by access to a car on an as-needs basis without the high cost of ownership." (Bergmaier et al. 2004, 8). Therefore,

Bergnaier et al (2004, 6-7) indicate that car sharing strategy targets this mobility mode gap existent between automobile ownership and public transport or other mobility modes. In car sharing programs, the customer pays a fee for using the automobile and evading the variable cost of operating the automobile and the fixed cost of owning the automobile. Car sharing fee payment resembles public transport trip ticket payment.

From the perspective of market segmentation, car sharing represents an example of a niche market that could shift to a mainstream market. Unlike car sharing market niche, automobiles with electric powertrain market niche still deplete value from customers due to ownership and operation costs. Different scenario could be a combination of both car sharing with electrical automobiles. Visibility of car sharing market prospect becomes more evident due to the benefits to urban citizens searching to avoid automobile ownership costs and the implicit urban setting interactions as previously referred in the external influencing factors. In their recent survey, Martin et al. (2010, 1) indicate that USA and Canada car sharing industry as of July 2009 served around 378,000 members encompassing 9,818 automobiles. By July 2010, IMR (2010) reports that in both countries car sharing industry served around 516,100 members with a fleet of 10,405 automobiles.

Also, management practitioner Kumar (2010) sheds light on the European trend observed during the recent great economic recession between the years 2008 and 2009 in which around 120,000 people became new members of a car sharing program. From another perspective, car sharing as a market niche has been explored with prototype business models in 2008-2009 by Daimler with Car2go in Ulm, Germany and later in Austin, TX. USA (Osterwalder and Pigneur 2010, 238; Kortum 2009, 4), BMW pilot project with BMW on Demand available in Munich, Germany (Cholia 2010), and recently Peugeot's Mu initiative in several European cities (Fuhrmans 2010). Daimler seems to be the most active in exploring with mobility purpose business models. Fuhrmans (2010) reports that in September 2010, Daimler launched the program Car2gether that is a car pooling variation of its early program Car2go. Car2gether matches passengers with compatible drivers using recent social media web-based technologies. Before proceeding to the agile enterprise

subsection, the researcher refers to management practitioner Singh (2010) by Frost & Sullivan who predicts an expansion of car sharing industry to 5.5 million members in Europe and 4.5 million members in USA and Canada by 2016.

Agile enterprise

The agile enterprise element, also known as enterprise agility (EA), described in this subsection serves as a construct to the previously reviewed concepts of business model innovation and mobility purpose. The influential inference to apply EA for the proposed business model innovation within this thesis derives in separate from two scholars and consultant practitioners: Gary Hamel and David Cole. The reader will see reference to them later in this section. According to Sanchez and Nagi and Ren et al. (2001, 3562; 2003, 489), the agile manufacturing concept originated in 1991 at the Iacocca Institute of Lehigh University in the USA. Sanchez and Nagi contrast lean manufacturing and agile manufacturing. Lean manufacturing represents a consequence of market competition and scarcity. Agile manufacturing represents a consequence of "complexity brought about by constant change." Sanchez and Nagi (2001, 3562). Sherehiy et al. (2007, 456) add that distinction of lean and agile regarding the type of adaptation corresponds to that between reactive adaptation and proactive adaptation. Besides, Sherehiy et al. 2007, 446 suggest that perhaps the "agile enterprise/organization" epitomize the progression idea of the enterprise capable to cope with change.

Now the discussion returns to the motivation to use EA notion. Scholar and consultant practitioner, Hamel suggests that solving significant problems lead to significant innovation. According to him, a management discovery can occur as a result of identifying a significant problem. In this process, one should ask the following three questions: "what are the tough trade-offs that your company never seems to get right?" "what are big organizations bad at?" and "what are the emerging challenges the future has in store for your company?" (Hamel 2006, 4-5). The researcher will focus on Hamel's first question. Since, he provides the example answer that perhaps fits to the current established automobile business model condition like this: "Maybe you believe that your

organization has become less and less *agile* [emphasis added] as it has pursued the advantages of size and scale. Your challenge is to find an opportunity to turn an 'either/or' into an 'and'." Again, this proposed answer reflects the current dilemma the established automobile business model encounters and the venue to seek a durable solution.

Likewise, Cole (2009, 10:40) responds to question referring to Toyota which for Q1 2009 lost more money than GM and Honda lost more money than Ford Motor Company even though those two Japanese automobile makers did not have the legacy cost as USA automobile makers have it:

> "one of the things we see in Toyota and Toyota Production System, and the concept of the company...They were very well over-invested pretty dramatically in capacity around the world…exchange rate shift just cost them over 10 billion dollars in the last year… the *nimble* [emphasis added], it's not the lean anymore, it is the *lean-agile* [emphasis added] that is going to prosper into the future. It is a real test." (Cole 2009, 10:40).

Above and beyond, Hoverstadt mentions that the main cause of "corporate collapse is a failure to deal with strategic risk." (Hoverstadt 2008, 170). From another perspective and indirectly supporting Hoverstadt rationale of corporate failure cause, Doz and Kosonen place the following noteworthy question and answer:

> "How can CEOs and their leadership teams radically accelerate the evolution of their business models? This is a critical question: many companies fail, not because they do something wrong or mediocre, but because *they keep doing what used to be the right thing for too long, and fall victim to the rigidity of their business model* [emphasis added] In the face of discontinuities and disruptions, convergence and intense global competition, companies now need to transform their business models more rapidly, more frequently and more far-reachingly than in the past." (Doz and Kosonen 2010, 370).

Even more stringent perspective, the one from Drucker who states that "To wait until a business—or an industry—is in trouble is playing Russian roulette. It is irresponsible management." (Drucker 2003, 25). Therefore, the reader could understand, from a broader sense, corporate collapse as a consequence of an overall result of not building value for its customers. Hoverstadt refers to academics Drucker and Canadian Mintzberg to illustrate that consistently they acknowledged the limitations of the "traditional planning approach." (Hoverstadt 2008, 172). He suggests that corporations require two skills to "anticipate risks" and "to react with agility". Therefore, his suggestion promotes a change towards strategic risk from non-integrated and "reactive approach" to a "systemic and proactive one." (Hoverstadt 2008, 173). Rather controversially, Hoverstadt claims that the common suggestion refers to transform the organization to a more "agile" one, so this can respond rapidly to change occurrence (Hoverstadt 2008, 172). However, he argues this notion misses the point of risk anticipation. Therefore, the rationale of his suggestion of both skills above mentioned. The following Figure 4.1 illustrates Hoverstadt's notion:

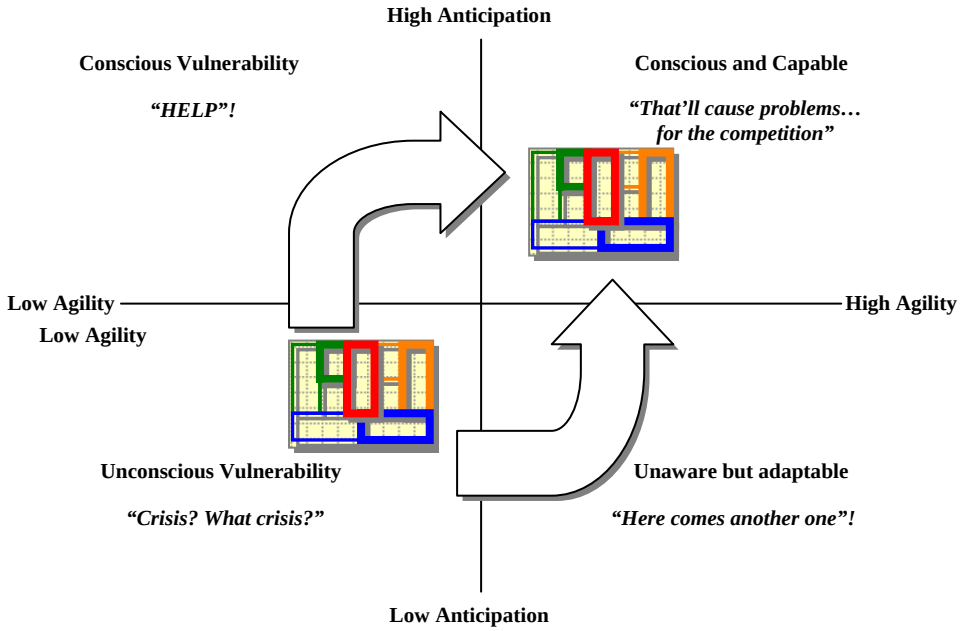


Figure 4.1 Two routes to strategic risk competence for the agile business model innovation. Adapted from Hoverstadt (2008, 173).

Similarly, Drucker (2003, 52) demonstrates the notion of anticipation with the example of Ford, when in the late 1940s offered the option of seat belts. Ford was ahead of passenger seat-belt requirements but cancelled the option due to lack of sales. Later, American society became aware of automobile occupant safety and in the middle of 1960s society criticized all automobile industry for not having occupant safety concerns. In terms of dealing with social impacts, Ford missed its early anticipation of seat-belts requirements. Also, Drucker suggests "in technology-monitoring, the businessman not only has to recognize an 'early-warning' system to identify impacts, and especially unintended and unforeseen impacts. He then has to go to work to eliminate such impacts." (Drucker [1974] 2010, 56). Therefore, the discussion below searches for the EA concept and elaborates on it to construct towards the agile business model innovation concept subject of this thesis.

In their literature review on enterprise agility (EA), Sherehiy et al. identifies six main features of agility at the overall enterprise level: "flexibility, responsiveness, speed, culture of change, integration, and low complexity" (Sherehiy et al. 2007, 457). They continue by suggesting that the agile enterprise/organization methodology encompasses "assimilated different practices, techniques, and ideas developed in the framework of adaptive and flexible enterprise/organizations" (Sherehiy et al. 2007, 456). They add that for agility notion the most significant and multifaceted elements of the enterprise include: "organization, people, and technology." (Sherehiy et al. 2007, 456). From these three enterprise elements, the discussion below concentrates only on the organization aspect to keep the focus of this thesis.

Sherehiy at al. conclude that research on the means the organization manages "unpredicted and dynamically changing environment" employs the following terminology: "adaptability", "flexibility", and "agility" and they embody, as previously refer, an advancement of the enterprise/organization to cope with change (Sherehiy et al. 2007, 459). However, Hatch (2006, 78) clarifies that recent organizational theory acknowledges that the expression "environmental uncertainty" is confusing. Actually, managers "feel" uncertainty in relation to perceived unpredictable environments because they feel they do no have all the facts to make a decision. Hatch confirms that humans perceive uncertainty but

environments do not. Therefore, uncertainty does not depend on the environment but it depends on the organization's decision makers that assess the environment towards a decision. This phenomenon is known as "information perspective on uncertainty" Hatch (2006, 78).

To have the characteristics of "adaptable and flexible", the agile enterprise needs to embrace an "organic organization" approach. The same scholars Sherehiy at al. summarized other scholar insights for the agile enterprise like this:

> "in order to be agile the enterprise has to be adaptable and flexible and has to adopt the features of the organic organization such as few levels of hierarchy, informal and changing lines of authority, open and informal communication, loose boundaries among function and units, distributed decision making, and fluid role definitions (Lawrence and Lorsch, 1967; Ashby, 1956; Hatch, 1997; Vecchio, 2006)." (qtd. in Sherehiy et al. 2007, 457-458).

In specific and based on empirical study, Burns and Stalker (1961, 119-121) refer to organic to the organizational form for unstable environments in contrast with mechanistic that is the organizational form for more stable environments. In his viable system model, Hoverstadt (2008, 36-37) and Atkinson and Moffat (2005, 33-36) convey the notion of a fractal structure. In this structure similar mechanisms repeat at every level for every sub-system such the Koch Snowflake. Therefore, the same structure applies for all organization levels and permits to experiment and capture the function and complexities of the organization. Writing on the same topic, Warnecke (2009, 33) provides the main attributes for the fractal company like this: dynamics, similarity, self-optimization, and self-organization.

On balance for the aim of this thesis, the concept of agile enterprise with its attributes of adaptability and flexibility with the features of the organic organization and fractal structure will be complemented by Hoverstadt's anticipation notion early mentioned.

Combining agile plus business model innovation theories

In this brief subsection, the researcher describes how the concepts and constructs previously sketched in Synoptic box 4.2 could be connected for the aim and specific research objective 2. Initially, a pair of opposites seemed to satisfy the visualization of interdependencies for the conceptual framework. However, after integrating not only the concepts but also the external influencing factors before detailed, the researcher reflects that the exchange and equilibrium type of relationship better suits the nature of the constructs for external influencing factors, agile enterprise, and business model life-cycle. Wang et al. (2009, 464) propose a conceptual framework for the business model innovation in the context of open innovation. This conceptual framework serves as reference to guide the development of interdependences. The business model canvas and its four selected building blocks represent the relationship of the three constructs previously defined. Therefore, this **proposition** represents the relationship of three constructs by means of the business model canvas.

4.2.2 Initial conceptual framework

The exchange and equilibrium type of relationship for this conceptual framework is displayed in a hive configuration Figure 4.2.

This conceptual framework will be used to guide and analyze the research work. The business model canvas in the center has relationships with three constructs oriented to external influencing factors, structural coupling, and business model life cycle previously referred in Synoptic box 4.2. The business model canvas encompasses the four building blocks previously detailed: customer segments, value proposition, revenue streams, and key activities. The external influential factors represent the drivers of strategic risk. The structural coupling represents the nature of relationship between stakeholders as elements of a wider environment and the business model canvas. Awareness of the business model life cycle notion helps to define new strategies to sustain the enterprise.

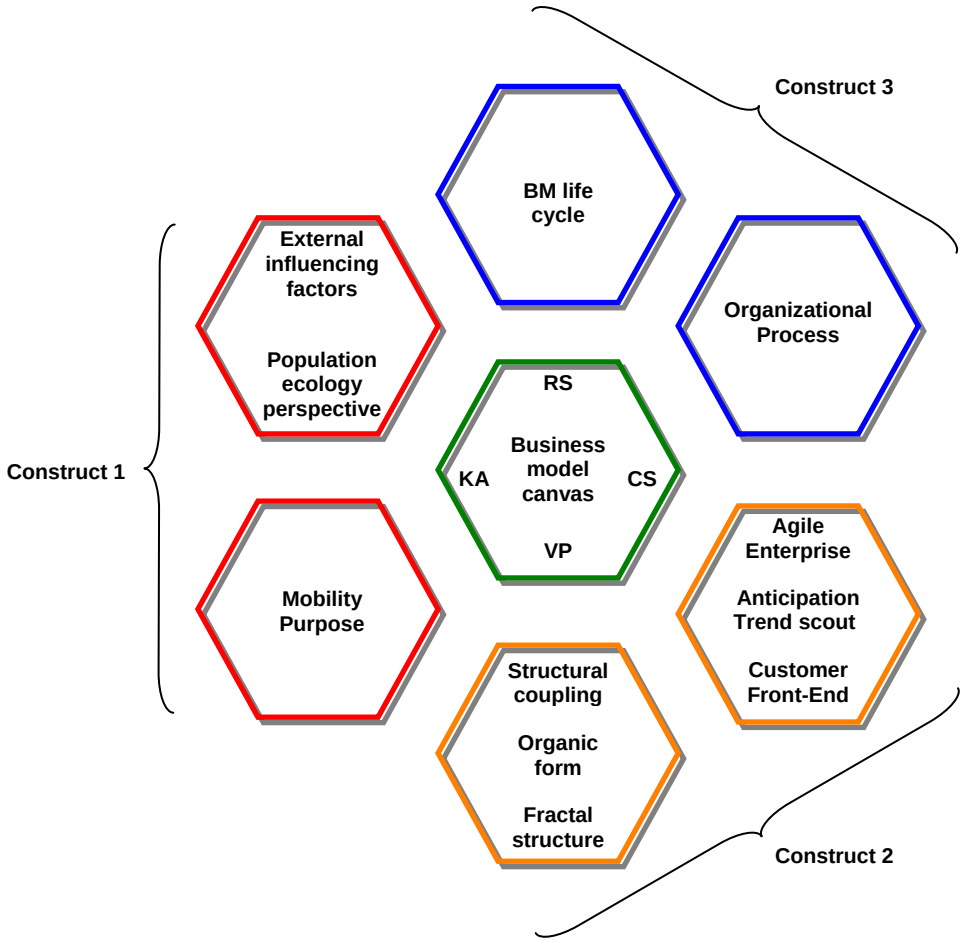


Figure 4.2 Initial Conceptual Framework for the agile business model innovation to build value for customers.

Mobility purpose functions as value proposition. Mobility purpose builds value for the customer needs. In particular, the institutionalized condition of the automobile industry can work in favor of the transition from automobile ownership (depleting value from customers) to mobility purpose (building value for customers) by educating customers and society towards this mentioned mobility purpose.

The customer front-end supports involvement of customer in new services development. The business model fits its external influencing factors by means of agile enterprise principles plus the anticipation concept supported by trend scouts. The challenge requires an organic form of organization using the notion of fractal structure. Together, this concepts support a structural coupling that keeps the relationship between stakeholders as elements of a wider environment and the business model canvas.

The organizational process embraces the experimentation with business models and consciousness of the business model life cycle view helps to delineate strategies to sustain the firm. In the proceeding section, all relevant issues will be briefly discussed.

4.3 Relevant issues

As expressed in the introduction of this chapter, this section ends with relevant issues that evolved from designing the initial conceptual framework for the agile business model innovation to build value for customers. The theory design approach facilitated by analogy the design of the conceptual framework. In addition to the mobility purpose and agile enterprise concepts discussed here above, chapters 2 and 3 provided the main field for discussion of theories and concepts. The researcher decided to discuss up to this chapter, in separate from the previous literature review and the institutionalized automobile industry chapters, the mobility purpose and agile enterprise, since in the established automobile industry both concepts applied are at a very immature pilot stage or almost inexistent. This chapter also emphasized the need to clarify wide spread delusions around the established automobile industry and from the perspective of organizational structure and dynamics listed like this: 1) the growth in mobility demands; and 2) the unpredicted or uncertainty of the wider environment around the organization. This chapter clarified those delusions and the leading points can be listed in similar order this way: 1) scholar Knoflacher clarifies that the mobility purpose in fact has not grown in human history but just mobility modes; 2) the unpredicted or uncertainty characteristics reside in the minds of decision makers in lack of information but not in the wider environment around the organization.

All the selected concepts were grouped in three constructs and these constructs were interconnected by means of the business model canvas in an exchange and equilibrium type of relationship. The last represented by a hive configuration that provides a visualization of concepts and constructs relationships one-to-all and vice versa. This combination of concepts and grouping them into constructs provide momentous to the conceptual comprehension of the agile business model innovation.

The following chapter of this research will detail the Research Methodology and Methods to employ to achieve the third specific research objective for the empirical research implementation.

CHAPTER 5: RESEARCH METHODOLOGY AND METHODS

This research methodology and methods chapter seeks to implement empirical research aligned to the aim and the third individual research objective of this thesis deployed in Chapter 1. This chapter uses a combination of structuring plans and guides provided by Fisher (2007, 12; 72; 151-188; 253-266; 318) and Biggam (2008, 79-128). This chapter in the context of the specific research objectives for this thesis relates to the third objective. The research methodology and methods chapter incorporates along these lines:

- **Describe** the research strategy.
- **Propose** data collection method.
- **Provide** a framework for data analysis.
- **Acknowledge** limitations and potential problems.

5.1 Introduction

The set of text blocks in the following page illustrates the four interconnected specific research objectives and the sequence of the study "explore stakeholders' insights and experiences associated with the established business model…" to the third specific research objective of this thesis (text block bold font). The third specific research objective challenges the research [methodology and] methods chapter of the master's thesis to use the conceptual framework (previously build in chapter 4) to collect and interpret insights and experiences associated. This specific research objective is a practical objective that calls for empirical research implementation.

At this point, the researcher needs to denote the distinction between methodology and methods. In line with this concern, Fisher (2007, 40) clarifies that the study of methods is the methodology. On the other hand, methods are the resources to accomplish the primary research, for example interviews. Biggam (2008, 82-83) explains that as a result of the critical literature review process in search of what is the state of the art about the subject, one finds the

need for empirical data. In the case of this research work, it was found the need to get insight from the incumbent and industry stakeholders.

1. Clarify the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

2. Evaluate critically concepts, theories, and conceptual frameworks significant to the agile business model innovation towards mobility purpose services to build value for its customers while pairing with its external influencing factors.

3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

4. Suggest recommendations to the automobile industry regarding an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

Combined chapters 2 and 3 recognize an opening in prevailing literature in which there are plenty of facts leading to address the need for the transformation of the established automobile business model and that this transformation by means of an agile business model innovation lacks of empirical research. A significant input from this thesis relates to the interpretation of primary research data on how current established automobile industry stakeholders envision opportunities and barriers for implementation of an agile business model innovation for mobility purpose services. Previous chapters for the critical literature review, the institutionalized automobile industry, and the conceptual framework address the specific research objectives 1 and 2. Specific research objective 3 carries this research beyond by means of

collection and interpretation of established automobile industry stakeholders' insights and experiences.

Thus, preparing a prospect to explore why the established automobile business model struggles to build value for its customers with mobility purpose needs and what a diversity of incumbents, industry participants, or stakeholders reckon barriers and opportunities to an agile business model innovation for mobility purpose services. The comparison of relevant issues from theoretical domain presented in the previous three chapters with those from the empirical domain will impart on the researcher a better discernment of the peculiarities to implement an agile business model innovation and therefore better suit to suggest and recommend an agile business model innovation in the automobile industry.

This chapter—Research methodology and methods—presents particularities for the research strategy selected to undertake to complete the empirical study. Then, the subsequent section defines a method of collecting data followed by a section defining the framework for analysis. Finally, the researcher provides a section covering constrains and potential problems with the selected research strategy and its subsequent execution.

5.2 Research strategy

Biggam (2008, 82) defines research strategy as the narrative on how the researcher expects to execute the empirical study. The researcher should select a research strategy to accomplish specific research objective 3. Thus, the researcher views the overall aim of the thesis and its specific research objectives and ponders which research strategy better fulfils the research requisites. As a result, the researcher retrieves both the overall aim research and the third specific research objective earlier formulated in chapter 1:

The overall aim of this thesis project is to envisage an agile business model innovation for the automobile industry towards mobility purpose able to keep building value for its customers.

3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

This specific research objective resulted earlier in chapter 1 from a progression for applied research questions. Turabian (2007, 9) proposes the applied research question type: "What must we understand before we know what to do?" This type of question is in the middle point and is neither entirely practical nor entirely conceptual. Besides, the reader can recognize the link ("an agile business model innovation") between the third specific research objective and the overall aim of this thesis. Confirmed that coherence feature, then the reader can notice that the empirical research in this work focuses on an inquiring work ("Explore stakeholders' insights and experiences associated within the…") associated with the modern-day established automobile business model. The main scope, related to stakeholders, will be to those such as incumbents and partners within the automobile industry as well as entrants and customers of the mobility purpose services industry. Therefore, stakeholder set includes also those beyond the so-called OEM. Before proceeding to the next paragraph, Fisher (2007, 153) makes a distinction of research forms between open or unstructured and pre-coded or structured. In the unstructured research form the researcher will obtain not expected responses. The structured research form the researcher has a predetermined range of responses and the main concern resides in relative frequencies.

Said that, the obligated question remains: Which research strategy fits an inquiring work associated with the modern-day automobile business model, the research requisites, and an approach to find multi-sided perspectives from stakeholders to attain a better understanding of a phenomenon (an agile business model innovation) for the automobile industry as a complex setting?

Basically, this research work seems qualitative primary and not quantitative. Qualitative research centers to exploratory works in which the quality of responses results by asking "why" questions (Biggam 2008, 86). The reader could refer to chapter 1 in which a progression for applied research questions

has origin at a "why" question. However, the researcher takes this initial situation as a first hint, since Biggam (2008, 85, 87, 92) clarifies that the aggregation of the selected research strategy, the specific research objective, and the data collection technique define the research qualitative in nature (also known as interpretavism/phenomenology). Therefore, this notion will be revisited later at the end of this chapter.

A survey-based research, as a strategy, by means of e-mail questionnaires seems inappropriate for the research requisites of this work and time consuming for a single investigator and perhaps more suitable for a research team.

Experimental research does not fit the applied research concept of what must we understand before we know what to do, since this type of research seeks to run experiments for hypothesis testing.

Historical research does not suit this research work, since the main concentration is on actions that happened in the remote past. This research work concentrates on a modern-day phenomenon.

Action research, as a strategy, seems inappropriate for the applied research question nature of this research work earlier defined. Due to the approach of this action research, a suggested solution shall be implemented and the outcomes monitored. Besides, the researcher needs to be included in the research work not only as an observer but also as a contributor. Perhaps, the objectivity seems a weak point of this approach. However, Brannick and Coghlan argue that the insider research by means of "a process of reflexive awareness" and confirming the value for the theoretical domain (Brannick and Coghlan 2007, 60). In any case, a strategy for this research work based on action research does not seem suitable for the reasons presented.

Case study, as a strategy, seems appropriate for the applied research question nature of this research work. According to Biggam, a case studies "one example of a particular type." Biggam (2008, 83). Yin provides the following definition:

> "A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." (Yin 2003, 13).

Therefore, a case study as a strategy could fit the empirical research requisites of this research work except for its linear process characteristic. With this regard, the researcher concern was based on findings from the institutionalized automobile industry chapter—in particular the common denominator among the industry of automobile ownership as value proposition, it seemed challenging to rely on involvement of stakeholder representatives from the incumbent to this empirical research. Thus, the researcher judges pertinent to use a case study with some enhancements already available such systematic combining.

One research method that will be employed, as a research strategy, to execute the empirical research is an abductive approach to case study (also known as systematic combining). What is a systematic combining and why is this appropriate for this research work? Dubois and Gadde describe the abductive approach or systematic combining as follows:

> "The main characteristic of this approach is a continuous movement between an empirical world and a model world. During this process, the research issues and the analytical framework are successively reoriented when they are confronted with the empirical world" (Dubois and Gadde 2002, 554).

The same authors explain that the motivation of this approach leads to the abduction notion by Peirce. Patokorpi summarize abduction notion as "a form of everyday reasoning that people typically use under uncertainty in a context." (Patokorpi 2009, 113). Patokorpi refers to Pierce notion that three basic types of logic exist: deduction, induction, and abduction. The researcher summarizes in Table 5.1 Pierce's canonical illustrations of these three types of logic (qtd. in Patokorpi 2009, 115) adapted by the researcher:

	Deduction	Induction	Abduction
	Rule: All the beans from this bag are white.	**Case:** These beans are from this bag.	**Rule:** All the beans from this bag are white.
	Case: These beans are from this bag.	**Result:** These beans are white.	**Result:** These beans are white.
Conclusion	**Result:** These beans are white.	**Rule:** All the beans from this bag are white.	**Case:** These beans are from this bag.

Table 5.1 Pierce's canonical illustrations of three logic types.
Adapted from list provided by Patokorpi (2009, 115).

The Figure 5.1 illustrates the systematic combining elements. Dubois and Gadde (2002, 555) state that the principal goal of doing research is to challenge the theoretical domain with empirical domain. They argue that this challenging aspect is almost incessant during the research activity in the systematic combining.

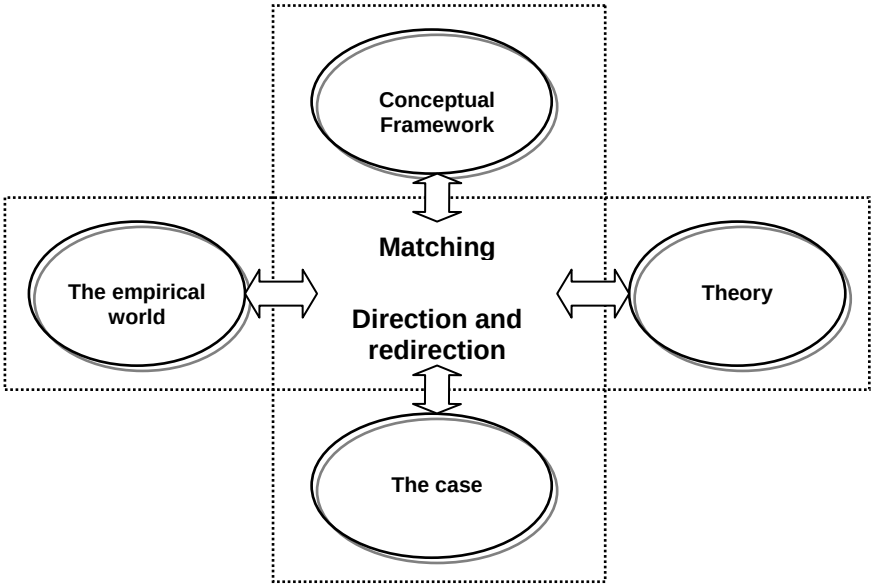


Figure 5.1 Systematic combining. Adapted from (Dubois and Gadde 2002, 555).

Dubois and Gadde (2002, 554-556) explain the matching process refers to iterations among conceptual framework, data, and the corresponding analysis. This process by itself refers to equate theory and reality. Direction and redirection of the study support the matching. Actually, the attempts to match theory and real-life could lead to different directions. This systematic combining approach is valuable for new theory development and at the same time the conceptual framework, the empirical world, and the case study develop. Albeit the aim and specific research objectives of this research work are not to develop new theory but to better understand a phenomenon.

Because of the rationale here above presented, the systematic combining, as research strategy, fits the execution of this empirical research. Besides, systematic combining provides answer to researcher's dilemma before mentioned related to potential unwillingness to participate from incumbent

stakeholders representative side while conducting the empirical research. The feature of direction and redirection of the study protects the empirical research.

A significant aspect of this research resides in contrasting dissimilarities and comparing similarities between findings from the chapters on critical literature review and the institutionalized automobile industry with the results of the systematic combining approach.

In summary, what is presented in the foregoing paragraphs evidences an understanding of the essentials of the systematic combining approach and delineates its design and practical application suitable for this empirical research. In the proceeding section, the data collection methods for empirical data will be delineated.

5.3 Data collection

After selection of the systematic combining approach, as a research strategy, for execution of this empirical research, the researcher needs to define a method to collect the corresponding primary research data. Primary research as defined by MLA Handbook is “the study of a subject through firsthand investigation, such…; conducting a survey or an interview;…” (Gibaldi 2009, 3). Data collection section includes two subsections: Data collection: sites and sample selection; and Data collection techniques. Essentially, the researcher, by developing this section, delineates where to obtain data from; the sample size; the sampling technique; and how to obtain data.

5.3.1 Data collection: sites and sample selection

The empirical research for an agile business model innovation for the automobile industry supported by a systematic combining (abductive approach to case study) involves stakeholders geographically dispersed in Europe and North America to converge the third specific objective of this thesis. Besides, Dubois and Gadde express that “multiple sources may contribute to revealing aspects unknown to the researcher, i.e., to discover new dimensions of the research problem.” (Dubois and Gadde 2002, 556). Although it does not represent a perfect analogy, the criteria for considering stakeholders in these

geographies anchor in the idea that diametrical or opposite paths to view reality renders another cognition. Therefore, for this empirical research the sites depend on stakeholder location. The stakeholder initially considered features the following: customers, OEMs (incumbent), educational institutions, media, clusters, service suppliers, new entrants such utilities and mobility service provides. Figure 5.2 illustrates stakeholders in position to a wider environment risk drivers, and structural coupling with stakeholders and at the center the incumbent.

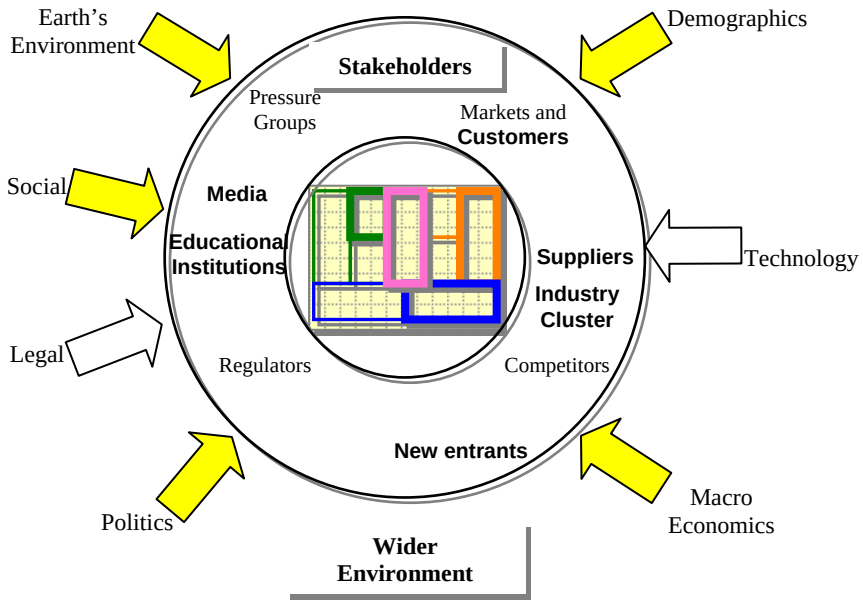


Figure 5.2 Position of stakeholders in the context of organization wider environment risk drivers and structural coupling with stakeholders. Adapted from Hoverstadt (2008, 175).

This empirical research by means of an abductive approach to case study as a research strategy, tries to be meaningful by selecting stakeholder organizations that denote a business model innovation. As a result, the selection of sites to obtain primary research data makes available research subjects at the extreme of the phenomenon. Thus, at the subsequent stage analysis and synthesis the distinctions between the established automobile business model and alternative ones can better boost. Besides that, the researcher applied tacit knowledge to pursue the following list of research subjects for the empirical research:

1. Rigoletti Casa de Diseño, Mexico City
2. Mastrettacars, Mexico City
3. Autoline Detroit, Livonia, MI USA
4. Kiska GmbH, Anif-Salzburg, Austria
5. Automotive Cluster Vienna Region (ACVR), Vienna, Austria
6. Istituto d'arte applicata e design, Turin, Italy
7. Denzel Mobility Carsharing GmbH, Vienna, Austria
8. TechMag GmbH, Heppenheim, Germany
9. Utilities Company, Austria
10. Carsharing member for 7 years, Vienna, Austria

These ten research subjects include management practitioners, scholars, and customer representative. The researcher, as individual investigator, initially selected a sample size in a range between 10 and 15 research subjects. The researcher qualified this empirical research as one single case study. With the exception of research subject (number 10 in list) all the others represent a set of stakeholders interacting with the institutionalized automobile industry. Research subject 10 represents a stakeholder of the mobility purpose service industry. As a result from researcher's critical literature review, the institutionalized automobile industry can be simplified to a single case study, since all OEMs have (as expressed before in the research strategy section) in particular the common denominator among the automobile industry to offer the value proposition of automobile ownership.

Among several sampling techniques referred by Biggam (2008, 88-90), the researcher selected a convenience sampling based on access on a case-by-case participant. A convenience sampling represents a non-probability approach meaning that samples are not taken randomly. The researcher assumes the risk of this approach not representing a statistical population, since the empirical research here deployed, similarly as presented in section 3.4, searches for the extremes to contrast.

5.3.2 Data collection: techniques

Biggam (2008, 104) advises for this subsection to focus on what was done and why the researcher suggested the data collection techniques for this empirical research.

Once found that common denominator in the previous subsection, the researcher pursues the selection of the data collection methods. The researcher selected interviewing among other data collections techniques as a means for this specific empirical research. Other data collection techniques include "secondary data, observation, interviews, and questionnaires." (Biggam 2008, 101). This empirical research will obtain data by means of individual and group interviews to stakeholder representatives above listed. For this project, the abductive approach to case study undertakes semi-structured interviews to stakeholders such practitioners and managers involved in the automobile industry and representative customer of the mobility services provider are the more suitable alternative.

The rationale behind prompts in addition to that common denominator the exploratory nature of the third specific research objective of this research work. According to Fisher (2007, 153), an open approach characterizes exploration. However, interviews, like other data collection methods, could be conducted between two extremes: unstructured or structured according to Goodwin (2006, 35). In the middle, the semi-structured interview uses a guide of main topics or themes to be covered during the interview. Preparation of the semi-structured interview included the following process steps similar to those proposed by Fisher (2007, 167) and illustrations by Goodwin (2006, 35-36):

- Identify, based on literature review, topics to inquire.
- List questions and methods for its analysis.
- Decide on open and close questions or combination of both.
- Prepare abstract to distribute to interviewees ahead of interview.

Afterwards, the researcher organize the interviews in this manner:

- Define record keeping using transcript.
- Prepare tentative interview program.
- Select interviewees and approach them.
- Set appointments.

The interviews could be conducted either at interviewee's premises or via teleconferencing by means of Skype software—a phone call application over the Internet. Appendices A1 and A2 include samples of list of semi-structured questions by three themes (mainly related to the constructs from the conceptual framework illustrated in Figure 4.2 of chapter 4) used for the semi-structured interviews with stakeholders organizations and stakeholder customer. The researcher consults secondary data to complement the interviewing process including websites hosted by stakeholder organizations.

Once defined the research strategy and data collection, the next section integrates them into a framework for data analysis. Before discussing the framework for data analysis, the reader will notice, as previously referred in section 5.2 for research strategy, at this point the researcher confirms that overall this is a research qualitative in nature (also known as interpretavism/phenomenology), since it aggregates the selected research strategy (systematic combining or abductive approach to case study method), the specific research objective (Explore stakeholders' insights and experiences…), and the data collection technique (interviews).

5.4 Framework for data analysis

The purpose of this framework for data analysis (please do not confuse with conceptual framework) refers to serve as an outline to analyze the research data obtained. In essence the framework for data analysis provides a guiding process to describe, analyze, and interpret data collected. The researcher borrows an illustration of this guiding process provided by Biggam (2008, 120) that is presented in the next page Figure 5.3.

This adapted illustration depicts the framework for data analysis and the interaction with the conceptual framework functioning to guide and analyze the

research work as expressed in subsection 4.2.2. In this manner, the framework for data analysis facilitates pursuing an abductive approach or systematic combining. The subsequent section discusses constrains and potential problems for the empirical or practical research based on the selected research strategy and data collection technique for the specific research objective.

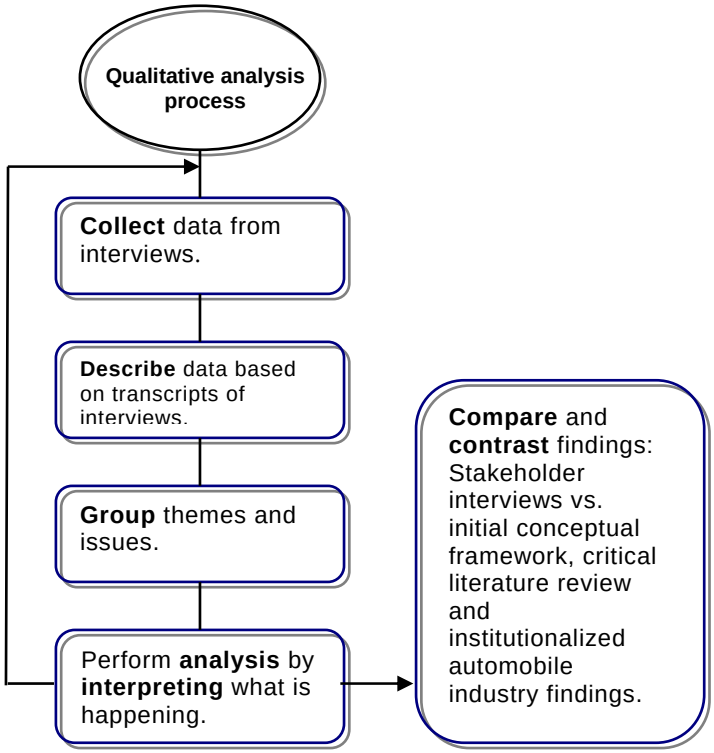


Figure 5.3 Qualitative data analysis. Adapted from Biggam (2008, 120).

5.5 Constrains and potential problems

In spite that the case study, as a research strategy, enhanced by an abductive approach provides the elements for conducting the empirical research aligned with the third specific research objective of this thesis, the researcher reflects on few constrains and potential problems related in specific to the selected empirical research: limited generalization of results, validity of research due to convenience sampling technique, and difficulty to access research subjects.

Particularly related to the aspect of results generalization, Weick (1969, 18) states that case studies focus on "situation specific and, therefore, not appropriate for generalization" (qtd. in Dubois and Gadde 2002, 554). However,

the researcher, in line with view by Dubois and Gadde (2002, 556), argues that this apparent weakness can be overcome by collecting various informants who can lead to expose new features of the research problem.

The validity of research due to convenience sampling technique could be questioned, since the researcher assumes that the population is homogeneous. However, the debate can be minimized if the researcher places two notions: 1) the common denominator prevailing in the automobile industry regarding the automobile ownership as mainstream mindset for the value proposition; and 2) the exhaustive critical literature review and the institutionalized automobile industry chapters help to identify characteristics of the extremes of the business model population and afterwards pursue interviews with those research subjects.

Besides, systematic combining provides answer to researcher's concern before mentioned related to potential difficulty to access participants from incumbent stakeholder representatives' side while conducting the empirical research. The feature of direction and redirection of the systematic combining protects the empirical research.

CHAPTER 6: EMPIRICAL RESEARCH FINDINGS: DESCRIPTION, ANALYSIS, AND SYNTHESIS

The analysis and synthesis section views stated or implied in this chapter are those of the researcher alone. They do not necessarily represent the views of the interviewees.

This empirical research findings chapter divulges the results of the systematic combining (abductive approach to case study) described in Chapter 5 for Research Methodology and Methods. The implemented empirical research was aligned to the aim and the third individual research objective of this thesis deployed in Chapter 1. This chapter used structuring plans and guides provided by Biggam (2008, 129-137). This chapter 6 in the context of the specific research objectives for this thesis relates to the third specific research objective. The empirical research findings chapter incorporated along these lines:

- **Describe** the findings from the empirical research implementation.
- **Analyze or interpret** findings from the empirical research implementation.
- **Synthesize** empirical research data against critical literature review, the institutionalized automobile industry concepts, and conceptual framework.

6.1 Introduction

Chapter 6 discloses the results of the empirical research implementation. This research focused on the group of research subjects previously listed in the subsection 5.3.1 for data collection: sites and sample selection. This empirical research based its approach on the framework for data analysis previously described in section 5.4 (Figure 5.3) and interacts with the systematic combining discussed in section 5.2 as a research strategy (Figure 5.1). This interacting process between the framework for data analysis and the systematic

combining approach occured while seeking the matching process that is supported by the direction and redirections of the study suggested by the latter approach. The Table 6.1 summarizes the redirections induced by the attempts to match theory to reality while conducting this study.

	Focus	Phenomenon	Main Dimension
Phase 1	OEM new product development	Agile enterprise business model innovation new business development for mobility	Actor structure
Phase 2	Beyond boundaries of OEM	Agile innovating business model for mobility	Activity structure
Phase 3	OEM and entrants	Agile Business Model Innovation and Mobility Purpose	Activity structure
Phase 4	OEM (incumbent)	Agile Business Model Innovation and Mobility Purpose	Activity structure

Table 6.1 Reorientations of the study. Adapted from similar table provided by Dubois and Gadde (2002, 554).

The purpose of the following list relates to place the study implemented in context as suggested by Biggam (2008, 130). Instead of providing a profile for each of the research subjects, for those which may apply, the researcher furnished the corporate website URL address, if applies, of these organizations as follows:

1. Rigoletti Casa de Diseño, Mexico City.
   http://www.rigolettidi.com/infocorpo.html
2. Mastrettacars, Mexico City
   http://www.mastrettacars.com/
3. Autoline Detroit, Livonia, MI USA
   http://www.autolinedetroit.tv/whatisad/
4. Kiska GmbH, Anif-Salzburg, Austria
   http://www.kiska.com/#/home/kettler/
5. Automotive Cluster Vienna Region (ACVR), Vienna, Austria
   http://www.acvr.at/index.php?id=868&lang=en
6. Istituto d'arte applicata e design, Turin, Italy.
   http://www.iaad.it/n_eng/istitutoArteApplicataDesignTorino.php

7. Denzel Mobility Carsharing GmbH, Vienna, Austria
http://www.carsharing.at/
8. TechMag GmbH, Heppenheim, Germany. Supplier Company dedicated to develop lightweight magnesium applications for the automobile industry.
9. Utilities Company, Austria. 2.800 employees.
10. Carsharing member for 7 years, Vienna, Austria.

For more detail of interviews, the reader can consult transcripts of them in Appendices B1 to B10.

Discussion presented in the foregoing paragraphs mean for the reader that this chapter 6 addressed the third specific research objective (text block in bold font here below) previously formulated in the introduction chapter.

1. Clarify the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

2. Evaluate critically concepts, theories, and conceptual frameworks significant to the agile business model innovation towards mobility purpose services to build value for its customers while pairing with its external influencing factors.

3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

4. Suggest recommendations to the automobile industry regarding an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

Before proceeding to the description and analysis of the results, as well as synthesis of practical research data against the critical literature review; the institutionalized automobile industry concepts; and the conceptual framework; the researcher provides an outline of the respective discussion. Added to the framework for data analysis presented in chapter 5 Figure 5.3, Dey (1993) introduces an interpreting qualitative data process, which consists of description, classification, and annotation. (qtd. in Goodwin 2006, 42-44). This process resembles the one presented by Biggam (2008, 120) that includes description, analysis, and implies the synthesis. The researcher confirms previous selection of this framework for data analysis. Therefore, the outline is delineated in the following lines.

The qualitative data analysis followed the themes previously referred in previous subsection 5.3.1. The overall description was integrated with the interview transcripts found in the appendices B1 to B10. However, a description summary for each theme will be presented in this chapter. Then, the researcher conducts the analysis that is an interpretation of the descriptions. Finally, the synthesis proceeds by comparing similarities and contrasting dissimilarities against the conceptual framework, critical literature review and institutionalized automobile industry findings.

Note: Description of responses codes questions by stand-alone number (e.g. Question 1) for the organization stakeholders and number and literal, in this case lowercase letter “c” (e.g. Question 1c) for customer stakeholder.

6.2 THEME 1: External influencing factors; Institutionalized Organization; Mobility Purpose; and Business Model Canvas: Value Propositions and Key Activities.

6.2.1 Description of answers to Theme 1 stakeholder organizations

Question 1. ***How do you observe, in the current business conditions, the transition from automobile to mobility purpose?***

Q1 Answers Description

Five out of the ten interviewees guided the state of affairs of the **transition** from automobile to mobility purpose. McElroy (2010) summarized that there is no OEM totally engaged in the mobility services business. He added that the company Zipcar® dedicates to the carsharing business. Meanwhile, Stassin (2010) stated that the change to mobility is no occurring even tough people are talking about it. Perhaps, in 20 years from now it will not exist the ownership of the car or several solutions with a different ownership scheme. The limiting aspect refers to the established automobile that cannot change overnight. Other respondent, Kuen (2010) mentioned that the established automobile industry would not vary radically over the next 10 years but they initiated an easy transition. An innovation manager of an Austrian utilities company (November 10, 2010) acknowledged a move of entailed companies and it is not exclusive of automobile manufacturers but in collaboration with utilities. Interviewee from a carsharing organization discussed "Carsharing business is not new. In specific to Denzel case, we started the carsharing business in the year 1997." (Röck 2010).

Four out of the ten respondents referred to the **socio-political** share for the transition from automobile to mobility purpose. This socio-political involvement spans from the aspects, as expressed by Rigoletti (2010), of defining transport without missing the social motivations to the growing significance of the role of cities, as denoted by Stassin (2010) and Röck (2010), in the transition from automobile to mobility purpose. Milani (2010) also emphasized the preponderance role of society for the transition from automobile to mobility purpose, since users of the latter come from society. Discussion in specific to the political aspect Milani's insight was this:

> "Many are speaking about the transition, but few are really thinking about it." (Milani 2010).

The same interviewee added that societal aspects require attention, since mobility progresses "from infrastructure to use." (Milani 2010). Röck (2010) provided the specific example of initiatives on mobility purpose by the City of Vienna. Stassin (2010) expressed that based on social theories it could be less

complicated to change a city than the world and he provided the example of the company "Better Place" focusing on a small geographic area that eventually could swing others, because of a snowball effect.

Also, four out of ten interviewees discussed **infrastructure** and **change of behaviors** from society. Thus, Milani (2010) denoted that a "cultural problem" at society level has priority to be solved, since the option to apply other aspects including mentality and information technologies exist for alternative services. Another interviewee shed light on this cultural problem adding that "a change of behaviors is not yet there" (Guaschino 2010). In similar context another interviewee addressed the issue by expressing:

> "…, but over all educate people to make use of the concept of carsharing. In essence, actions should be to share and educate people to detach from the deluxe vehicle sense." Rigoletti (2010).

However from another perspective, recent generations start to show a change in attitudes towards automobiles as indicated by one of the interviewees: "It is important to recognize that young people want to use the car not to own it" (Röck 2010).

Two out of the same group of interviewees acknowledges the relationship of **mobility purpose service and** the corresponding **infrastructure**. Stassin (2010) articulated that to achieve expansion of mobility purpose, it requires infrastructure. The other interviewee conveys on a similar notion by indicating that utilities companies with automobile manufacturers are "Depending on each other for the implementation of electric mobility." (interview with an innovation manager of an Austrian utilities company, November 10, 2010).

Relative to stakeholders two of the ten interviewees referred to **activities towards mobility**. Stassin (2010) denoted that perhaps small communities, utilities companies, gas stations or even supermarkets could be involved in this transition and then the automobile industry as followers at high scale. Kuen (2010) indicated that incumbents still focus on core business and there is cooperation of incumbents with entrants in the market.

In relation to the inferred **value propositions** four interviewees referred like this: Mastretta (2010) reasserted that their company, a established sports car manufacturer, orients to the entertainment aspect of the automobile targeting a sports car market niche and not mobility. Other interviewee from a mobility service provider expressed "after 3 years we really developed the business not only for "green" mind but also for a different focus mind on the ownership of the vehicle." (Röck 2010). Also, the interviewee Rigoletti (2010) suggested the mobility concept should consider besides its functionality some distinctiveness. The other interviewee stated, "The value content is leaning more and more to the electronics and software" (Meichsner 2010).

The researcher inferred responses related to business model **key activities** from four of the interviewees. Stassin (2010) indicated that there is a management inertia, the knowledge is scatter and miss integration, and actually he placed the example that R&D actions focused on component level and actually concept automobiles erroneously aim customer segments. An actually, interviewee from design school, Rigoletti (2010) indicated the mobility concept should consider design activities for interior space, safety, and materials. Putting emphasis on a systems approach, Meichsner illustrated "An example of a system level will consider variables such as time, routing, taking you to a train station, inquiry for parking available, such as in Vienna, and then take the train to Frankfurt." (Meichsner 2010). Röck described some of the activities as a mobility service provider "Our site provides to customers with a calculator to find the decision point to carshare or to rent-a-car for a particular case." (Röck 2010).

To sum up, this represent the salient points from interviewee answers. At this point, there is no OEM totally engaged in mobility services business. It is not occurring despite public opinion talks about it. The time projection for mobility purpose to happen goes from 10 to 20 years from now according to some interviewees. Part of the reason relates to the established automobile industry infrastructure.

There is a significant socio-political influencing factor for the transition from mobility purpose to automobile. This driver spans from the social motivations to the increasingly significant role of cities. Society aspects have relevance, since mobility is achieved from infrastructure to use. Examples of initiatives on mobility include de City of Vienna. Carsharing business is not new and in the case of Austria dates back to 1997. Small geographic area such as a city or region has greater preponderance to swing others.

However, the relationship of infrastructure and change of behaviors from society represents a cultural problem (mentality) that has priority over other aspects such ICT for alternative services. Besides, younger generations want to use the car not to own it.

Mobility purpose service requires infrastructure and that is part of the reasons for the future mutual dependence for the implementation of electric mobility by automobile manufacturers and electric utilities.

For activities towards mobility purpose, perhaps other entrants could be involved such small communities, gas stations, or even supermarkets. For now, incumbents concentrate on core business and some cooperation with entrants.

In reference to value propositions exist sports cars manufacturers, relatively new market entrants that target the corresponding market niche and not mobility. On the other hand, mobility service providers are moving from "green" mind to a different mindset on automobile ownership. Besides the mobility purpose concept should consider besides the functionality some distinctiveness attributes.

Business model key activities should consider the current management inertia in which the knowledge is scatter and miss integration. The focus on at component level R&D should be reverted to include the whole automobile concept with the aim customer segment in mind. Actually, one of the respondents indicated the mobility concept should consider design activities for interior space, safety, and materials. Besides, other interviewee added the systems approach to consider such as time, routing, train stations, and parking slot. Finally, interviewee from Mobility service provider indicated that the ICT activities they conduct provide support to their customer members to decide whether to take depending on the trip the option of carsharing or rent a car.

Question 4. ***How do you visualize the automobile business model innovation by keeping the balance between the attitudes to automobiles and maximizing current value for its customers?***

Q4 Answers Description

Response to this question addressed the building block for **value propositions** of the business model canvas. Eight of the same group of interviewees answers this question in the paragraphs below.

One of the interviewees, McElroy verbalized that "Different customers want different things" (McElroy 2010) and he provided the example of Ford and Microsoft with the system "MyFord Touch™" with interconnectivity with USB devices such iPod and free hands features purposely to attract customers to their automobiles. Stassin (2010) argued that people's instinct to move would not shift. On the other hand apart from mobility, he cerebrated that perhaps the current "I-what-to-show-off statement" could evolve with the advent of "automatic driving machines" to the privilege concept and the prevalent shaping of product to service—similar to that of current passengers (first, business, economy) class in airlines.

Kuen stated, "There is a link of emotions in fascination cars or pure mobility" (Kuen 2010). For example, he questioned the case of hybrid automobiles that in fact do not render a considerable fuel economy improvement due to the basic physics involved and some are buying them. He attributes this phenomenon to "emotions and marketing involved. Like making a statement: 'I-am-a-good-boy' caring for the environment." (Kuen 2010). On the other hand, Milani denoted that "Fascination is after usefulness" (Milani 2010). Another interviewee supported Milani's statement by proudly stating "or just add Italian design"☺ (Guaschino 2010). Milani referred to previously indicated "cultural problem" in the context of society that the natural "sequence is if you need it or not, whether it is nice or not. A new mobility system is mobility consciousness" (Milani 2010). Actually, interviewee from mobility purpose service provider adds, "the younger generations lifestyles are different from previous generations." (Röck 2010). Also, he indicates there would be different

target groups of customers depending on market conditions, for example currently in Shangai, China “the car population is already at levels of traffic congestion.” (Röck 2010).

Another interviewee correlated future customer needs to fuel reserves and indicated, “The future is that availability of oil, based on cost and fuel reserves, will not be accessible to everybody.” (Meichsner 2010). He added that the electric automobile could be less costly in reference to current “automobile structure and built-complexity. Mobility is a need of people.” (Meichsner 2010). Similarly, an innovation manager of an Austrian utilities company (November 10, 2010) denoted that ”Environmental concern is the main topic. Attitudes will shift. But still these cars will need to provide status. So, design attributes still will remain important and to be recognized as an electrical vehicle on the street”

All in all the responses to Question 4, diverse customers want different things. One path OEM is taking refers to add to automobiles ICT features to attract customers. The human intrinsic need to move will prevail for the years to come. The automobile fascination could evolve from distinction--"I-what-to-show-off" and "I-am-a-good-boy" statements--to service privileges. This could denote a transition from product to services.

Good design moves from usefulness to fascination. Needs represent the priority and emotional features represent a secondary purpose but still prevails a cultural problem in society to reverse the natural sequence. Mobility consciousness represents the new mobility system.

Younger generations lifestyles differ from previous generations. Needs of customers in cities with high car density should address the levels of traffic congestion but also the cost and fuel reserves that will not be affordable for all. The electric automobile motorization should be seen as a path to reduce automobile structure and built-complexity. "Environmental concern is the main topic" and attitudes will shift but automobiles will keep providing status. Utilities firm interviewee considered that design attributes will remain important and to be recognized as an electrical vehicle on the street.

Question 7. ***Does "name of the organization" approach new product/service development in a rapid, improved, cost effective, and near to its customers than any other industry players? Can you provide a practical example?***

Q7 Answers Description

Response to this question addresses the building block for **key activities** of the business model canvas. Three out of the eight respondents to this question answer Yes. Five of the same group elaborated on the answer but did not responded to the close question. Mastretta confirmed that their organization pursues that approach and attributed the reason for this to the corporate culture embraced mainly to "doing things well." (Mastretta 2010). McElroy (2010) denoted that majority of automobile manufacturers recognize the need to improve their product development process. However, he recognized that in comparison to other industries, the automobile industry is subject to increasing legislation and regulations on emissions, fuel economy, safety, and recycling make it more complex. He illustrated the case of cooperation and emphasizes the opportunity for OEMs under electric automobiles, since electric motors could be more like a commodity. Thus, OEMs could spin off electric manufacturing. The key issue relates to how to guarantee and preserve the cooperation and corporate culture independently of executive management.

According to Stassin (2010), Kiska has a notable capability to boost brand by refining concept and improving it. The other capability relates in specific to composite materials, manufacturing, and new materials invention. Kuen (2010) noticed that similar capabilities characterize other industries but the automobile industry has a stretch goal due to safety and other regulatory requirements. Milani (2010) denotes that it depends whether the automobile is a new automobile or a redesign or refresh. So, in practice is not really too long.

Röck gave his answer with Denzel focus summarized in the company slogan: "experience mobility experience Denzel" (Röck 2010). Meichsner (2010) gave an open response by expressing that TechMag intellectual property put their offer in a very competitive cost and in parallel they offer similar supreme materials properties like those of carbon fiber but in more affordable price like that of magnesium. A manager of innovation from an Austrian utilities company

indicated currently they are pursuing an electric mobility research project. Part of the project stages included to gather insight on electric mobility from citizens or customers to learn directly from Austrians at several levels of society about their needs and wants.

In short, Responses to Question 7, one of the respondents related the corporate culture to pursue this organizational approach for those referred key activities. Another interviewee acknowledged that OEMs recognize the need to improve product development process but the automobile industry is subject to regulatory complexities. OEMs under electric automobiles could exploit an opportunity to spin off for example electric manufacturing operations but the key aspect relates on sustainable cooperation and culture despite management changes. Other interviewee referred to organization capabilities to consult on brand boosting and intellectual property for materials development.

Another respondent coincided that automobile industry denotes similar capabilities to other industries but in the former is subject to more stringent regulatory requirements. One respondent referred to the distinction in terms of product development time between new or redesign platform. Interviewee from a mobility purpose service provider linked the company focus to the slogan for mobility experience. Another respondent indicated that intellectual property activities allow them to be competitive in price and supreme characteristics of products offered. Interviewee from an Austrian utilities company indicated that organization involves in research projects in electric mobility and organized a citizens' discussion to obtain needs and wants from them.

Question 12. ***Does "name of the organization" pursue serving future mobility demands? How? Which is the strategic framework?***

Q12 Answers Description

Mastrettta (2010), one respondent from a sports cars manufacturing, indicated that in fact they do not pursue mobility but to fulfill entertainment and emotional needs. Respondent from specialized media, McElroy (2010) expressed hearing automobile industry executives' statements related to being

mobility companies but the reality is different from those speeches. One of the newest options in cooperation and collaboration relates to that between automobile industry and electric utilities and emulates to similar phenomenon that occurred around eighty years ago also between automobile industry and at that time oil companies. Stassin (2010) responded they conduct design consultancy with impact on mobility. They observe some dynamics behind the issue. They, as idea tank, provide the main idea of conceptual projects.

Kuen (2010) denoted they jointly work with politics on strategies and structuring funding systems to establish mobility options in Vienna region. Two are the focuses: to support partners' human capital qualification and mobility with its corresponding funding. Milani (2010) indicated the first initiative in Italy for an academic bachelor program "Design of sustainable mobility and transportation means" supports the future mobility demands, since mobility is in relationship with society and different levels of government. Guaschino added "the skills and think tank as a sub-product." (Guaschino 2010).

From another perspective, Röck (2010) explained the different approaches they pursue to serve future mobility demands. They conduct market research with the University of Vienna and the WU. Another approach is by means of their call center. They follow trends of carsharing members and "why and what we may improve." (Röck 2010). They gather data on usage time and its patterns. The objective is to provide a carsharing service easy and without complexities. On his side, Meichsner (2010) stated that TechMag pursues to extend range by offering a better lightweight scenario for mobility. Innovation manager of an Austrian utilities company (November 10, 2010) indicated they pursue their strategy but do not have the specific answer. They are searching for other services around the electricity and proposing business models for our clients not only for electricity supply but also for the corresponding infrastructure except manufacture of automobiles.

On balance, some niche market companies like sport cars manufacturers confirmed absolutely they are not in the mobility business but entertainment. Meanwhile, traditional OEM executives in the media declare they are in the mobility business when in fact they are not. Cooperation and collaboration

between automobile industry and electric utilities emulates similar phenomenon that occurred 80 years ago between automobile industry and oil companies. Idea tank provides conceptual projects. They observe dynamics behind the mobility issue. Therefore, they provide consultancy with implications to mobility.

Cluster interviewee explained they work with politics on strategies and funding systems to establish mobility options in the region. One focus is on support partners' human capital qualification and the other is on mobility with its corresponding funding systems. Similarly regarding the academic aspect, academic institution in Italy supports future mobility demands by initiating a bachelor program. This academic institution claims that mobility relates to society at diverse levels of government. Also, a mobility service provider indicated they conduct market research with local universities. Besides, they follow the trends and patterns from carsharing members to support reasons to improve on what in specific. Interviewee expressed they search to extend range by providing a lightweight materials solution for mobility. Interviewee from Austrian electric utilities indicated they have their strategy but do not have a defined response. Thus, they search for other services and the business models around them apart from electric utilities.

6.2.2 Description of answers to Theme 1 customer stakeholder

This subsection summarizes by taking excerpts from answers to questions associated to this theme 1 (Appendix A2):

Question 1c. Could you describe your family in the context of needs for mobility purpose?

Question 2c. Could you summarize the number of trips purpose you need to make in a weekday and during weekends? Please include the travel modes if possible.

Question 3c. How do you and your family get interested in carsharing services?

Question 7c. Are you satisfied with the service offered? Are you aware of new services offered by your CSO in case they exist? Loyalty services,

Extensions of services, Discounts to other services, or membership rewards for example.

The interviewee, Schmid (2010), is a scientist at one of the most important medical institution in Austria. Interviewee and family live in the district 18th of Vienna. A stop of the tram is in front of their house. From house to his work at the hospital is around 1 kilometer distance. His wife works in the 9th district. She has driver's license but does not drive. They have two children. Both use to live with them. Their daughter now lives in an apartment. Their son goes to the University of Vienna that is around 2 to 3 kilometers far from the house. He takes the tram to go the university.

The interviewee and his family has mainly four trip purposes: shopping, going outside for excursions during the weekends or vacation, transportation for children activities and to go to work for his wife and he, and overall to return home.

Twelve years ago his last car broke down and have to replace it. He used to travel for around 5,000 to 7,000 kilometers per year. The car was mainly for trip purposes above mentioned. In the meantime, he found out he did not have to have a car. He used to pay around the equivalent of 24€ a month for the parking and now the current monthly fee he knows is around 50 to 70€. Then, I started to use a bicycle and my wife goes to work using public transportation, since parking at her work in the 9th district is scarce and expensive. For certain purposes they need the car for example for larger shopping trips or to transport items from the shop or to visit friends outside the city in the countryside. For short trips perhaps I take a taxi or my friends lend me a car but sometimes becomes difficult to organize. Thus, carsharing was a good option.

In general, he is satisfied with the service. The cars are very clean never a problem nor damaged car nor that the organization did not inform. He receives newsletters by e-mail. In a recent newsletter, they informed us they changed the fees to a cheaper charge for journeys above 100 kilometer.

6.2.3 Analysis of answers to Theme 1 customer and organizations stakeholders

The responses from the interviewees suggest that an OEM transition from automobile to mobility purpose services call for very few exceptions. However, the generalized perception from the group of interviewees induces to consider a period between 10 to 20 years to happen. Part of the reason mentioned is the established automobile industry infrastructure. This infrastructure aspect can be referred to the notion of the sunk costs effect. Thus, this explains why the incumbent still concentrates on its core business.

Out of the three external influencing factors, the social-political influencing factor or driver was addressed by the interviewee group much more frequent than the energy balance and economy influencing factor. The researcher reflects on this fact as an evidence of how really institutionalized is the automobile industry. From interviewee responses, the relevance of the city to spread the transformation towards mobility purpose is presented and also together with the city the infrastructure to in need of change to allow the transition. Therefore, the city as a system and the infrastructure as structure emerged as necessary elements to induce a change on behaviors. Thus, mobility purpose requires besides a change in the automobile business model a change in society behaviors basically by education and the city (system) around the automobile. Responses suggest that incumbent and new entrants start to collaborate on the infrastructure aspect.

The value proposition is moving from environmentalist mind to an automobile non-ownership mind. This represents a change in attitude more holistic to include the energy balance and the economy driver. Part of that could be attributed to the phenomenon more frequently seen that younger generations' interests focus on using the automobile but not to own it.

The building block key activities need alignment to value proposition. The evidence was indicated by an interviewee when referring to management inertia that is characterized by scatter knowledge and missing integration. R&D activities at system or component level miss the scope of the whole purpose of the automobile. That is the reason two of the respondents suggested that mobility purpose concept should include design activities and systems

approach. No wonder, the carsharing company interviewee indicated they provide support to their customers with ICT activities for decision making.

The established automobile industry business model persists on offering a value proposition based on attracting customers to own automobiles with ICT features on board. The human intrinsic need to move will prevail for the future but the researcher reflects that this not necessary translates into a value proposition based on automobile ownership. The emotional aspect of the automobile as a product could change from product with fascination to service with privilege in the transition from automobile to mobility purpose. So, the current social status provided by the automobile needs to change.

Contributing to that purpose, the notion of good design provided by interviewee from an Italian academic design institution applies at this point moving from usefulness to fascination. Then, the cultural problem in society emerges since emotional features reverse this harmonic cycle. So, a value proposition to build value for its customers needs to consider younger generations lifestyles, the needs of customers in high density population and its congestion levels including automobile passenger occupancy, the cost of automobile ownership, and the trend that cost of fuels will not be affordable for all.

Said that, the researcher reflects that one interviewee insight suggesting electric automobile to be seen as solution to reduce automobile structure and built-complexity can be extended to a systems scope to also reduce operation complexity to build value for its customers.

Effective new product or service development was linked by interviewees to corporate culture in the context of the organizational approach. Regulatory requirements impose additional complexities to the new product development process that can be seen as an opportunity more to support the mobility purpose transition, since automobiles circulating in the city areas with the speed limit restrictions could not require such stringent safety requirements. So, electric automobiles besides the potential to spin off manufacturing operations could also could make safety and regulatory requirements less complex, for inner city automobiles.

The research project on electric mobility conducted by one Austrian electric utilities firm demonstrates the approach of new product development in closeness with its customers or users by means of a citizens' discussion.

Interestingly, the statement from sports car manufacturer interviewee confirming they are not involved in the mobility business but entertainment can be generalized to all manufacturers selling niche sports cars for those genuine emotional purposes. On the contrary, the approach by some mainstream OEMs declaring they are in the mobility business with sports car niches represents a rhetoric fallacy to the value proposition offered.

One interviewee compared the cooperation and collaboration between automobile and utilities companies pursuing mobility purpose demands to that in the past of automobile and oil companies. This brings the notion of recurring business cycles in the automobile industry that can refer to previous lessons learned. At cluster level, the interface with politics and academia for funding and develop human capital with the mobility purpose in mind is evident. Other interviewee focused on the implementation aspects such as innovative use of materials for new applications. An in the case of an Austrian electric utilities company, they experiment with research projects on electric mobility to find services and business models in a sort of search of business model cycle.

Customer stakeholder interviewee confirms his need for a mobility purpose solution. In his account, the researcher denotes the system, structure, and behaviors relationship present in harmony. The city (system) and its safe and co-modal public transportation and bicycle paths (subjacent structure) determine the behaviors (no ownership of automobile for mobility purpose) of the carsharing member. This includes also awareness of his four trip purposes and the distinguishing economics involved between taking a product or a service.

6.2.4 Synthesis of answers to Theme 1 customer and organizations stakeholders

Respondents generalized perception that it will take between 10 to 20 years for a transition from automobile to **mobility purpose** leads to suggest that the established automobile industry infrastructure is subject to the sunk costs effect. Critical literature review, Besanko et al. (2007, 434-436, 590) indicated that

sunk costs effect induces companies not to innovate. This notion explains why the established automobile industry adheres to its current product concept offer preventing to move to mobility purpose services.

Responses from interviewees confirmed the **institutionalized** characteristic of the **automobile industry** supported by the larger **society** as explained by Vecchio (2000, 336) when referring to population ecology perspective and the organization phase of retention. So, as expressed before a change in the automobile business model requires in parallel a change in society behaviors by education. To address **society behaviors** the researcher recalls the previous systems notion detailed in the chapter for the institutionalized automobile industry. Forrester ([1968] 1971, 1-1, 1-5, 4-2) details the notion of systems and later Knoflacher (2005, 4) adapts to an urban setting indicating that a city is a system and the subjacent structure of the system causes the behaviors in that system.

The customer stakeholder interviewee's experience also evidenced this systems approach. In his account, the researcher recognizes the system, its subjacent structure, and behaviors relationship present in harmony. The city (system) allows for usage of alternative modes of transportation such bicycle, public transportation, or taxi. The system subjacent structure (infrastructure) of the city includes a safe and co-modal public transportation system available. This subjacent structure determines the behaviors (no ownership of automobile for mobility purpose) of the carsharing member including also awareness of his four trip purposes and the operating cost involved between taking a product or a service.

Interviewee's group confirmed the trend observed by other practitioners and scholars, younger generations attitude change from automobile ownership to usage. Management consultant Brook (2004, 4) found for example that members of carsharing organizations have an average age of 35-year-old or members of the Generation X type of population group. Reed (2010) reveals survey results from telecom industry in which younger generations prefer a cellular phone to an automobile. Reed (2010) warns that young consumer attitudes towards automobiles embody both and opportunity and a threat for the institutionalized automobile industry. Thus, empirical and critical research literature on the

institutionalized automobile industry strongly suggest that demographics by age group represent an **early warning trend** for the established automobile industry related to a shift in attitudes and behaviors towards automobiles. This shift in behaviors could diminish eventually the larger society support of goods produced by the automobile industry causing to lose its current organization phase of retention (institutionalized). Therefore, the value proposition should start to be reoriented to include mobility purpose services.

However, from interviewees' responses the institutionalized automobile industry continue attracting customers in need of **mobility purpose** with a **value proposition** based on automobile ownership with additional ICT features on board. The human intrinsic need to move will prevail for the future but not at the expense of a value proposition based on automobile ownership. As one interviewee suggested the fascination aspect of the automobile as a product could change to service with privilege for the transition from automobile to mobility purpose. The researcher suggests in terms of segmentation strategies this could be a transition from attitudinal to aspirational variables, resembling the latter attitudes but in the future. From the critical literature review, Nordhielm (2006, 62-63) conveyed segmentation strategies addressing the attitudinal and aspirational variables to understand the customer. Besides, the reader should keep in mind the notion of good design provided by interviewee from an Italian academic design institution that applies at this point moving from usefulness to fascination.

One of the interviewees from a sports car manufacturing reassured they are not involved in the **mobility business** but entertainment. Interestingly, this interviewee's insight prompts the researcher to the chapter 3 where it was presented scholar (McLuhan [1964] 1994, 218), who predicted that the automobile would follow the path of the horse, since the horse lost its function in transportation but made a triumphant return to entertainment. This suggests that niche market and mainstream market purposes for entertainment or mobility respectively should be genuine. Otherwise, the organization could fall in a rhetoric fallacy to the value proposition offered like that when some mainstream OEMs declare they are in the mobility business with sports car or even SUV niches.

Besides, the insight from another interviewee that the trend in mobility services is also in transition from a **value proposition** from environmentalist mind (focus on effects) to an automobile non-ownership mind (focus on cause) prompts to ensure that the value proposition (to build value for its customers) for mobility purpose should consider the following attributes cross-referenced to the chapters 2 and 3: younger generations lifestyles (Buytendijk et al. 2008, 3; Reed 2010), the needs of customers in cities and its congestion levels including automobile passenger occupancy and parking scarcity (Drucker [1981] 2010, 169-170; Inderwildi et al. 2010, 28, 35; Lovins et al. 1999, 151; Sachs 2009b, 25-27), Cost avoidance of automobile ownership including its negative equity and operating cost (Bergmaier et al. 2004, 6-8; Ragsdale 2010, 11-13), and the trend that cost of fuels will not be affordable for all (Kohn 2010, 264; Monheim 2003, 84; Sachs, 2009a; Shaheen et al. 2009, 35; Stiglitz 2007, 172). This also represents a change in attitude more holistic to include the combined **energy balance and economy factors**.

Key activities inferred from the interviewees' insights reveal that there is a management inertia characterized by scatter knowledge and lacking of integration. The R&D needs a broader reach to include the whole purpose of the automobile. These insights are in line with the key activities category of problem solving by Osterwalder and Pigneur (2010, 37). This means that instead of limiting key activities to production these should be realigned to provide solutions to customer-specific problems such mobility purpose. Also, the researcher visualizes the third category of key activities, platform/network, from carsharing mobility services provider interviewee's insight. This interviewee referred to their support to customers with ICT activities for decision making such as an application to decide whether to car share of to rent for an specific situation. Overall, another significance of identifying key activities resides in the visualization of them to understand business model fit notion, as referred by Morris (2010, 728), for future engagement in collaboration programs with other firms as referred by Kanter (1994, 103) in the critical literature review chapter.

6.3 THEME 2: Structural Coupling; Organic Form; Fractal structure; Agile Enterprise; Anticipation; Listening Post–Trend Scouts; Customer in the Front-end; and Business Model Canvas: Customer Segments.

6.3.1 Description of answers to Theme 2 stakeholder organizations

Question 5. ***How do you observe automobile industry process of listening to the needs of its customers or users?***

Q5 Answers Description

Rigoletti (2010) explained that by educating associates, they could be receptive to customer needs in a cultural context. He placed an OEM example. Nissan recently announced the opening of a styling center called "Nissan Design America" in the city of Mexicali in the Mexican northwest state of Baja California Norte. Mastretta (2010) described their process of listening to the needs of their customers of sports car in three aspects. They contacted potential customers, they attended international autoshows to conduct a market test and gather points of view and exchange, and they pay attention to media from which they obtain trends and responses to interviews they were subjected.

McElroy (2010) claimed the company GM is planning for the future with their AUTOnomy concept that besides the ICT and guiding technology described before includes a body "top hat" on chassis configuration. The AUTONnomy concept proposes a business model that considers selling the chassis and leasing the top hat for the specific application. Stassin (2010) argues the automobile industry has a highly specialized process to listen to customer needs. Besides this aspect, the automobile industry is subject to safety product regulations that render products that are byproduct of listening to customer plus compliance to safety regulations. Kuen (2010) also argue that in the relationship of the automobile industry and its customers, the latter are not prepared to articulate what they want. Then, the automobile industry searches for a balance between needs and wants as well as finances. The automobile industry strives to sell automobiles. Milani assured that:

> "The problem is not really listening to the customer but not conditioning them and not to look to create them new needs. The target is not only for one customer but the whole society." (Milani 2010)

Guaschino (2010) provided an example of this attitude with the advertisement campaign "Fiat 500 wants you" for which a website was built to allow public to place its "say" for the automobile design but not to own one. Milani (2010) clarified that the concept behind this advertisement campaign targets a popular and affordable automobile except the label price niche did not addressed that.

Röck (2010) summarized the process in an OEM saying spread inside the automobile dealer business: "whatever we produce they are going to sell it". NGO (non-governmental organizations) and government petition for environmentally oriented automobiles. However, there are two reasons for taking them some time to appear commonly: economical aspects (corporate customers such electric utilities and companies' engineering development are the main buyers) and charging infrastructure.

Meichsner (2010) stated not seen this process working well. He presented the case of GM concentrated on revenue and not too much on listening to customer needs. He declared, "They [OEMs] overlooked the need for smaller cars. When the financial crisis came, nobody bought big cars. That was the root cause of going bankrupt." Meichsner (2010). Other approaches to listen to customers come from BYD in China and VW in Germany. The latter looks for presence in different market niches. He argued maybe the strategy would not succeed, since the automobile industry has intrinsic massive capital expenditures causing low flexibility in "changing markets." Meichsner (2010). An innovation manager of an Austrian utilities company (November 10, 2010) denoted some OEMs are faster (like Renault and Peugeot) than others that are watching and lingering. This interviewee sees German automobile industry leaving others to lead the electric mobility implementation but at the end all OEMs are involved in certain way.

In summary, a kind of process of listening to the needs of customers includes education of associates to be receptive to customer needs in cultural context. Example of this approach is Nissan with its recent styling center opening in northwestern Mexico. A sports car manufacturer three aspects of its process by contacting potential customers, attend autoshows with prototypes or concepts to conduct market tests and obtain insights, and from media from which they obtain trends and responses to interviews to them. One interviewee illustrated this process with the conceptual AUTOnomy by GM. This concept "top hat" and chassis concept includes a business model that considers selling the chassis and leasing the top hat. According to other respondent, the automobile industry process of listening to customer needs is highly specialized but also concepts include the safety regulations to which the product is subject. Interviewee from cluster region argued in the relationship of the automobile industry and its customers, the latter are not prepared to articulate what they want. Thus, automobile industry strives to sell automobiles.

Interviewee from an design and art academic institution assured that the issue is not whether to listen or not customer needs but not conditioning them and not to search to build new needs. The focus should not be limited to the customer but the whole society. One of the interviewees presented the electrical mobility case in this listening to customer process. He explained that two of the reasons for not occurring refer to economical aspects and charging infrastructure. Another interviewee indicated that OEMs that do not listening to customer needs could become bankrupt. Other OEMs took a different approach by targeting different market niches. The interviewee questions the success of this strategy, since the automobile industry requires intensive capital investments causing low flexibility. Other interviewee indicated for the electric mobility some OEMs are leading the way and others are spectators but at the end all are involved in some degree in electric mobility.

Question 6. ***Have you heard of automobile industry trend scouts? If yes, how will or do they operate?***

Q6 Answers Description

The term trend scout among the interviewees group needed clarification. After general description of the term, four respondents identify it with related activities. Other three respondents indicated they did not know the term.

McElroy (2010) described their general function as searching for trends around the globe in particular psychographic issues. One trend the interviewee observes is the migration to cities and the advent of younger generations in develop economies. Those younger generations are dissimilar to the current generations. For example in Japan those younger generations are not attract by car fascination. The advantage for those generations is technology. Stassin (2010) revealed that actually those are the services they provide. The process includes scenario generation, people wants, and trends in the industry and company in particular. However, this process does not have influence on the behavior of automobile industry management. He placed the following analogy: "It is likewise deciding on how spicy or salty but not deciding on veggie or meat." (Stassin 2010). Kuen (2010) indicated this trend scouts are more common in the fashion industry. He explained that OEMs are listening also to tier 1 supplier. However, he recognized not knowing if they are standard in the automobile industry and whether they have influence on the decision making process of the firm. Meichsner (2010) explained that trend scouts observe where the trends are moving and study younger generations and people's behaviors, taste, style of dressing, films, computer games, and the type of automobile they would drive.

Röck (2010) recognized not hearing before the term trend scout. However, after the interviewer provided a little background on the term to trigger thoughts, he said the answer would be yes, since that function is part of his job. He explained like this:

> "While promoting business relations in China, India, and Norway, I am able to recognize future trends and judgment for the development of carsharing and Thinkcity as well as China and India markets."

Milani (2010) clarified not hearing the trend scout name before but the function of studying trends resemble that with different name in style centers. However,

this function is inclined to the combination of advertising and design. Also, an innovation manager of an Austrian utilities company (November 10, 2010) responded not knowing the term nor automobile manufacturers using the concept.

Briefly, according to four respondents trend scout includes the following functions: searches around the globe for psychographic issues, observes migration to cities, and studies younger generations in develop economies. For example in Japan, the automobile does not attract younger generations. Another respondent indicated they do provide those services including scenario generation, people desires, trends in the industry and in specific to the company but still those services do not influence on automobile industry management behavior. Other respondent clarified not being sure whether the automobile industry use trend scouts and if they influence the management process. Another interviewee included in the trend scout function studies on younger generations and people's behaviors, taste, dressing style, films, video games, and type of automobile they would drive.

Question 8. ***What is the corporate culture of "name of the organization"? And, How is fostered the cultural fit among associates and team members?***

Q8 Answers Description

McElroy (2010) considered this question a tough one. Highly relevant to corporate culture is the agent of change. Usually, it takes time. However, recent experiences demonstrate is feasible to compress the traditional timing to achieve a dramatic corporate culture change. Among those within the automobile industry are Hyundai and Ford Motor Co. For the latter, Alan Mulally accomplished the change of the corporate culture by defining clear objectives for everybody within Ford and monitor them on a weekly basis. Associates perception is that they are doing the right thing and morale is high. Mulally background in aerospace industry, based on platforms, provided the field to apply his transferable skills including network with similar union.

Stassin (2010) revealed that they do not have a written corporate culture, since that according to him could lead to make it static. According to Kuen (2010), the corporate culture among ACVR partners can span within extremes of team decision process to kind of patriarchal approach. Milani provided the following insight: "For us it is very important the pair design and culture, but without this pair is not easy to speak" (Milani 2010). The process involves a "social attribute" to satisfy needs and not exclusively the "nice" feature that is the last consideration. Therefore, the optimal quality represents a balanced combination of needs and nice features. The interviewee added, "Design is not styling exercises." (Milani 2010). Guaschino added, "the meaning is more important than the beautiful design, the relationship with the object." (Guaschino 2010).

Röck summarized like this: "people needs challenges." Röck (2010). Denzel corporate culture is nurtured by means of responsibility. Meichsner (2010) described TechMag corporate culture in the context of a network organization: lean, flexible, and fast moving. An innovation manager of an Austrian utilities company (November 10, 2010) explained their corporate culture resides in their cooperation approach within internal business units. For example in relation to the electric mobility research project, this cooperation approach with internal business units helps to define their role as a utility company in the context of the electric mobility system.

In brief, highly relevant to corporate culture is the agent of change. For example, Alan Mulally by Ford accomplished a change of corporate culture by defining clear objectives for everybody and monitor them on a weekly basis. Others do not have a written corporate culture to prevent making it static. In a regional cluster, corporate culture can span within extremes of team decision to kind of patriarchal approach. For an academic institution, the pair design and culture is very important. This process involves a social attribute to satisfy needs and not exclusively the nice feature that is the last consideration. Another interviewee indicated that people need challenges and corporate culture is nurtured by responsibility. Other interviewee explained that corporate culture resides in their cooperation approach within internal business units.

Question 9. ***Does "name of the organization" have any early warning to find out modifications in the business conditions that could influence its results? Is there within automobile industry any awareness of the agile organization principles? Can you provide an application example?***

Q9 Answers Description

McElroy (2010) indicated the automobile industry in general has been announcing the implementation of agility since 20 years ago. Business environment is changing and the complexity of product development is greater, due to new people, technology, and regulations. A step beyond includes customers in the product development process and get them involved in a business simulation exercise. Stassin (2010) responded that they are active in different sectors with different clients. Therefore, they have an unusual information basis as entrepreneurs and as an international scope company. Their capability resides in a constant mechanism to map from other business. Some international corporations are mainly production oriented without strategy of brand or service. Better predicting than others results from these elements. Milani (2010) confirmed they have such early warning. Relative to mobility system, they collaborate with several partners and universities worldwide with Turin as home base. Partnership need resides in developing a current program, academics, and abilities. Their systemic approach consists in every year to partner with at least two enterprises. The interviewee stated "It is impossible to think for yourself alone" (Milani 2010).

Röck (2010) considered a mix of both notions early warning and agile organization necessary to find out modifications in the business conditions. Denzel carsharing team obtains information from members using Facebook application. Internally, comments are distributed to the corresponding area. Besides, every month Denzel carsharing team, with stringent regulations, keeps control economic and financial aspects. He added they do not have an explicit policy for agility but top management pursues to place the right person to the right matter and change management has relevance in this approach. For us redirect is relevant to address customer needs.

Meichsner (2010) confirmed they have such an early warning system and trend scouts tell them the need for a type of product. The ideas become design and then product at affordable price. For that to happen, technology needs to be flexible. Therefore, a new trend for OEM that in the past looked to have their manufacturing plants will now seek the opposite approach. Another aspect is the organization by itself of the business. Agility seems transcendental when applied to marketing. In terms of operations, the fundamental question is how the breakeven point is achieved to make a profit in all sorts of situations.

Kuen (2010) responded partners of ACVR do not have such early warning because of the normal business cycle time. For the long term, they only have general approximations and mostly noticeable in SME. An innovation manager of an Austrian utilities company (November 10, 2010) revealed they have a conservative approach for the decision making process very clear.

On balance, the automobile industry has been pronouncing the discourse of implementing agility since around 20 years ago. Business environment is changing and added complexity of product development. Thus, a step ahead should include customers in the product development process. Other respondent revealed they are involved across industries with different clients. Their capability resides in the constant mechanism of mapping from other business. These allow them to better predict than others.

Collaboration brings the organization to a position to find the right approach for a mobility system. This collaboration is conducted under a systemic approach. Other respondent indicated that both notions early warning and agile organization are needed to find out modifications in the business conditions. However, they recognize not having implemented explicit agile concepts. Another interviewee explained that a combination of early warning and trend scout tell them the need for a type of product. Agility seems transcendental when applied to marketing. Interviewee from a regional cluster and electric utilities company confirmed their organizations do not have an early warning system.

6.3.2 Description of answers to Theme 2 customer stakeholder

This subsection summarizes by taking excerpts from answers to questions associated to this theme 2 (Appendix A2):

> **Question 4c. Please tell me a typical day, perhaps a weekend, when you use carsharing with the whole family?**
> **Question 5c. What is the name of the carsharing organization (CSO) you have membership? For how long have you been a member of carsharing?**
> **Question 11c. Regarding the fleet, would you suggest some particular design features for purpose carsharing automobiles?**
> **Question 12c. From your perspective as a member of carsharing, what suggestion could you make to the service in general? Have you experience issues with reservation of automobiles or vehicle availability?**

Schmid (2010) explained that in those days his sister has a house in the countryside. When they wanted to visit her, carsharing was the easiest way to do it. Their children were in their 18 year-old.

Initially, he believes its carsharing service was called Denzel Drive. Now, it has the name Denzel Mobility Carsharing and he has been member for around 7 years.

He does not believe that particular design features for purpose carsharing automobiles should be incorporated. He believes modern automobiles are very well designed. He selects the carsharing automobile by cost or by utility purpose to transport bulky items not by car styling preference.

Schmid (2010) reflected on the following suggestions for carsharing service: Electric automobiles for the city, since range would be below 100 kilometers. He reflected on the reason perhaps not incorporated as mainstream for carsharing due to the emotional elements surrounding the established automobile. He elaborated that mainly the type of car, size, interior space, and power has connection to sell the automobile because of emotional grounds. He also referred to the unused interior space in the automobile and the fuel

economy reduction due to dead weight. He reflected that perhaps this whole issue has to do more on policy making but not safety requirements to the automobile industry.

6.3.3 Analysis of answers to Theme 2 customer and organizations stakeholders

Education of associates to see customer needs in a cultural context is being implemented by some OEMs. Others, like the sports car manufacturer interviewee include the customer in the front-end of its product development process. Ironically, the AUTOnomy concept by GM provides evidence of the efforts a few OEMs are placing towards mobility purpose. However, still is there in the business model some sort of ownership, not necessarily the whole automobile like today, but the chassis only. The current process of listening to customer needs is highly specialized since includes also the regulatory affairs such safety. This is again a reminder of the point made in the previous analysis in reference to reducing complexity by redirecting the value proposition towards mobility purpose.

An interesting insight among others came from the cluster interviewee by arguing that the customer is not really prepared to articulate what they want to the automobile industry. This insight confirms and triggers some thought back to previous topic discussed on the society and the change of behaviors. Also, it is identified as cultural problem to address in terms of automobile ownership and the energy balance factor. Even more, this notion is supported by another interviewee stating that the main point is not whether to listen or not to customer needs but not conditioning them or searching to build them new needs. So, besides the customer, the overall society needs should be addressed. In this sense, another interviewee limited the scope of not listening to customer needs for the cause of financial failures. The researcher places this statement in the context of the overall society needs and could say that in fact OEMs were listening to the short term customer needs or appetite for SUV emotional attitudes but not society needs. These needs society interact with the economy driver including a combination of credit restrictions and fuel price increase.

Again, the sunk costs effect notion is retrieved from interviewee statement that automobile industry is characterized by intensive capital investments causes low flexibility. Thus, this is part of the reason some OEMs are leading the way and others just spectators regarding the electric mobility.

In general, the respondents did not recognize the specific term trend scout. However, after the researcher provided little background the trend scout activities, the interviewees recognized the concept and provided details recorded in the previous description and the interview transcripts. Interesting is that two of the interviewees indicated not sure whether a trend scout could influence behavior of automobile industry management.

The significant role of the corporate culture change agent was emphasized by one of the interviewees. However, as in similar question the response was that the key issue is how to sustain that corporate culture no matter the change management. The researcher believes the insight provided by one of the interviewees in terms of the process that involves a social attribute to satisfy needs and not exclusively the nice feature that is the last priority. This should be a guide not only for top management but also from shareholders to ensure the corporate culture to last in spite of change on top management.

There is a generalized notion that business environment is changing. Interviewees appreciate the issue of having an early warning mechanism in a sense that provides information for the decision-making process. Among those early warning mechanisms include: involvement of customer in the product development process and collaboration with other organizations to get insight from other industry sectors. However, the concept of an agile enterprise seems to the researcher that is not well understood and others interviewees recognized not having implemented an explicit agile enterprise approach.

The customer stakeholder interviewee has been a member of carsharing service provider for almost 7 years. Carsharing suit his and his family needs for recreation during weekends, shopping of bulky items. He does not believe that design features for purpose carsharing automobiles should be incorporated and that modern automobiles are very well designed. However, in his suggestion for carsharing service he mentioned two aspects that make the researcher to reconsider to balance his previous response. His two suggestions include added

to the carsharing fleet electric automobiles, since the range is below 100 kilometers and perhaps obtain some redesign towards dead weight reduction and the consequent fuel economy and automobile passenger occupancy improvement.

6.3.4 Synthesis of answers to Theme 2 customer and organizations stakeholders

Two interviewee's insights depart beyond the mainstream concept of **listening to customer**. One of them argued that customer is not really prepared to articulate what they want to the automobile industry. The other stated that the main point is not whether to listen to or not to customer needs but not conditioning them nor searching to build them new needs. Both interviewees' insights prompt to three scholar notions.

The first insight refers to **structural coupling** by Hoverstadt (2008, 173-174). The structural coupling portrays a relationship established between organism form with their environment to preserve a fit to endure and coevolve. Stakeholders represent the first structural coupling. Strategic risk represents a potential condition to break the structural coupling between the organization and its stakeholders. Thus, missing stakeholders could cause a risk for the organization. Customer is just one of the stakeholders of the organization.

The second insight prompts to Schumpeter (1939, 1:85) when he referred in discussion on the rise of the automobile industry that the need as far as economically relevant was created by the industry, and people could obviously have gone without automobiles. Besides, Drucker (2003, 18-20) states that businesspeople build markets. Both notions suggest that the cycle could be reversed by the automobile industry in **collaboration** with government. Regarding this collaboration aspect, Drucker (2003, 52) refers to management's responsibility for the social impacts of its organization. On the other side, Russo et al. (2009, 7) suggest that collection of stakeholders as well as national governments concern for their local automobile industry competitiveness in international markets have the obligation to actively participate in reshaping the automobile business model.

Another interviewee denoted that the cause for those OEMs in bankruptcy was mainly for not listening to customer needs. The researcher could say that in fact OEMs were listening to customer short-term fascination needs and appetite for SUVs but not society stakeholder needs. Stiglitz (2007, 172) criticizes Detroit strategy of disregarding global warming to sell high profitable "gas guzzlers" (SUVs previously referred by Ingrassia [2010, 116]) and describe it as "immoral" and paradoxically unprofitable. This phenomenon can be explained with the psychological tendency of "discount the future" that indicates that managers underestimate future cost effect and respond in the short-term yield but calamitous in the long-term.

Also, customer stakeholder interviewee perspectives of not necessary design features for carsharing purpose automobiles should be weighted with other organization stakeholder's views that perhaps demand particular design features for carsharing purpose automobiles.

The replies from the interviewee stakeholder organizations suggest there is not a consistent idea on the **agile enterprise** concept. However, some of the interviewees referred to isolate agile enterprise constituents such flexibility and early warning mechanisms. One interviewee referred to the aspect that the automotive industry characterized by intensive capital investments causes low flexibility. Then, the researcher could refer again to the sunk costs effect notion by Besanko et al. (2007, 434-436, 590) previously presented in the chapter for institutionalized automobile industry. In the chapter for conceptual framework, Drucker ([1974] 2010, 56) demonstrated the notion of **anticipation** or early warning to identify impacts and particularly unintended and unforeseen impacts to start working to eliminate them. Also, in the conceptual framework chapter, the researcher referred to Hoverstadt (2008, 172) who suggest that besides agility to react the organization needs the skill to anticipate risks. One respondent indicated they conduct collaboration with other organizations to get insight from other industry sectors.

Similarly, the concepts of **trend scout** and **customer in the front-end** denote application opportunities on an agile business model innovation. As part of the building block for customer segments, the researcher positioned trend scouts. At first, the group of stakeholder organization interviewees did not recognize the

trend scout term. After giving them some background of the functions of a trend scout, the interviewees provided their insight. Some of them expressed they were not sure trend scout could really influence automobile industry management behaviors. As previously seen in chapter 2 for critical literature review, Gassmann and Gaso (2004, 6) identify trend scouts as one of the three kinds, or as they refer archetypes, of organizations forms for listening posts. They define listening post (LP) like this "a peripheral element of a decentralized R&D configuration with a specific strategic mission and sophisticated mechanisms for knowledge sourcing." (Gassmann and Gaso 2004, 4). Mankowsky (2009, 02:45) provides practitioner insight on Gassmann-Gaso listening post concept and the intricate complexities a competitor could experience in trying to imitate segmentation strategies based on aspirational variables as expressed by Nordhielm (2006, 62-63). On the other hand, segmentation strategies aligned mainly to demographic variables become more easily imitable by competitors. Therefore, a combined segmentation should target specific customer needs.

Two of the respondents indicated they involve **customer in the front-end of their NPD**. The researcher inferred that respondent from the sports car manufacturer applies the customer in the front-end of their NPD. The other respondent applies the concept in similar manner but also as a means for anticipation or early warning mechanism. In chapter 2 for critical literature review the researcher referred to Gassmann et al. (2006, 47) who propose to involve the customer at the front-end of NPD innovation activities. For the researcher this notion contributes to the building block for value propositions.

One of the interviewee provided two examples of contemporary corporate culture change. However, these success stories are dependent on the change agent or leadership. These company examples still resemble the mechanistic organizational form. Actually, the interviewee reflected on how to sustain that corporate culture no matter the change management. One suggested solution aligned to the agile enterprise concept refers to the organic management system first defined from empirical research by Burns and Stalker (1961, 119-121). **Organic management systems** are better suited for unstable environment in contrast with mechanistic that is the organizational form for more stable

environments. Organic management systems provide the answer to interviewees generalized notion that business environment is changing. In fact, Burns and Stalker (1961, 11) define organic systems as the ones that have better adaptation to changing conditions. In addition, Sherehiy et al. (2007, 457-458) summarize the concept that an agile enterprise should have the characteristics of adaptable and flexible and needs to hold an organic organization approach. Related to the structural aspect for this organic management system, Hoverstadt (2008, 36-37) and Atkinson and Moffat (2005, 33-36) convey the notion of **fractal structure**. Writing on the same topic Warnecke (2009, 33) provides the main attributes for the fractal company like this: dynamics, similarity, self-optimization, and self-organization.

6.4 THEME 3: Business Model Life cycle; Organizational Process; Business Model Canvas: Revenue Streams.

6.4.1 Description of answers to Theme 3 stakeholder organizations

Question 2. ***Do you agree with the following statement? Traditionally, global automobile industry has been successful in product and process innovations but needs further development in business model innovation. Please elaborate accordingly.***

Q2 Answers description

Five out of seven interviewees confirmed that the automobile industry has done little regarding business model innovation. One interviewee, instead of providing a yes or not, went beyond the close question and reiterated the need for the "link of the social mood with innovation system inside the company" (Milani, 2010). The same interviewee mentioned that the future on mobility should be supported by coherent social and private sectors working together. Milani (2010) illustrated with the example in Italy of a well-known national OEM that appears to be private but in fact is government owned and the outcome are social political products instead of products for the market. This last step seems to be the big issue. The other interviewee, from an Austrian

electric utilities organization, reflects that the automobile industry does not need a new business model, since other companies provide options to automobile ownership.

Among the interviewees recognizing the low activity in business model innovations within the automobile industry, McElroy (2010) indicated that purchasing and logistics processes the automobile industry has been a role model for other industries. Some of the few examples in the past refer to mergers and acquisitions. Examples were one OEM buying and adding to its brand portfolio three other premium brands. Other example was the joint ventures to develop and manufacture a specific common subsystem or component. One recent is the exchange in equity for example among Renault, Nissan, and recently Daimler. The significant aspect is how to deal with the complexity. All these instances not yet applied to mobility for at least the next 10 years.

Stassin provide this insight: "It is not a growing model, for sure not." (Stassin 2010). At social level, we are not able to modify it and it is very complex. Interviewee trusts that competitiveness could bring actions for change and redirect it towards mobility. Kuen (2010) explained that business model innovations have foundations on cooperation and collaboration. The issue resides on finding the appropriate partner. Cooperation schemes do not evolve in the outlook, when these are based on friendship and tradition.

Röck (2010) mentioned that the automobile industry needs development of a new business model. One OEM is experimenting with a mobility purpose business model. Experimental OEM business model concept makes use of one-way system. On the other hand, mobility services provider use a two-way system. In their experience, customer member pattern of usage includes 90% by public transportation and 10% for individual mobility by carsharing. Their insight is that "It is not an exchange of modes of mobility." (Röck 2010). Collaboration programs have with public transportation is relevant for the business model to represent a supplement for the "last mile" (Röck 2010). Younger generations have a different way of thinking in reference to mobility but not owning an automobile. Priorities move around vacations or the latest iPod. They are in the development process of a mobility card to provide

different alternatives besides the carsharing including public transportation, railway, and others. According to Röck (2010), the concept is to sell mobility not the car. Meichsner (2010) referred to other industries such as computers in which components are kind of commodity but differentiation results form services and software.

In any case, according to five of the seven respondents the automobile industry needs further development in business model innovation. The other two interviewees elaborated on the question. One of these two interviewees denotes there is a connection of the social ambit with the innovation system within the organization. Besides, the concurrent social and private sectors should be coherent to their role and jointly work. Otherwise, the outcome represents social political products instead of products for the market. The other interviewee considered that the automobile industry does not need a new business model, since there are other organizations dedicated to provide options to automobile ownership.

From the first group of respondents, the following are the salient points. The automobile industry has been a role model for purchasing and logistics. In the past, different business model applied such merger and acquisitions, joint ventures, and recently exchange in equity. As a result, the intriguing aspect relates on dealing with complexity. However, no one of these models attempted the mobility for at least 10 years. Another respondent indicated that the current business model is a no growing model. At social level represents an obstacle and has inherent complexity.

Other respondent mentioned that business models have its foundations in cooperation and collaboration. The issue is to find the appropriate partner. Mobility service provider respondent indicated the automobile industry needs a new business model. The respondent is aware of one OEM already experimenting with the mobility purpose business model. Carsharing customer usage represent supplemental rather than an exchange of modes of mobility. Collaboration programs with public transportation are important to be the "last mile". Younger generations have different attitudes towards mobility without owning an automobile. The latest development resides in a mobility card for

multiple modes. Another interviewee indicated that differentiation results from services and software.

Question 3. ***From your experience and professional life dealing with the automobile setting, Could you mention an example of what you consider a business model innovation within the automobile or mobility purpose industry?***

Q3 Answers Description

According to McElroy (2010), a good example of a conceptual business model innovation corresponds to GM AUTOnomy. This business model innovation offers an electric self-driving two-seat concept vehicle with sonar, radar, video and GPS technologies. The innovation of the concept resides in the fact that this is the first time an OEM pays attention to the infrastructure for the operation of the automobile. China could be the ideal market, since China would require an enormous infrastructure for its population density pursuing similar development of automobile industry in the USA. McElroy (2010) provided the following analogy regarding China that would require enormous infrastructure to cope with population in need of mobility like this: communications infrastructure should be huge with wire technology but they avoided this and move straight forward to wireless telephones.

Stassin (2010) mentions that perhaps GM could build a "skateboard" concept but the change implications represent an obstacle. However, he reflected that in theory China could be the optimal site to start, because China is starting to encounter the automobile industry intrinsic problems already seen in the majority of societies in the so-called Western hemisphere. He added to his answer like this: "Visiting the case of people in China and the car companies, first of all, they want to produce cars not to supply cars" (Stassin 2010). Another insight by Stassin (2010) referred to information communication technologies (ICT) and global positioning satellite (GPS) devices that will support the introduction of mobility services without automobile industry. GPS affects tremendously driving behaviors and in fact changes customer relation to

the product leaving behind the service aspect. Stassin finalized his response by stating that this will represent "lateral opportunity materialized" (Stassin 2010).

Kuen (2010) presented of a business model innovation for electric cars between two suppliers and one OEM. Milani (2010) presented a conceptual example but not yet in reality. An electric utilities proposal that in two years the utilities company could have a Smart car by Daimler with a unified bill by Enel (Italian utilities operator) for home and mobility electrical utilities. Guaschino added to Milani's response that electric utilities tariffs would function according to several levels of energy consumption "like t-shirt sizes: S, M, and XL." (Guaschino 2010). Röck (2010) provide two examples of business model innovation: carsharing system in Austria and Daimler and Hanover mobile. He ended to his answer, as he typified before that OEMs considered carsharing a business for a limited group of non-realistic people. "So, they (the OEM) did not take it so serious." (Röck 2010).

Meichsner (2010) described the business model innovation case of a power and gas supplier in Germany called E.ON that started alliances with automobile manufacturers. He also referred to the Daimler business model that looks for investments (highway toll systems, electric vehicles in China with BYD, and Tesla) around its core business. From the side of an Austrian electric utilities company, one innovation manager mentioned the business model innovation of the company called Better Place that provides mobility services, the automobile, the infrastructure, and other services.

After all, GM has the AUTOnomy electric self-driving two-seat concept automobile with sonar, radar, video, and GPS technologies for guiding. But the business model innovation at conceptual level resides in the consideration of infrastructure for this automobile concept. China could be the optimal market to start this conceptual business model. Another interviewee indicated that a non-advisable approach for China should be to produce cars not to supply them. ICT and guiding technologies affect driving behaviors and customer relation to the product and its services behind as lateral opportunity. The role of electric utilities is mentioned by at least three of the respondents. Business model innovation for electric utilities companies in collaboration with automobile

manufactures includes services with features of unified billing for home and mobility, energy tariffs to suit needs, charging and discharging stations.

Focusing on carsharing as a mobility purpose service, one interviewee indicated, as far as he knows, only one OEM is experiment with carsharing services. Other interviewee referred to the same OEM engaging in several investments around its core business such highway toll systems, electric automobiles in China, and the USA. An innovation manager from an Austrian electric utilities firm illustrated the business model innovation with the company Better Place that provides mobility services, the automobile, the infrastructure, and other services.

Question 10. ***Has "name of the organization" conducted collaboration programs with other enterprises or within regional clusters framework?***

Q10 Answers Description

Only one of the respondents indicated they do not have at all collaboration programs. Eight out of nine interviewees confirmed they have conducted collaboration programs with partners. For example, Rigoletti (2010) mentioned they, as an educational institution, have a collaboration program with Nissan for its design center. This added to previous collaboration programs with Fiat and Alfa Romeo.

McElroy (2010) mentioned two examples of notable collaboration programs within the automobile industry. The brand Saturn by GM represents one unique example of a collaboration program. This company entered in collaboration with Nordstrom and McDonald's. Saturn worked with both to introduce for the first time in the automobile industry the best buying experience. The other example was Chrysler in the 1990s with its all time best-purchasing department in the industry by means of its Extended Enterprise® (EE). With this concept, Chrysler purchasing department knew the complete product process. Actually, the EE concept promoted collaboration programs between one-to-one partners such GE and Praxair for specific business competences.

Stassin (2010) explained that Kiska has collaboration programs project-wise rather than fixed programs. Some programs are conducted with universities

others with companies in several industry sectors. Kuen (2010) observed that the region cluster collaboration with partners by means of educational programs. Besides, pursuing electric mobility the ACVR collaborate with the Austrian Mobile Power platform to link SME by means of regional network. Milani (2010) explained the IAAD collaborates by means of a transversal approach among the public and private sector and associations to develop abilities on prospect professionals.

Meanwhile to reduce the carsharing membership annual fee to the lowest possible, Röck (2010) states Denzel carsharing has collaboration programs with public transportation companies such as "Wiener Linien" in Vienna and similarly in other cities in Austria such Salzburg, Innsbruck, and Graz and ÖBB that is the Austrian Federal Railway company. From his side, Meichsner (2010) clarified that you need collaboration programs to have utmost information. Innovation manager of an Austrian utilities company (November 10, 2010) revealed that for one research project on electric mobility they collaborate with 14 external partners that include research institutions and companies.

In brief, commonly collaboration programs include academic institutions with automobile manufacturers regional centers. Across industry sectors, there were examples of collaboration programs between OEMs, department stores, and fast food companies mainly to share and learn business competences. Within the automobile industry, the EE represented a role model precedent in purchasing practices to pursue. Others companies within the automobile industry had collaboration programs in a project-wise approach. Educational programs and networking among partners signify the main purposes of one cluster included in this experimental research. Another education institution collaborates in a transversal approach with public and private sector and associations to develop professional capabilities on prospect professionals.

Others such a carsharing company included in this empirical research has collaboration programs with city public transportation companies and the federal railway company to reduce the carsharing membership annual fee to its customers. Other interviewee clarified that companies need collaboration programs to have utmost information. Austrian electric utilities company

included in this practical research has collaboration programs on a project-wise approach with research institutions and companies on electric mobility.

Question 11. ***Has "name of the organization" applied the concept of open innovation with its partners?***

Q11 Answers Description

Two of the respondents indicated they do not pursue the open innovation approach. Another interviewee indicated he was not sure has seen the open innovation approach applied in the automobile industry. Four interviewees believe they have applied the open innovation approach.

Stassin (2010) indicated they followed the open innovation approach in very few exceptions. The open innovation licensing is not their target. Kuen (2010) confirmed they do not pursue the open innovation approach. They only focus on the networking aspect. According to McElroy (2010) very few cases can be noticed in the automobile industry. One of those is the MyFord Touch™ software for which developers write applications.

Milani (2010) revealed they pursue an open innovation approach by sharing resources including human talent with its partners in innovation. Röck (2010) indicated they pursue the open innovation approach with a city public transportation and the federal railway company. Meichsner (2010) indicated they apply for production processes the concept of open innovation by means of the plant-in-plant notion. Innovation manager of an Austrian utilities company (November 10, 2010) expressed they share knowledge among partners within the electric mobility project.

In short, four of the interviewees believe they apply the open innovation approach by sharing resources, by develop service capabilities or production capabilities. Other interviewee expressed they have limited process pursing open innovation. Another respondent expressed, he has not seen quite often the open innovation applied within the automobile industry. One respondent specifically indicated they do not pursue an open innovation approach.

6.4.2 Description of answers to Theme 3 customer stakeholder

This subsection summarizes by taking excerpts from answers to questions associated to this theme 3 (Appendix A2):

Question 6c. Could you explain me in your words how the carsharing system works for you? Also, please elaborate on fees and charges you incur for the service?
Question 8c. Do you prefer the two-way carsharing service or do you prefer one-way? What is your average duration per round trip or distance?
Question 9c. Mainly during the time you are a carsharing member, Do you still keep a car (ownership)? If not, how was the transition to avoid car ownership?
Question 10c. Can you list some of the economic benefits you notice from carsharing versus car ownership in this period you have been a carsharing member?

Schmid (2010) explained the car is order on the Internet. This method has been available from the beginning when I got the membership around 7 years ago. It is very convenient the interface to reserve a car instantly. Now the Internet platform is more convenient. There are between 5 to 7 locations to pick up the car around 2 kilometers from my apartment. Therefore, there is a good probability he gets a car when he needs it without long reservation time ahead. Longer reservation ahead is needed it when he needs the car for a specific time. The car is parked in an underground parking lot. Then, he accesses the car at the station with a key card with a chip allowing him to open it. He has to use the car within the period reserved, otherwise he should extend it electronically via cell phone or with the interactive computer inside the car that allows him to extend or reduce the period. Overtime means penalty for the member. The service includes gasoline. The user should not return the car with less than a quarter. If the car needs gas, he can go to a BP gas station and pay with a fuel card placed in the interactive display.

Annual fee is around 40€. Depending on the size of the automobile or even vans the member pays for the hour elapsed and for the kilometer traveled. The small category is around 2.50€ per hour and 40 cents per traveled kilometer. "So, the longer the driven distance, the higher the cost charges." (Schmid 2010). The fee is lower at night. At the end of the journey, the car must be returned to the same parking lot where he picked it up. He uses carsharing 3 to 4 times a month.

Schmid (2010) explained it would be interesting if a one-way could be organized. In average he makes the car reservation for 6 hours and travels between 30 to 60 kilometers. So, if he goes to a second place he ends with more kilometers. For shorter distances, there are not advantages and it is better to take a taxi.

Currently, Schmid (2010) does not own a car. He gave away his car also because of the parking fares and in addition the difficulty to find parking space in the proximity to his apartment. For instance, a trip of 5 minutes driving from work to home it takes additional 10 minutes or more driving searching around to find a parking place. He was considering perhaps a small car to visit and see friends in Italy or for a nicer trip more frequent around 200 kilometers. In similar organization within Denzel, there is not integration of the systems for example in the south of Austria in the countryside. Different scenario occurs in Salzburg, Innsbruck, and other cities. He can use carsharing in all Austria. For a 2 days trip he does not use carsharing but normal car rental. He reflects that perhaps GPS technologies can make available some seamless switching of services. In general, there is a good citizenship attitude of carsharing members.

Schmid (2010) calculated the economic benefits in like this: carsharing per month maybe around 200€. For a car at least five times more if I owned with all the cost of ownership, investment, repairs, etc. One needs to decide ahead and plan the journey, different from taking the car owned right away. Carsharing use is very limited only for the purpose in the city. For other journeys he uses bicycle.

6.4.3 Analysis of answers to Theme 3 customer and organizations stakeholders

Majority of interviewees responded the automobile industry needs further development in business model innovation. It is recognized that there is evidence of attempts to implement business model innovation. However, the researcher assures all of them had as value proposition the credit-supported ownership of the automobile. Interesting is the insight again from Italian design academic institution, where the interviewee mentioned that business model innovations has a connection with social ambit. The interviewee explained that social and private sectors should be coherent to their roles and mutually work. If not, government as an entrepreneur would produce political products instead of products or services to fulfill customer and society needs.

Another respondent, different from a previous one, mentioned again the pair cooperation and collaboration this time in the ambit of business model innovation. Both notions are different. Therefore, appropriate partner for each notion would require different motivations. The researcher coincides in the view of the following two interviewees. One stated the automobile industry business model is not growing and the other stated the need for a new business model. In new business model innovations the value proposition is not based only on a product offer. As explained by carsharing service provider interviewee, the carsharing business model has collaboration programs with public transportation to supplement the services they offer and reduce the fees to members or new products such mobility card already available in mega-cities. All of these efforts based on the context that younger generations have different lifestyles and attitudes towards credit based ownership of the automobile.

At this point, the researcher found that collaboration between automobile industry and electric utilities is a recurring topic from the group of interviewees. However, according to one interviewee only one OEM is already experimenting with mobility services in collaboration with city municipalities. The same OEM also is experimenting with investments around its core business including highway toll systems and electrical automobiles in China and USA. Other business model innovation at conceptual level is the AUTOnomy by GM. This business model includes a two quick connect systems: the body (top hat) and the chassis. The value proposition still is around partial ownership of the

automobile in this case the chassis. ICT and guiding technologies made this self-driving two-seat concept suitable for the Chinese market.

Other collaboration programs have been pursued across the automobile industry and academic institutions, suppliers, public sector, associations, department stores and fast food companies. The researcher found interviewee companies use the collaboration programs to information updates and to develop capabilities at enterprise or human capital level.

Responses from interviewees suggest there are plenty of opportunities around an agile business model innovation to pursue, since application of the open innovation concept is limited within the automobile industry.

Customer stakeholder is well versed on how the carsharing system works and the options available to him. The pattern that after a person subscribes to a carsharing service provider, the member does not keep the automobile ownership, is evident in his case. On the contrary, for automobile ownership, the interviewee is well versed on the value depletion in qualitative and quantitative terms. Besides, the interviewee articulates some improvement to the service in terms of GPS technologies for a seamless switching of services for example carsharing to rental car.

6.4.4 Synthesis of answers to Theme 3 customer and organizations stakeholders

Business model innovation represents a necessary further development for the automobile industry according to the majority of interviewees. The researcher speculates that perhaps this suggestion parallels a similar claim expressed by CEOs in a global report. From this report findings presented in chapter 2 for the critical literature review, Pohle and Chapman (2006, 34-35) found that business executives search for business model to build differentiation and sustainability. The group of CEOs expressed that business model represents the approach to escape from commoditization in the marketplace. Similar notion was presented in chapter 3 for the institutionalized automobile industry by Lovins et al. like this “Its convergent products compete for narrow niches in saturated core markets at commoditylike prices.” (Lovins et al. 1999, 151).

Another interviewee provided the insight that business model innovations have a connection with social ambit. The interviewee continued explaining that social and private sectors should be coherent to their roles and mutually work. In chapter 2 for critical literature review, Drucker clarifies that "innovation is not a technical, but social and economic, term." (Drucker [1974] 2010, 40). Therefore, the reader could realize of the consistency between practice and theory for this specific notion of business model innovation.

One more insight from interviewees refers to point that the automobile business model is not growing and other interviewee's insight indicates the need for a new business model. The interviewee added that for new business model innovations the value proposition is not based only on a product offer. Particularly, in the context that younger generations have different lifestyles and attitudes towards credit based ownership of the automobile. Actually, some of the conceptual business model innovation, for example the so-called AUTOnomy by GM referred by one of the interviewees, includes a value proposition around partial ownership of the automobile in this case the chassis. Therefore, all this insights bring to the concept of **business model life cycle**. This notion belongs to the building block of the business model canvas for **revenue streams**. In chapter 2 for critical literature review, Moser et al. (2007, 7) use the concept of "empty revenue" as part of business model life cycles. They explain that business models have a life cycle "from value growth to economic obsolescence". At this end stage of economic obsolescence, the business model eventually starts to lose its business value. They add that in spite of having a substantial market share, revenue could become profitless. Also, Demil and Lecocq (2010, 231) refer to the example of the biotech industry which by means of start-ups they affix services (recurring revenues) to their main products (per transaction) to have a diversity of revenue resources. To end this topic, Sabatier et al. (2010, 432) introduce the **business model portfolio concept** to have the business model itself as a source of revenue. They define business model portfolio as "the range of different ways a firm delivers value to its customers" to ensure short and long term sustainability. This perspective encompasses not only the product or services to originate revenue streams but

also the diversity of business models as another mean to originate revenue streams.

The concepts of business model life cycle and business model portfolio lead us to search for an **organizational process** to embrace these approaches. Drucker explains that "The innovative organization requires, above all, that every product, every process, every activity, be put 'on trial for its life' periodically—maybe every two or three years." (Drucker [1974] 2010, 48). He continues his explanation "the innovative organization, while organically a part of the ongoing business, needs to be structurally and managerially separate." (Drucker [1974] 2010, 49). Besides, Chesbrough (2010, 356) offers the **spinoff notion** (further detail found in Chesbrough [2002, 15]) of 3Com from Xerox as an illustration of business model innovation. He refers to the intrinsic characteristic of the business model innovation as **trial and error** before the fact and some adaptation after the fact. Therefore, the researcher identifies Chesbrough's **spinoff** and **trial and error notions** supporting those by Drucker before quoted.

According to one interviewee only one OEM, Daimler, is already experimenting with mobility services in collaboration with city municipalities. The same OEM also is experimenting with investments around its core business including highway toll systems and electrical automobiles in China and USA. Aligned with the **business model experimentation**, carsharing as a market niche has been explored with prototype business models in 2008-2009 by Daimler with Car2go in Ulm, Germany and later in Austin, TX. USA (Osterwalder and Pigneur 2010, 238; Kortum 2009, 4), BMW pilot project with BMW on Demand available in Munich, Germany (Cholia 2010), and recently Peugeot's Mu initiative in several European cities (Fuhrmans 2010). Daimler seems to be the most active in exploring with mobility purpose business models.

A different respondent mentioned again the pair **cooperation and collaboration** this time in the ambit of business model innovation. Collaboration programs include the following collection: automobile industry and academic institutions, suppliers, public sector including municipalities, associations and regional clusters, electric utilities, department stores and fast

food companies; and between carsharing service providers and public transportation to supplement their services.

The researcher described, analyzed, and synthesized three themes of the interview's transcripts corresponding to the three constructs from the conceptual framework presented in previous chapter. The summary of salient points of this empirical research implementation will be summarized addressing its corresponding specific research objective 3 in the next chapter 7. Conclusions will be developed for this specific research objective and the previous two specific research objectives covered in chapters 2 to 5.

Finally, its is relevant to highlight that besides the automobile industry stakeholders group invited to participate in the interview process, the researcher invited three research subjects from the mainstream OEM side in the areas of marketing, sales, and strategies and mobility. The corresponding first and second research subjects candidates did not respond but the corresponding third research subject responded with his declination and added he did not consider himself an expert related to the business case aspect of mobility services and pondered if any at all are there. This response from an OEM research subject candidate represents evidence of potential opportunities for an agile business model innovation for the automobile industry.

CHAPTER 7: CONCLUSIONS AND MANAGERIAL IMPLICATIONS

This chapter means a cyclical closure for the previous chapters of this research work. This chapter uses structuring plans and guides provided by Biggam (2008, 138-161). The conclusions and managerial implications chapter incorporates the following actions along these lines:

- **Summarize** the findings from theoretical and empirical research with reference to each specific research objective.
- **Derive** conclusions from research findings.
- **Formulate** managerial implications based on conclusions and suggestions for further research.
- **Judge** the research work with reference to observed limitations.
- **Provide** lessons learned.

7.1 Introduction

This chapter 7 returns to the overall aim and specific research objectives of this work. Essentially, the outline for this chapter seeks to cover the following aspects: to summarize the findings in the theoretical and empirical domain in relation to the specific research objectives 1 to 3; based on this findings develop the conclusions for each one of these specific research objectives; formulate managerial implications and suggestions for further development based on those conclusions to address in this manner the specific research objective 4 and the overall aim of this thesis; and derive limitations of this study and lessons learned giving the reader consideration on the course of action to complete this research study. Discussion presented in the foregoing paragraphs means for the reader that this chapter 7 addresses the overall aim and the fourth specific research objective (text block in bold font here below) previously formulated in the introduction chapter.

The overall aim of this thesis project is to envisage an agile business model innovation for the automobile industry towards mobility purpose able to keep building value for its customers.

1. Clarify the misfit with external influencing factors on the automobile business model that cause the industry to lose its ability to build value for its customers with mobility purpose needs.

2. Evaluate critically concepts, theories, and conceptual frameworks significant to the agile business model innovation towards mobility purpose services to build value for its customers while pairing with its external influencing factors.

3. Explore stakeholders' insights and experiences associated with the established automobile business model including motivations and obstacles to an agile business model innovation.

4. Suggest recommendations to the automobile industry regarding an agile business model innovation for mobility purpose services to build value for its customers with mobility purpose needs in current and future market conditions.

7.2 Specific research objectives: summary of findings and conclusions

7.2.1 Specific research objective 1: Misfit with external influencing factors on the automobile business model

Summary of findings

Chapter 3 covered specific concepts of the institutionalized automobile industry. Findings for this specific research objective mainly belong to chapter 3 but

contributions to concepts and theories resulting from a critical literature review in chapter 2 supported also this specific research objective 1.

The external influencing factors, which render the strategic risks drivers, form part of a wider environment. For the purpose of this research study, energy balance, economy, and socio-political external influencing factors delimited the scope of a wider environment. There must be a fit of the automobile business model to its external influencing factors to build value for its customers with mobility purpose needs. The fit is achieved by means of a structural coupling. The structural coupling is the relationship between the organization business model and its stakeholders.

The researcher used Kepner and Tregoe (1997, 30-47) approach to problem analysis to find the root cause for the automobile industry lose its ability to build value. The problem analysis (Tables 3.1 and 3.2) reconstruction circumscribes its scope to the structural coupling between the automobile business model organization and its customer stakeholder. Building value represents the performance goal (SHOULD) for this problem analysis. Depleting value from its customers with mobility purpose needs represents the deviation (ACTUAL) from this performance goal. Institutionalized automobile industry **value depletion** from customers with mobility purpose needs can be summarized like this:

- Automobile ownership its associated negative equity and operating cost.
- Products visibility and its connotation of contributors to GHG.
- Current urban setting dynamics including city high population, traffic congestion and parking space availability in combination with automobile ownership and passenger occupancy.
- Not recognized via new service offerings that younger generations show a shift in attitudes and behaviors towards automobiles.

Additionally to the direct value depletion from customers as stakeholder, indirectly as taxpayers have contributed to sustain the established automobile

business model highly visible in recent times by means of government bailouts, loans, and incentives packages to own new automobiles.

Subsection 3.4 suggested the **most probable cause** for the automobile industry to lose ability to build value for its customers like this:

> The institutionalized automobile business model **does not** observe and cope with strategic risks that break its structural coupling with its customer stakeholders.

The following Figure 7.1 illustrates a cause effect block diagram to locate the most probable cause found in combination with notions on strategic risk by Hoverstadt (2008, 170, 172) and structure of a problem by Kepner and Tregoe (1997, 24-25).

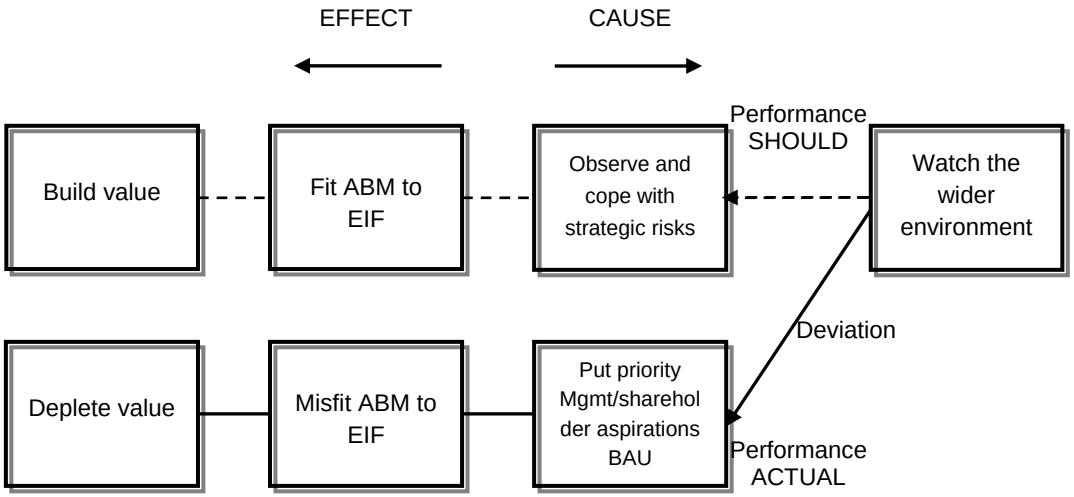


Figure 7.1 Cause-effect block diagram. Location of most probable cause found.

Conclusion

The institutionalized automobile business model and its value proposition based on automobile ownership deplete value from the customer with mobility purpose needs. In spite of that, the researcher could suggest that part of the reason the automobile industry ultimately failure does not occur yet— except two USA OEM bankruptcy processes in April and June 2009 and almost afloat in the 3rd Quarter 2010—resides in its relevant characteristic of being an institutionalized organization and the behaviors caused by the current

infrastructure of urban areas. According to the population ecology perspective, as far as the larger society supports the products (automobiles) of the institutionalized organization (automobile industry) this will be a vital ingredient of the society. The wider environment must be seen at stakeholder and the external influencing factors. The **external influencing factors render the strategic risks**. The strategic risk breaks the **structural coupling**, or relationship, between the automobile organization and its stakeholders. Thus, the automobile business model should observe and cope with strategic risk to ensure a fit to external influencing factors and the subsequent value building to customer with mobility purpose needs.

The **deviation** occurred when the institutionalized automobile industry opted for keep producing automobiles from an early rural scenario into a growing urban scenario. Then, the automobile industry began to build the "need" for the automobile to sell it instead of addressing the mobility purpose need. This building of the need by the automobile was supported by attached attitudinal variables to the automobile and priority placed on management and shareholders aspirations instead of the wider environment. The larger society support to automobiles grew and the rest is history. Part of that history oriented the researcher to find that the first crisis in the automobile industry occurred in 1920 before the 1929 great depression.

The elements of **value depletion** listed above include the younger generation showing a shift in attitudes and behaviors towards automobiles. This element if ignored by the automobile industry, it could become an imminent treat. On the contrary if observed and managed, it could be an opportunity to expand on new mobility purpose services.

7.2.2 Specific research objective 2: Concepts, theories, and conceptual frameworks

Summary of findings

Findings from Chapter 2 to 4 relate to the specific research objective 2. These findings epitomize a critical literature review that challenged concepts and theories to suit the needs for this master's thesis. The conceptual framework delineated in chapter 4 serves as outline to complete this summary of findings.

This summary of findings follows the three constructs of this conceptual framework and the business model canvas notion as well as the statement for the need of empirical research.

Business model canvas. The concept of business model can be traced back to the late 1950s. The concept was more visible as a term in late 1990s and early 2000s during and after the dot.com boom and bust. From journal research reviews, the researcher confirmed that exits a non-common explicit definition of the business model concept, since the notion based on academic standards is still in early development stage or immature. After a challenge of several definitions of the term for the purpose of this mater's thesis, the following represents **the business model definition** to adhere: "A business model describes the rationale of how an organization creates [builds], delivers, and captures value" Osterwalder and Pigneur's (2010, 14).

Osterwalder and Pigneur define the business model canvas like this: "a shared language for describing, visualizing, assessing, and changing business models" (Osterwalder and Pigneur 2010, 8). Their business model canvas encompasses nine building blocks. This research study focused on four of those nine building blocks: **value proposition, customer segments, revenue streams, and key activities**. Each one of these building blocks correlates to a business area as follows: value proposition (offer [**what**]), customer segments (customer [**who**]), revenue streams (financial aspects [**how**: capture value]), and key activities (infrastructure [**how**: deliver services]).

Construct 1. The **external influencing factors** render the strategic risks drivers. Hoverstadt's notions of strategic risk serve as framework to locate the business model canvas surrounded by a wider environment, stakeholders and the external influencing factors. Energy balance, economy, and socio-political drivers represent the external influencing factors selected for this research study.

The nature of the **energy balance risk** can be described as follows: **1)** High visibility of the automobile industry as a contributor to global warming in spite other sectors such coal utilities have a higher share on CO_2 emissions; **2)** Due to

this visibility, customer base demands more technology towards lower GHG emission but not change in behaviors towards efficient use of energy by society; **3)** Interacting with the socio-political risk driver, customer eventually could realize that the combination of automobile ownership and urban setting added to traffic congestion, emissions, automobile occupancy, and inefficient use of energies is not a mobility purpose solution. The overall impact could be that customers could start shopping for mobility purpose alternatives from service providers. These might happen when moral and regulatory commitments prevail in society and policy makers.

The nature of the **economy risk** can be described as follows: **1)** The current value proposition limits its general scope to automobile ownership in spite of the negative equity for the customer; **2)** From a broader view, episodes in economics history presented in chapter 3 demonstrate that the established automobile business model can erode employment even in prosperous economy periods; and **3)** When reviewing free market economic assumptions, interactions with social psychology need to be considered and its management implications. Particularly, on the notion of discounted future that explains why short-term gain is preferred against long-term benefit. Thus, management's responsibility for the social impacts of its organization gains relevance. The overall impact could be that customers place grounded demands for change in the automobile business model from a stand-alone tangible products (new automobiles) provider to a combination of products and services provider in the setting of the knowledge wealth economy. These might happen when the constant transition trend from rural to urban areas could be more generalized.

The nature of the **socio-political risk** can be delineated as follows: **1)** The established automobile industry represents an institutionalized organization supported by the society; **2)** Two relevant factors preserve the established automobile industry: the degree of change in the environment and its ability to adapt to such change; **3)** Government interventions and bailouts have became more frequent as timeline presented in chapter 3; and **4)** Demographics, particularly last generations, show a shift in attitudes and behaviors towards automobiles. The overall impact could be that interaction of **demographics** within socio-political risk driver and others such energy balance and economy

occur, society eventually could no longer support the established automobile business model as an institutionalized organization. These might happen when customers including society, eventually as younger generations move into decision-making positions, could lead a change in the wider environment of the established automobile business model. Lastly, as noted early the socio-political factor interacts and overlaps with energy balance and economy factors of precisely a wider environment.

The population ecology perspective uses biological natural selection views. One of the phases of an organization change process refers to retention. Retention implies the "**institutionalization**" of demonstrated adaptive organizations. Provided that "the larger society" supports the goods or services produced by the organization, the "organization will be a critical component of the society" Vecchio (2000, 336).

Knoflacher emphasizes that the reality is that **there is not such growth of mobility** (Knoflacher 2009, 60-61), since "usually the total number of trips over time remains the same -only the mode of travel changes" and he adds that mobility purpose has not being altered, except the mobility kind (Knoflacher, 2007). The researcher inferred from Knoflacher that four are the main mobility purpose (trips): home-work; home-shopping; home-leisure; and return-home (Knoflacher 2009, 158). Knoflacher (2010) reveals the support formula to modify the subjacent structure of the system (city) that causes the behaviors in that system can be expressed like this:

Support = Experts x Politicians x Administration

If one of the terms is zero, no support will be provided to modify the subjacent structure of the system. **Car sharing** represents one alternative to mobility purpose instead of mobility modes. Bergmaier et al. define car sharing organization like this: "Car sharing organisations can be specifically designed to enhance sustainable modes of transport, by filling a 'mobility gap'. Modes such as walking, cycling and public transport are complemented by access to a car on an as-needs basis without the high cost of ownership." (Bergmaier et al. 2004, 8).

Construct 2. Structural coupling, according to Hoverstadt, represents the "nature's answer to the problem of strategic risk and it also applies to organizations" (Hoverstadt 2008, 173). Hoverstadt (2008, 173) adds that the relevant aspect of the structural coupling represents its linkage between the organization and the wider environment to ensure a fit to evolve together. Structural coupling is significant to the **adaptation** and sustainability of the organization. An **agile enterprise** has to be **adaptable and flexible**. The organization form has the features of an **organic management system** as detailed by Burns and Stalker (1961, 119-121) for unstable environments. Burns and Stalker (1961, 11) define organic systems as the ones that have better adaptation to changing conditions. Contrary to a common expression about the uncertain and dynamically changing environment, in fact the adjective uncertain disorients. Hatch (2006, 78) explains that the managers perception or feel uncertainty as a result of their environment due to the lack of information for decision-making activity. Humans and its organizations perceive uncertainty but environment do not. The phenomenon is known as information perspective on uncertainty.

Also, according to Hoverstadt (2008, 36-37, 179) the **fractal structure** applies for all the organization levels and allows experimentation and capturing the function and complexities of the organization. This fractal structure provides the means at every stage of the business model life cycle to procure new prospects. The organic management system provides adaptation and flexibility to changing situations and the fractal structure supports the management of complexity. However, Hoverstadt recommends pursuing not only the agile enterprise ability but also the **anticipation** of risks ability. One viable archetype to source knowledge to move to a position of high anticipation is by means of a **trend scout**. According to Gassmann and Gaso (2004, 8), the trend scout collects trends from stakeholders and lead users to the company headquarters. Also, Gassmann et al. (2006, 46-47) suggest incorporate **customers**' source knowledge into the innovation **front-end** phase to develop superior products or services.

Construct 3. Business model life cycle notion belongs to the revenue streams building block. The cycle develops from value growth to economic obsolescence. The latter represent the concept of empty revenue no matter exist a significant market share. The main idea is to build different revenue streams including a **business model portfolio** that spans from products (revenues per transactions) to services (recurring revenues) as value propositions. Both concepts lead to the **organizational process** required to permit business model experimentation and spinoffs intrinsic to the corporate culture of the organization.

Besides each of the constructs and business model canvas concept rendered in this summary, it is relevant to denote the clarifications provided in subsection 3.5 (for emerging issues and the need for empirical research) to general misconceptions discovered while conducting this theoretical research but for succinctness not enunciated here. The researcher limits this paragraph to mention the statement justifying the need for empirical research: Bonded chapters 2 and 3 identify a gap in available literature referring to multiple perspectives and information leading to address the need for a reposition of the established automobile business model and that this reposition in specific by means of an agile business model innovation lacks of empirical research.

Conclusion

The definition of business model adopted by this research study expresses the following: business model describes the rationale of how an organization builds, delivers, and captures value. Certainly, the value concept does not address a specific stakeholder, since the organization value should be considered for all its stakeholders. However, for application purposes this thesis narrowed the scope to customer with mobility purpose needs. The building blocks selected considered at least one from each of the four business areas: offer, customer, financial aspects, and infrastructure.

The strategic risk approach was very helpful to position the business model in concert with a wider environment. The theoretical research demonstrated the presence of the three **external influencing factors** originally selected for this

study. The nature of their risk rendered useful concepts enunciated in the above summary. Among the highlights include: the identification of the **value proposition elements** for customer with mobility purpose needs in the concert of stakeholders, customer base impose on automobile industry more technology demands towards lower GHG emissions but not change in behaviors towards efficient use of energy by society, the established business model can erode employment even in prosperous economy periods, the notion of discounted future that explains why short-term gain is preferred against long-term benefit, the institutionalized characteristic of the automobile industry, and the observed trend showing a shift in attitudes and behaviors towards automobiles by younger generations. This **trend in demographics but also in psychographics** within the socio-political risk interacting with the others such energy balance and economy could impact by causing that society no longer would support the automobile business model as an institutionalized organization. Depending on the mindset perspective, this could be a treat or an opportunity to make the transition towards an agile business model innovation to offer mobility purpose services.

The **mobility purpose concept** apart from mobility modes clarifies the generalized misconception for growth of mobility and helps to concentrate efforts to achieve it. Mobility purpose functions as value proposition. Mobility purpose builds value for the customer needs. In particular, the institutionalized condition of the automobile industry can work in favor of the transition from automobile ownership (depleting value from customers) to mobility purpose (building value for customers) by educating customers and society towards this mentioned mobility purpose. Car sharing represents one viable alternative to mobility purpose instead of mobility modes. In parallel, it gains relevance the role of the institutionalized automobile industry to support the expert term in the support formula to modify the subjacent structure of the system (the city) that causes the behaviors in that system: Support = Experts x Politicians x Administration.

The **structural coupling** notion results very useful also to discern the few relevant from the universe of complexities at the wider environment and organization level. This approach helps to integrate a conceptual interface

between the inwards and outside settings of the organization. As a result of the overall critical literature review challenges different concepts that rendered a construct significant to the **agile business model innovation**. The conceptual sequence of this construct can be described like this: The structural coupling represents the nature of relationship between stakeholders as elements of a wider environment and the business model canvas. Mobility purpose functions as value proposition. Mobility purpose builds value for the customer needs. The institutionalized condition of the automobile industry can function in favor of the transition from automobile ownership (depleting value from customers) to mobility purpose (building value for customers) by educating customers and society towards this mentioned mobility purpose. The **customer front-end** supports involvement of customer in new services development. The business model fits its external influencing factors by means of agile enterprise principles plus the **anticipation concept** supported by **trend scouts**. The challenge requires an **organic form of organization** using the notion of **fractal structure**. Together, this concepts support a structural coupling that keeps the relationship between stakeholders as elements of a wider environment and the business model.

Awareness of the **business model life cycle** notion helps to define new strategies to sustain the enterprise such business model portfolio. The **organizational process** embraces the experimentation with business models and consciousness of the business model life cycle view helps to delineate strategies to sustain the firm. In the proceeding section, all relevant issues will be briefly discussed.

7.2.3 Specific research objective 3: Stakeholders' insights and experiences

Summary of findings

The generalized interviewees' perception indicates it will take between 10 to 20 years for a transition from automobile to mobility purpose. Also, responses addressing social connotation of the issue among others confirmed the institutionalized characteristic of the automobile industry. **Therefore**, to address society behaviors the researcher recalls the previous systems notion that indicates a city is a system and the subjacent structure of the system causes the

behaviors in that system. Customer stakeholder interviewee's experience is consistent with this systems notion.

The human intrinsic need to move will prevail for the future but not be at the expense of a value proposition based on automobile ownership. However, the established automobile industry insists on offering a value proposition based on automobile ownership with the latest on board ICT for the mainstream market. On the other hand, one of the interviewees from a sports car manufacturing reassured they are not involved in the mobility business but entertainment. Interestingly, this interviewee's insight suggests that niche market and mainstream market purposes for entertainment or mobility respectively should be genuine and not rhetoric fallacy by offering a value proposition by some of the mainstream OEMs declaring they are in the mobility business with sports cars or even SUV niches.

The replies from the interviewee stakeholder organizations suggest there is not a consistent idea on the **agile enterprise** concept. However, some of the interviewees referred to isolate agile enterprise constituents such flexibility and early warning mechanisms. One interviewee referred to the aspect that the automotive industry characterized by intensive capital investments causes low flexibility. Then, the researcher could refer again to the sunk costs effect notion. In terms on an early warning or anticipation mechanism, one interviewee responded that they are active in different sectors with different clients. Therefore, they have an unusual information basis as entrepreneurs and as an international scope company. Their capability resides in a constant mechanism to map from other business. Better predicting than others results from these elements.

Business model innovation represents a necessary further development for the automobile industry according to the majority of interviewees.

The following represent some of the **motivations** or opportunities for the transition from automobile to mobility purpose by means of an agile business model innovation. Some of the interviewees confirmed the trend observed by other practitioners and scholars, younger generations attitude change from automobile ownership to usage. The empirical and critical research literature on

the institutionalized automobile industry strongly suggest that demographics by age group represent an early warning trend for the established automobile industry related to a shift in attitudes and behaviors towards automobiles. This shift in behaviors could diminish eventually the larger society support of goods produced by the automobile industry causing to lose its current organization phase of retention (institutionalized). Therefore, the value proposition should start to be reoriented to include mobility purpose services.

As one interviewee suggested the fascination aspect of the automobile as a product could change to service with privilege for the transition from automobile to mobility purpose. Besides, the notion of good design provided by interviewee from an Italian academic design institution applies at this point moving from usefulness to fascination.

Also, the insight from another interviewee that the trend in mobility services is also in transition from a **value proposition** for the environmentalist mind (focus on effects) to an automobile non-ownership mind (focus on cause) prompts to ensure that the value proposition (to build value for its customers) for mobility purpose should consider the following attributes cross-referenced to chapters 2 to 4 and supported by empirical research conducted and presented in chapter 6:

- Younger generations lifestyles (Buytendijk et al. 2008, 3; Reed 2010).
- Needs of customers in cities and its congestion levels including automobile passenger occupancy and parking scarcity (Drucker [1981] 2010, 169-170; Inderwildi et al. 2010, 28, 35; Lovins et al. 1999, 151; Sachs 2009b, 25-27).
- Cost avoidance of automobile ownership including its negative equity and operating cost (Bergmaier et al. 2004, 6-8; Ragsdale 2010, 11-13).
- The trend that cost of fuels will not be affordable for all (Kohn 2010, 264; Monheim 2003, 84; Sachs, 2009a; Shaheen et al. 2009, 35; Stiglitz 2007, 172).

This also represents a change in attitude more holistic to include the combined **energy balance and economy factors**.

Two interviewee's insights depart beyond the mainstream concept of **listening to customer**. One of them argued that customer is not really prepared to articulate what they want to the automobile industry. The other stated that the main point is not whether to listen to or not to customer needs but not conditioning them nor searching to build them new needs. Another interviewee denoted that the cause for those OEMs in bankruptcy was mainly for not listening to customer needs. The researcher could say that in fact OEMs were listening to customer short-term fascination needs and appetite for SUVs but not society stakeholder needs. This phenomenon can be explained with the psychological tendency of "discount the future" that indicates that managers underestimate future cost effect and respond in the short-term yield but calamitous in the long-term.

The concepts of **trend scout** and **customer in the front-end** denote application opportunities on an agile business model innovation. As part of the building block for customer segments, the researcher positioned trend scouts. At first, the group of stakeholder organization interviewees did not recognize the **trend scout** term. After giving them some background of the functions of a trend scout, the interviewees provided their insight. Similarly, the organic management system and the fractal structure denote opportunity applications on an agile business model innovation. In this line, one interviewee reflected on how to sustain that corporate culture no matter the change management.

Another motivation or opportunity is enclosed in the declination response to interview from a mainstream OEM research subject candidate. The research subject candidate responded with his declination and added he did not consider himself an expert related to the business case aspect of mobility services and pondered if any at all are there. This response from an OEM research subject represents evidence the potential opportunities of an agile business model innovation for the automobile industry.

One more insight from interviewees refers to point that the automobile business model is not growing and other interviewee's insight indicates the need for a new business model. Actually, another interviewee provided the insight

that business model innovations have a connection with social ambit. The interviewee continued explaining that social and private sectors should be coherent to their roles and mutually work.

According to one interviewee only one OEM, Daimler, is already experimenting with mobility services in collaboration with city municipalities. The same OEM also is experimenting with investments around its core business including highway toll systems and electrical automobiles in China and USA. Those actions denote early activity in the concepts or organizational process and business model portfolio.

The following represent some of the **obstacles** for the transition from automobile by means of an agile business model innovation. Group of interviewees generalized perception of long term transition from automobile to mobility purpose leads to suggest that the established automobile industry infrastructure is subject to the sunk costs effect. The automobile industry characterized by its intensive capital infrastructure represents a sunk costs effect that induces not to innovate its business model. This notion explains why the established automobile industry adheres to its current product concept offer preventing to move to mobility purpose services.

Key activities inferred from the interviewees' insights reveal that there is a management inertia characterized by scatter knowledge and lacking of integration. The R&D needs a broader reach to include the whole purpose of the automobile. Also, the researcher visualizes the third (as seen in chapter 2 production and problem solving represent the other two categories) category of key activities, platform/network, from carsharing mobility services provider interviewee's insight. This interviewee referred to their support to customers with ICT activities for decision-making such as an application to decide whether to car share or to rent for a specific situation. Key activities visualized help to understand the business model fit, focus on them, contribution to value proposition, and engage on collaboration with other firms. Related to the later, interviewees mentioned in different contexts cooperation and collaboration activities they conduct. The researcher needs to reiterate the distinction between both terms. While collaboration is intrinsically motivated, cooperation is

extrinsically motivated Miles et al. (2005, 37). Therefore, collaboration denotes a trust-based relationship rather than a contractual relationship such cooperation.

Other interviewee indicated the automobile industry in general has been announcing the implementation of agility since 20 years ago. This could have connotations to the management inertia above referred.

As previously referred, another interviewee explained that social and private sectors should have coherent roles and mutually work. If not, government as an entrepreneur would produce political products instead of products or services to fulfill customer and society needs.

Conclusion

The responses from interviewees addressing a social connotation of the established automobile industry among others confirmed the institutionalized characteristic of the industry. Thus, **society** represents part of the solution for the transition from automobile to mobility purpose. Therefore, to address society behaviors the researcher conveys the previous systems concept that describes a city as a system and the subjacent structure of the system that originates the behaviors in that system. This systems notion was evidenced with the customer stakeholder interviewee's experience in the empirical research. At this stage, the collaboration skill denoted in the results of the empirical research can be used to support actions with society. Evidence of this was conveyed by one of the interviewees indicating that at least one OEM is engaged already in **collaboration** with city municipalities to experiment mobility purpose services. The connotation of the collaboration skill should be intrinsically motivated and trust-based relationship.

The motivations to implement an **agile business model innovation** for the automobile industry were evidenced by the group of interviewees. Some of the interviewees referred to isolate agile enterprise constituents such flexibility and early warning mechanisms. The group majority of interviewees agreed that a business model innovation signifies a ‘must’ next step for the automobile industry.

As expressed before in the conclusion for the first specific research objective, **younger generation lifestyles** represents both a treat or an opportunity depending on the direction the institutionalized automobile industry would take. Actually, younger generation lifestyles signify a common element for value build or value depletion. The value proposition either by transformation or in co-existence as results from the experimental research could move from the fascination aspect of the automobile as a product to privilege of services for the mobility purpose. Value proposition attributes for mobility purpose were listed above. These value proposition attributes cross-referenced to chapters 2 to 4 and supported by empirical research conducted and presented in chapter 6.

The concepts discovered in the theoretical research regarding the aspect that business action builds products or services to customers perhaps unfelt wants; the attitude of ‘wantologist’ to help the customer to find what the customer wants; and the early automobile industry skill to build the need for the automobile were confirmed according to the researcher by the empirical research particularly with two salient points. One indicates that customer is not necessarily prepared to articulate what they want to the institutionalized automobile industry. The other salient element indicates that the main issue is not whether to listen or not to customer but not conditioning them nor searching to build them new needs.

Both theoretical and empirical research support the researcher statement that in fact OEMs were listening to customer short-term fascination needs and appetite for SUVs but not society stakeholder needs. This phenomenon can be explained with the psychological tendency of "discount the future" that indicates that managers underestimate future cost effect and respond in the short-term yield but calamitous in the long-term. The main salient point from both paragraphs above refers to the principle that not necessarily by **listening to customer** will render a value propositions that in fact build value for the customer. Thus, stakeholders as part of a wider environment should not be missed and **trend scouts** and **customer in the front-end** denote substantial benefits for an agile business model innovation.

The **sunk costs effect notion**, as a result of the theoretical research and inferred from the implemented empirical research, represents a barrier argument for the transition from automobile to mobility purpose by means of an agile business model innovation. Thinking in terms of infrastructure and the institutionalized automobile industry characterized as capital intensive, the reader would judge plausible the argument. However, the researcher could claim that the organizational aspect is not subject to such sunk costs effect. Therefore, this contrasting exercise between infrastructure and organizational aspect represents an opportunity instead of a barrier for the institutionalized automobile industry to pursue the agile business model innovation.

Indication for this approach is the early first hand **experimentation with business model portfolio** by Daimler, BMW, and Peugeot into the carsharing mobility service provider confirmed in some way by the empirical research implemented. This evidence confirms the theoretical notion of **co-existence** of the established business model and the new business model in the ambit of a defined organizational process that allows for such trial and error approach. Also, this result from the empirical research confirms the challenge of finding an opportunity to turn an ‘either/or’ into an ‘and’. The challenge and the answer by the institutionalized automobile industry represent the current dilemma encountered and the venue to seek a plausible solution. The human intrinsic need to move will prevail for the future but should not be conditioned at the expense of a value proposition based on automobile ownership. So, the empirical research suggests that niche market and mainstream market purposes for entertainment or mobility purpose respectively should be genuine but perhaps separated.

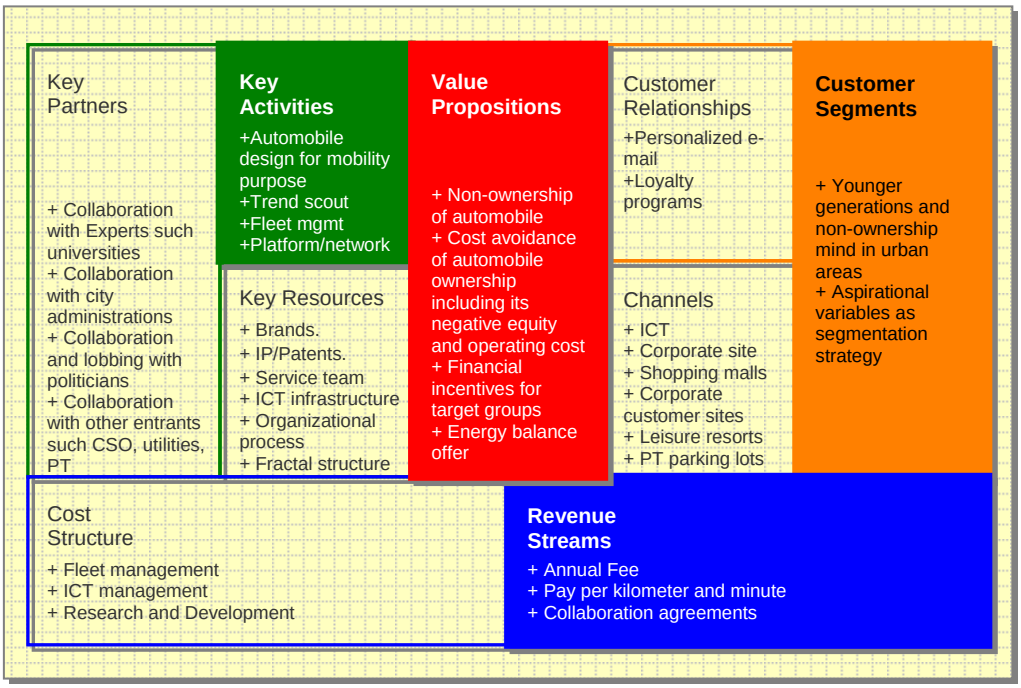
Besides the sunk costs effect, empirical research denoted a management inertia within the institutionalized automobile industry. This salient point is inferred from the statement that the automobile industry in general has been proclaiming the implementation of **agility** since 20 years ago but not happening yet. Also, the management inertia as part of the building block for key activities to deliver value was mentioned in the body of the practical research. Essentially, this management inertia has the characteristic of scatter knowledge and lacking of integration. For example, the R&D needs a different reach to

encompass the whole purpose of the automobile instead of scopes for systems, subsystems, and component levels.

One last point refers to the insight from the empirical research indicating that social or public and private sectors should have coherent roles and mutually work. This conveys the relevant issue to produce products or services to build value for customer and society with mobility purpose needs instead of political products by a government as an entrepreneur.

7.3 Managerial Implications and suggestions for further research

The managerial implications represent researcher's recommendations based on previous conclusions. These managerial implications address the fourth specific research objective and the overall aim of this master's thesis. This section opens with a suggested automobile industry business model for mobility purpose services in Synoptic box 7.1 highlighting the four building blocks—business model scope of this thesis.



Synoptic box 7.1 Automobile business model canvas for mobility purpose adapted from Osterwalder and Pigneur's (2010, 239).

This automobile business model canvas for mobility purpose represents one of the outputs of this master's thesis aligned with the fourth specific research objective.

Besides, the following Figure 7.2 depicts the suggested agile business model innovation for mobility purpose. This model addresses the overall aim of this master's thesis. Essentially, the model envisages an agile business model innovation for the automobile industry towards mobility purpose able to keep building value for all its customers.

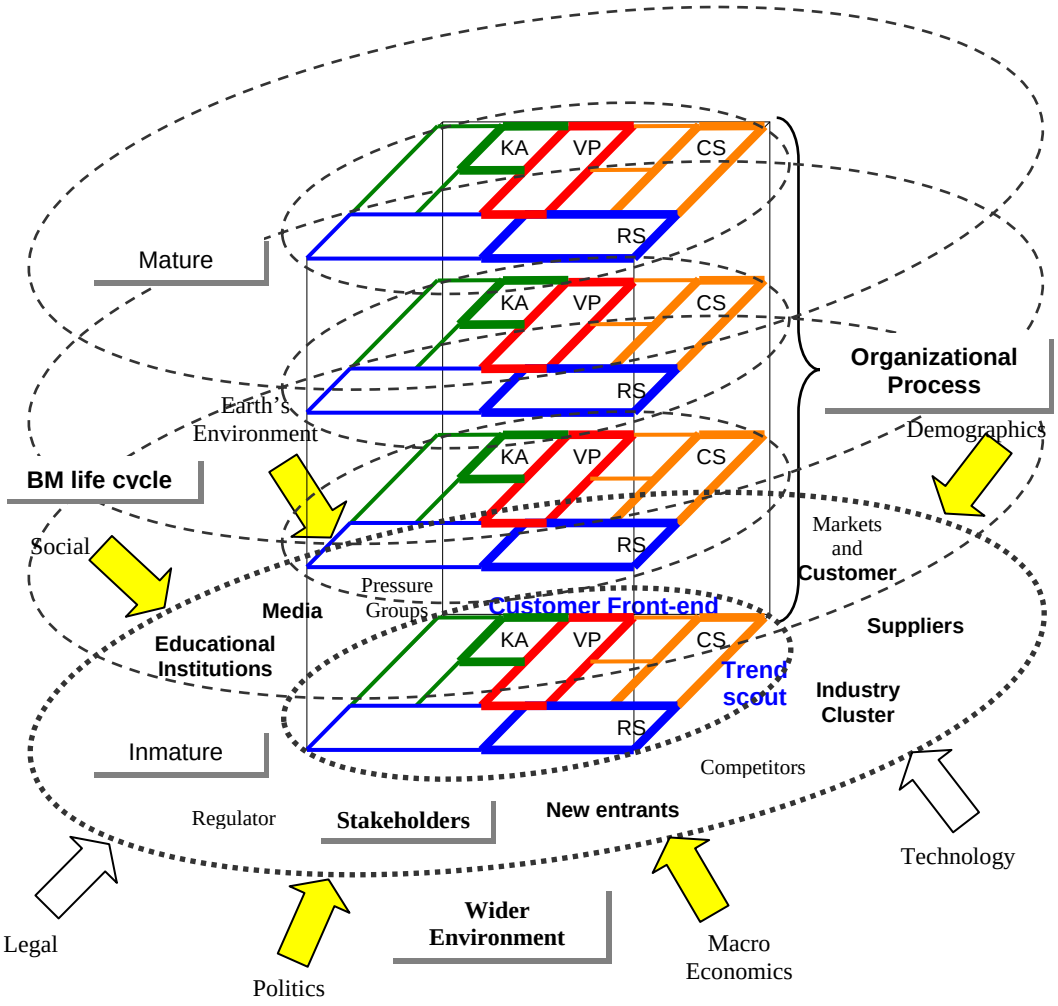


Figure 7.2 Agile Business Model Innovation for mobility purpose.
Adapted from Osterwalder and Pigneur's (2010, 44) business model canvas with innovation and agile enterprise concepts incorporated.

This model is an upgrade of the business model presented in chapter 2. Theoretical and practical research findings suggest pursuing an agile business model innovation with a strategic risk approach. Thus, the ovals around the business model represent the wider environment. Building value should not miss the collection of stakeholders of the automobile business model. This visualization allows the organization observing and coping with strategic risks that break its structural coupling with its customer stakeholders. The organizational process permitted to embrace experimentation of the business model.

Seen both illustrations, the following paragraphs will develop the managerial implications, suggestions for further research, limitations, and lessons learned. The managerial implications will address the conclusions for each of the three specific research objectives.

Managerial implications

The institutionalized automobile business model should start **observing and managing the strategic risk** that break its structural coupling with its customer stakeholders. For the first time in the history of the automobile business model, its value proposition offering as credit supported automobile ownership has been questioned. The business as usual attitude and the priority on management and shareholder aspirations eventually could cause the failure of the institutionalized automobile industry. From the perspective of the automobile business model history, the structural coupling has been broken with its customer stakeholders usually from strategic risk drivers such economy and energy balance. Urban areas and younger generation attitudes toward automobile ownership represent a strategic risk that could break the structural coupling with society stakeholders. Different from the structural coupling with stakeholders related to economy and energy balance, the structural coupling with society weakens the institutionalized characteristic of the automobile industry. Since, very likely the larger society that supports the products of the institutionalized automobile industry would eventually decrease.

Three OEMs have already initiated **experimentation** with business model towards mobility purpose services. As far as results from theoretical research

and confirmed by empirical research implemented, two of these OEM already have trend scouts functional areas to source knowledge. This business action represents an opportunity to develop in parallel initiatives to implement **an agile business model innovation for mobility purpose services** envisaged in this master's thesis. Trend scout function should be implemented and directed to search mobility purpose trends.

Management and shareholders of the institutionalized automobile industry should embark in the experimentation with the **organic management system** and **fractal structure**. The business model canvas exercise at cross-functional team level should be extended for the nine building blocks of the business model canvas.

Transferable business acumen such logistics, supply network management, and product development should leverage the mobility purpose services. Management within the institutionalized automobile industry can use and redirect lobbyist to influence legislation towards mobility purpose. The objective is to achieve a fit with external influencing factors on the agile business model innovation to build value for its customers with mobility purpose needs. The managerial implications of an agile business model innovation reside in being a powerful managing tool to visualize the organization and share explicit knowledge for future experimentation or fit for collaboration.

Management of the institutionalized automobile industry should exercise its relevant role to **support the expert term of the support formula** to change the subjacent structure of the city (as a system) that originates the behaviors in the city. For purposes of clarity the formula is reiterated here: Support = Experts x Politicians x Administration. This systems notion was evidenced with the customer stakeholder interviewee's experience in the empirical research. However, a salient insight from the empirical research indicates that public and private sectors should have coherent roles and collaborate. The relevant aspect resides in producing products or services to build value for customer and society with mobility purpose needs instead of political products by an entrepreneur government.

Also, the recommendation for the same management body is to make use of the its institutionalized automobile industry to **reshape customers and society aspirations toward mobility purpose services**. Society represents part of the solution for the transition from automobile to mobility purpose. This business action, as institutionalized automobile industry, could function in favor of the transition from automobile ownership (depleting value from customers) to mobility purpose (building value for customers). Salient point from the empirical research confirmed the challenge of finding an opportunity to turn an 'either/or' into an 'and'. The challenge and the answer by the institutionalized automobile industry represent the current dilemma encountered and the venue to seek a plausible solution.

Management should be **aware and use the business model life cycle** rationale to redefine new strategies to sustain the enterprise with a business model portfolio. Also, the concept of **organizational process** embraces the experimentation with business models. The early first hand experimentation with business model portfolio by Daimler, BMW, and Peugeot into the carsharing mobility service provider was confirmed in some way by the empirical research implemented. This evidence confirms the theoretical notion of co-existence of the established business model and the new business model in the ambit of a defined organizational process that allows for such trial and error approach.

Management should understand that **not necessarily listening to customer** would bring value propositions that in fact overall build value for the customer. **Stakeholders** of a wider environment to the organization should not be missing when managing strategic risk. In fact recently, OEMs were listening to customer short-term fascination needs and appetite for SUVs but not society stakeholder needs. The combination of trend scout and customer in the front-end has implications for the **anticipation** aspect for an agile business model innovation. Since the human inherent need to move will exist for the future but should not be conditioned at the expense of a value proposition only based on credit supported automobile ownership. This means also, that niche market and mainstream market targets for entertainment or mobility purpose respectively should be genuine but maybe separated.

Management needs to **derive strategies to cope** with the contrasting exercise between **infrastructure and organizational aspect**. The latter is not subject to the sunk costs effect as the former, which overall represents a barrier argument for the transition from automobile to mobility purpose by means of an agile business model innovation.

Management should pursue a more **integrative approach to overcome management inertia** characterized by scatter knowledge. R&D function needs a different reach to convey the whole purpose of the automobile besides the systems, subsystems, and component level scopes.

Key activities visualized should be relevant to management because they help to focus on them, understand the business model fit and contribution to value proposition, and engage on **collaboration** with other firms, entrants, car sharing organizations, or city municipalities.

Suggestions for further research

The subsequent list provides a summary of suggestions for further research on the transition from automobile to mobility purpose by means of an agile business model innovation:

- The contributions of social psychology driving the economy to boost the transition to urban mobility purpose by means of an agile business model innovation.
- Extend the research for business action towards urban mobility purpose at energy balance stage (causes) instead at environmentalist stage (effects) to mitigate GHG emissions.
- The transferable business skills (acumen) of current automobile industry that can support the transition to mobility purpose service such logistics, supply network management, product design, or even lobbying.
- As time passed, it is very likely that younger generations will experience more openness from OEMs (probably as a result of organizational changes explained by Kubler-Ross model) and maybe consider a research study on the organization, its agile

business model innovation, and collaboration aspect between OEMs and cities in specific as a case study for urban mobility purpose success story.

- Generation of revenue streams themes of the agile business model innovation for mobility purpose services.
- Quantitative research oriented to key performance indicators of an agile business model innovation for mobility purpose services.

7.4 Limitations and lessons learned

One limitation suggested by the researcher could relate to the coverage within this research study of the nine building blocks proposed for the business model canvas. However, as the researcher expressed originally the business model generation has more enrichment in a business setting if conducted is by a cross-functional team. Therefore, the four building blocks included in this research study relate closely to the business action of building value for the customer. In addition, the scope of the four building blocks was sufficient for a single researcher or investigator.

Another limitation could be the aspect of not including in the empirical research implementation research subjects from the mainstream OEMs. However, this was a consequence of the obvious management inertia response anticipated in chapter 5. Hence, the researcher conducted a critical literature review chapter; an extended chapter focused on the institutionalized automobile industry; and selected the most suitable research strategy for the empirical research implementation to compensate this limitation. Concepts and theories were challenged from different perspectives in chapters 2 and 3. Also, the research method employed (an abductive approach to case study), as a research strategy, to execute the empirical research allowed direction and redirection of the study with validation at each iteration. More detail supporting the scope of research subjects was provided in the chapter 5 for research methodology and methods. Furthermore, the common denominator of the institutionalized automobile industry residing in a value proposition based on automobile

ownership permitted the researcher to treat the industry as a single case for the purpose of this research study.

Lessons learned, also known as after-action review (USAID 2006, 1) or project retrospective or postmortem (Berkun 2005, 316), signify the knowledge acquired while conducting this research work apart from the output of the research study. This knowledge could have two connotations according to the USAID (2006, 1): favorable and unfavorable patterns to promote and prevent respectively.

One favorable pattern to promote recurrence is the intellectual exercise to identify, describe, and explore a so-called "wicked" (Denning and Dunham 2010, 313, 339) problem in real life. Rather than business or technological condition, the research topic of this study—automobile business model—represented more a social condition. Thus, the relevance of collaboration becomes necessary among its stakeholders to solve it.

Directly associated with the previous lesson learned, the unfavorable pattern to improve and prevent recurrence is related to the definition of reliable and achievable timescales that represented a challenge from the overall research study associated in some manner to a wicked problem. This is already part of researcher's individual tacit knowledge to retrieve for his future endeavors in the practice of management.

CHAPTER 8: REFERENCE LISTS AND BIBLIOGRAPHY

This chapter lists in alphabetical order reference list style to parenthetical citations using Chicago style templates by Kate L. Turabian for this thesis. Reference list includes two types of lists for secondary research and primary research. This chapter includes at the end also a subsection with a list of bibliography consulted. Reference lists include in accordance to subtitles:

- **Management peer review articles.**
- **Thesis dissertations.**
- **Textbooks.**
- **International organizations reports.**
- **Management non-peer review articles.**
- **News and magazine articles.**
- **Original seminal works**.
- **Interview transcripts**.

The researcher obtained and consulted reference and bibliography materials from the following seven libraries:

- Vienna Central Library (Hauptbücherei Wien).
- Vienna University, Main Library (Universität Wien, Bibliotheks-und Archivwesen, Hauptbibliothek).
- Vienna University, Education, Linguistics and Comparative Literature Library (Universität Wien, Fachbereichsbibliothek Bildungswissenschaft, Sprachwissenschaft und Vergleichende Literaturwissenschaft).
- Vienna University of Economics and Business, Main Library (Wirtschafts Universität Wien, Universitätsbibliothek Hauptbibliothek).
- Vienna University of Economics and Business, English Business Communication Library (Wirtschafts Universität Wien, Universitätsbibliothek, Englische Wirtschaftskommunikation).

- Vienna University of Economics and Business, Institute for Social Policy Library (Wirtschafts Universität Wien, Universitätsbibliothek Sozialpolitik).
- Vienna University of Technology, Main Library (Technische Universität Wien, Universitätsbibliothek Hauptbibliothek).

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Appendix A1: Sample Questionnaire for stakeholder organizations

Data collection technique: Semi-structured interview to stakeholders

Interviewee: Name
Position Title
Company Name, City, Country

Subject: Management of Technology & Innovation.
Title: Driving from Automobile to Mobility
Subtitle: Agile business model innovation

Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date:

A. THEME 1: External influencing factors; Institutionalized Organization; Mobility Purpose; and Business Model Canvas: Value Propositions and Key Activities.

1. How do you observe, in the current business conditions, the transition from automobile to mobility purpose?

4. How do you visualize the automobile business model innovation by keeping the balance between the attitudes to automobiles and maximizing current value for its customers?

7. Does *name of the organization* approach new product/service development in a rapid, improved, cost effective, and near to its customers than any other industry players? Can you provide a practical example?

12. Does *name of the organization* pursue serving future mobility demands? How? Which is the strategic framework?

B. THEME 2: Structural Coupling; Organic Form; Fractal structure; Agile Enterprise; Anticipation; Listening Post–Trend Scouts; Customer in the Front-end; and Business Model Canvas: Customer Segments.

5. How do you observe automobile industry process of listening to the needs of its customers or users?

6. Have you heard of automobile industry trend scouts? If yes, how will or do they operate?

8. What is the corporate culture of *name of the organization*? And, How is fostered the cultural fit among associates and team members?

9. Does *name of the organization* have any early warning to find out modifications in the business conditions that could influence its results? Is there within automobile industry any awareness of the agile organization principles? Can you provide an application example?

C. THEME 3: Business Model Life-cycle; Organizational Process; Business Model Canvas: Revenue Streams.

2. Do you agree with the following statement? Traditionally, global automobile industry has been successful in product and process innovations but needs further development in business model innovation. Please elaborate accordingly.

3. From your experience and professional life dealing with the automobile setting, Could you mention an example of what you consider a business model innovation within the automobile or mobility purpose industry?

10. Has *name of the organization* conducted collaboration programs with other enterprises or within regional clusters framework?

11. Has *name of the organization* applied the concept of open innovation with its partners?

Appendix A2: Sample Questionnaire for customer stakeholder

Data collection technique: Semi-structured interview to stakeholders

Interviewee: Name, City, Country

Subject: Management of Technology & Innovation.
Title: Driving from Automobile to Mobility
Subtitle: Agile business model innovation

Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date:

A. THEME 1: External influencing factors; Institutionalized Organization; Mobility Purpose; and Business Model Canvas: Value Propositions and Key Activities.

1. Could you describe your family in the context of needs for mobility purpose?

2. Could you summarize the number of trips purpose you need to make in a weekday and during weekends? Please include the travel modes if possible.

3. How do you and your family get interested in carsharing services?

7. Are you satisfied with the service offered? Are you aware of new services offered by your CSO in case they exist? Loyalty services, Extensions of services, Discounts to other services, or membership rewards for example.

B. THEME 2: Structural Coupling; Organic Form; Fractal structure; Agile Enterprise; Anticipation; Listening Post–Trend Scouts; Customer in the Front-end; and Business Model Canvas: Customer Segments.

4. Please tell me a typical day, perhaps a weekend, when you use carsharing with the whole family?

5. What is the name of the carsharing organization (CSO) you have membership? For how long have you been a member of carsharing?

11. Regarding the fleet, would you suggest some particular design features for purpose carsharing automobiles?

12. From your perspective as a member of carsharing, what suggestion could you make to the service in general? Have you experience issues with reservation of automobiles? Or vehicle availability?

C. THEME 3: Business Model Life-cycle; Organizational Process; Business Model Canvas: Revenue Streams.

6. Could you explain me in your words how the carsharing system works for you? Also, please elaborate on fees and charges you incur for the service?

8. Do you prefer the two-way carsharing service or do you prefer one-way? What is your average duration per round trip or distance?

9. Mainly during the time you are a carsharing member, Do you still keep a car (ownership)? If not, how was the transition to avoid car ownership?

10. Can you list some of the economic benefits you notice from carsharing versus car ownership in this period you have been a carsharing member?

Appendix B.1: Transcript of interview with Mr. Alberto Rigoletti, Director Rigoletti Casa de Diseño, Mexico City

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile enterprise innovation model for new business development
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: February 16th, 2010. 14:00

1. What is your opinion on the transition from automotive to mobility?

Before, it is necessary to mention that exists a difference between the European market and that of México. Apart from it, nowadays the search is for automobile design looking at the vehicle engineering. What is behind and what is next to pass from automotive to mobility from point A to B? The fundamentals reside in what move us or what the social motivation is. The key point is to create a transport unit without missing that motivation. For example, in the European Union (EU) the trend in the size of the family is decreasing mainly in all of its major economy country members. However, the trend is to introduce in that market more spacious vehicles such the so-called station wagon. By contrast in México, where the family demographics is different to that of EU, the station wagon niche literally does not exist anymore or it is minuscule when comparing to the activity in this niche by OEMs.

I believe one must search for a mobility concept that considers a middle point between that *per se* and the distinctiveness by its functionality. For example, an automobile for three passengers, utilitarian, and shareable should have a sober design with the plus value of being shareable. Besides, this automobile should be in such a way that the user does not care for return it. To achieve this, it is necessary to revise the urban infrastructure aspect, redefinition of pedestrian zones, but over all educate people to make use of the concept of car sharing. In essence, actions should be to share and educate people to detach from the

deluxe vehicle sense. Another scheme for mobility is the car pool that offers certain convenience to users organized in such a way. However, one should reflect on the automobile for families under this scheme. Apart from it, in the Japanese market we can observe that automobiles have been reduced in its interior space.

Above all, an example from our experience in México refers back some years ago when families of five members traveled for a weekend to Acapulco from México City in a VW Beetle 1600cc. Nowadays, a family of similar size in a vehicle with more interior space such a Jeep Patriot, just to quote a vehicle, can travel little uncomfortable due to the child seat requirements. Therefore, it is very important to account for all these aspects of interior space including the safety elements. This includes the materials also. Since, 50 years ago nobody would think in automobiles made of plastic parts integrated in great deal of components like today.

2. How do you listen to your customer needs?

First of all, by educating our people. Rigoletti Casa de Diseño is a seedbed of designers for México. The best way to listen to our customers is by embracing what each culture needs. For example, what the Brazilian automobile market needs could be different from what the Mexican market needs. For Fiat the design of the automobile line "Palio" was a success for several markets except the Argentinean automobile market.

This trend in the process of listening to the customer at OEM level is witnessed here in México. Last January 29th, 2010, Nissan announced the opening of its styling center "Nissan Design America" in the city of Mexicali, Baja California Norte, México.

3. Why is Rigoletti Casa de Diseño considered a business model innovation in México auto industry?

For its unique characteristics as academic and professional integrated design center to solve the needs of the Mexican market. The business model of Rigoletti Casa de Diseño is to sell dreams and most important to sell education. We offer a different education alternative in México, since Rigoletti Casa de Diseño has the "European Accreditation Board of Higher Education Schools" seal. On the other hand, the professional integrated design aspect leads us to real-life projects in which two 3rd-year students of the bachelor in transport participate. Every business involves risk. Now our challenge is to increase the enrollment. Our major concern is the academic level of our graduates.

4. Which is your collaboration program concept within the automotive industry?

More than collaboration, it is a need. Currently, we have a collaboration program with Nissan. Nissan considers Rigoletti Casa de Diseño for its design center. Before, we have collaboration programs with Fiat and Alfa Romeo. Our interaction with OEMs is demonstrated with student internships of Mexican talent in its design centers for regional development.

We have also an alliance with the "Istituto D'Arte Applicata e Design" in Turin, Italy. This alliance consists of academic programs for the Bachelor Degree in Industrial Design and for the Master Degree in Transport Design. In summary, we are partners in transport design. The first class will end this year 2010.

Appendix B.2: Transcript of interview with Mr. Carlos Mastretta, Partner and General Director of Tecnoidea (Mastrettacars), Mexico City

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile enterprise innovation model for new business development
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: February 17th, 2010. 9:35h.

1. How do you see, in the current scenario, the transition from automotive to mobility industry?

Before all, I should express that I believe that Mastrettacars is more oriented to the entertainment industry and not directly to the transport sector. Our automobile will be offered for entertainment. We need to think and reflect in its positioning for entertainment and concentrate on that. I am not sure we are in the mobility industry. Our situation is atypical and it is to be demonstrated its success. The business model is adequate. Our perspective is to place mobility towards entertainment. The market niche to which we look to serve is that for entertainment automobiles. We explored the market potential and considered the development stage we achieved with the design and manufacture of buses in México. Our design division will continue. In relation to the market potential, it is something we see also in other markets such as in Austria with the KTM X-Bow which is a vehicle more oriented for ostentation. Besides, media messages from the side of the mass OEMs such BMW with its new advertisement campain “Joy is BMW” o “Joy defines de future” where the emphasis resides in the joy to drive as purchase differentiator. This supports our view on the entertainment aspect and our target niche for exclusive sports cars class.

2. Why is Mastrettacars a business model innovation in Mexico auto industry?

I confirm that yes we are business model innovation for the Mexican market, because there is no precedent to other business model similar to for its size in M México. We are passionate by automobiles and the company oriented to design and manufacture of buses attained a technological level. Above all, we considered that the market conditions exist.

3. How is the process to listen to your customer needs?

Since we were young we have always been observers. Afterwards, we had contact with potential customers for the Mastretta MXT. We listened what people asked for this kind of vehicles. What they like and they do not. What we put in high regard is to answer customer requests. Among these requests is the glamour and entertainment with this kind of vehicles.

During the 2008 edition of the British International Motor Show in London, UK, we were able to conduct a market test, gather points of view and opinions. Afterwards in another show in Huixquilucan, State of México, México we participated by presenting our prototype and we have an exchange with the public attending this show. Also, we pay attention to the media, like this recent edition 3 of year 2010 of this magazine "Automóvil Panamericano", from which we obtain information of trends and reactions to several interview made to us.

Beside, our experience in the design and manufacture of buses orients us to listening our customers by direct exchange with them. Not only to respond to real needs of the customer but also to the final user needs. At least with five of our business customers, we have designed products from concept including tooling design and manufacture.

4. How long was the new product development for the Mastretta MXT? And Why this boutique small sports car the target niche?

The product development process has taken already four years from year 2006 to 2009. As I mentioned before this process included the prototype presentation in the British International Motor Show in London, UK. The start of production (SOP) is scheduled for mid-2010.

We address niche sports cars with technology that allows homologation for low production volume and high return on investment. We have available to our reach the investment. In other words, the volume production and investment was available to our reach. The business plan includes producing and selling 500 vehicles per year. With this volume, we are able to access European markets under the class "Low Volume Manufacture" and incursion at this level with at least 1000 units per year or 70 units per country.

5. Does your organization approach new product development in a better, faster, cost effective, and closer to your customer than other competitors? And what is Mastrettacars corporate culture?

Yes. Despite we really do not have competitors in this market. As far as I know.

Our corporate culture is based on doing things well. We do a good job for our customers and for our own products. Essentially, we started as a small family business and now we see our transformation to a corporation as part of the financial plan for our new product—the Mastretta MXT. Therefore, we will conduct the business in a more institutionalized manner with responsibilities and obligations with our shareholders.

6. What the current status is of the Mastretta MXT?

The product development process is completed. Currently, we are pursuing the assembly plant build in Lerma, State of México, México. By May 2010, the first automobiles will come out of the assembly line—four units per month and then eight units. Currently, we have commitments for ten.

7. Does Mastrettacars had conducted collaboration programs with other enterprises?

No. Only working contractual relationships for the services with other supplier companies.

8. Does Mastrettacars pursue serving future mobility demands?

No. We only look to satisfy entertainment needs. Therefore, we focus our attention to serve emotion needs, personal taste, and enjoyment of the product.

Appendix B.3: Transcript of interview with John McElroy, Host of Autoline Detroit, Livonia, MI USA (via transatlantic conference call)

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile enterprise innovation model for new business development
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: April 5th, 2010. 15:58 – 17:32h CET. (8:58 – 10:32h EDT)

1. How do you see, in the current business conditions, the transition from automotive to mobility?

Many car companies stop in the water, when talking about mobility. GM, Ford, Chrysler incursion into the rental car business was a failure. And they failed, because they used the rental car companies as a way to circulate their cars. They kept cars in service within the rental car company for around 6 to 8 months and sold them in auction afterwards, but almost close to the price of a new one. The fact is that rental car within OEM strategy was not really their core business.

No OEMs is fully into this mobility concept. For example BMW has a concept that helps buying the tickets, take the trip, let's say to Italy, by train and then driving the car there. It is a business system to drive your car. It is the only car company I am aware is trying to get in this concept. Other attempts in the USA, for example, are found 10 or 15 years ago. In which you lease a car with a premium allowing you to schedule any kind of car that Ford made. In other circumstances, the lease allowed you to pick the type of car according to your specific need in a specific time, for example a pick-up truck. All in one included for one leasing price. However, it did not work. It was extremely hard due to the complexity involved. Right now the company Zipcar® is more involved in the car sharing business. You just swipe your credit car, use the car, and bring it back. This is the most recent in North America.

2. Do you agree with the following statement? Traditionally, global automotive industry has been successful in product and process innovations but needs further development in business model innovations. Please elaborate accordingly.

Yes at the forefront. Purchasing and logistics have been very good in the last two decades and setting a role model for other industries. Buying parts from all around the word, with different currencies, and move them. Quite good. But not question that in terms of business innovations something needs to be done. For example we witness the situation in which one company was buying other companies such as Ford buying Jaguar, Volvo, Land Rover, you name it. Chrysler bought AMC. Later, we saw Daimler buying Chrysler. Joint ventures were also very popular in the 1980's. The purpose was twofold: to get together and to do a project together. As an example the joint venture of Ford and GM to develop and manufacture a new kind of transmission. It worked very well the cooperation concept for engine, transmission, etc. Later, Carlos Ghosn introduced a new wrinkle in alternatives to create a car by exchanging equity and fully opening off with its partners. This was Renault and Nissan and this month of April Daimler tied-up to both. The interesting question is if they can handle the complexity? Since this complexity grows exponentially as this business model adds more partners. Interesting approach. In something that customers do not really care. However, there is no move to mobility. It is all about cut-off costs and how to achieve greater scale to drive costs down also. And at the same time, looking for an expansion in the growing markets of the world such as China and India. For at least the next decade nothing will be seen in the case of business model innovations towards mobility.

3. From your experience and life inside the automotive media setting, Could you mention an example of what you consider a business model innovation within the automotive or mobility industry?

A very good example is GM small two-seat concept purely electric, completely autonomous, and fits into an infrastructure. It knows were it is and where it goes. This includes technologies such as sonar, radar, and video as well as GPS. First time a car company is looking at the infrastructure in which this vehicle will operate. GM AUTOnomy initial target market is China with its high population density infrastructure to follow the steps by the US American market could be huge. So, that is why GM sees the opportunity. The analogy for infrastructure is in the communications industry of China, which is bypassing the wire infrastructure and jumping directly into wireless telephones.

4. How do you see the business model innovation keeping the balance between fascination aspects and maximizing current value of the firm?

Different customers want different things. When many people like the mechanics and performance of vehicles others simply do not like or do not care about it at all. Currently, an interesting approach is the one taken by Ford. They are bringing interesting things working with Microsoft. Ford Sync® has interconnectivity with iPod or USB devices and provides hands free features. Ford is a step farther now with the "MyFord Touch™" system bringing WiFi and Apps to cars. Emulating iPod scheme. By creating these Apps, Ford is starting to do this kind of thing. Independent developers work on Apps. Ford is not getting revenue directly, but it is creating love for the machine because it has this kind of features.

5. How do you see automotive industry process of listening to customer business needs?

I don't see too much change. One interesting concept is the one related to technology in the automotive industry. GM AUTOnomy concept car with the following features: pure electric powered including electrical controls (drive-by-wire) for brakes, steering, and other vehicular systems as well as a built-in battery in the chassis. Now you add any kind of body (top hat) on this chassis. Quick connecting the application top hat to the chassis and the customer buys

the chassis and leases the top hat for the application. GM is looking ahead to customer needs and using new technology for quick disconnect.

6. Do you hear of automotive industry trend scouts? If yes, how will they operate?

Yes. Trends scouts in the automotive industry are very much studying trends all over the World. Psychographic issues. Migration to cities is definitely a trend and much younger demographics in the developed world. But not as we know it right now. For example, young people in Japan do not care for cars any longer. Technology is the new advantage for those new generations. The question is how to do it.

7. Does automotive industry organization approach new product development in a rapid, improved, cost effective, and near to its customers than other industry players? Can you provide a practical example?

Yeah. Good question. All automakers recognize they need to improve their product development process. For example the technology Ford uses for its "MyFord Touch™", spacing, increasing legislation for emissions and fuel economy, and recycling are getting more and more complicated. Trying to learn from the computer industry, which in many cases is easer in this industry. Contrary to the automotive industry in which if they want to change the type of tires, this would require eighteen months process just to change the tires due to the testing involved. So, much testing and validation is required in the automotive industry. In the electronics industry, they do not even sometimes face recycling regulations. Platform "MyFord Touch™" came from supplier of consumer electronics technology out of the self. Ford and Microsoft combine and look for somebody else to manufacture. Very interesting contracts development including an out of the shelf approach. Relative quickly.

Right now all OEM have a lot of research for internal combustion engines. Even at the detail that PhDs in laboratories can analyze and predict the behavior or

the flame in combustion chambers. Another opportunity is in the electric cars, if they really catch. Probably customer may not care for the type of electric motor. Or Automakers spin off the manufacturing operations. Most customers really do not care. They only care if it has automatic or manual transmission. What if GM and Ford spin off their powertrain operations for gasoline or diesel and they cooperate. More scale than any other operation. More developments. The Global Engine Manufacturing Alliance (GEMA) is a good example, but from the business stand point of view it did not worked. In this case Mitsubishi suffer a significant decrease in its vehicle sales and Hyundai did not have its initial interest in GEMA. Here the key point is how do you keep partners interested in the cooperation venture and be in fact very cooperative. This week Dieter Zetsche is interested in Carlos Gosh Nissan-Renault. But when Carlos Ghosn leaves, nobody can warrant that the initial cooperation business will continue. Here the crucial is how to preserve the business processes to stand on their own independently of arrival of new top management and foster business performance by itself.

8. What is automotive industry corporate culture? And, How is fostered the cultural fit among associates and team members?

Tough one. It is extremely important who is to change it. It requires a long time, but also I have seen fast corporate culture changes. Hyundai in the past they did not have very good products. Their products were very cheap. Then, the CEO of Hyundai searched for great design, great product, and great service. Their corporate culture changed better than that of Japanese carmakers. Another example is Ford. They were facing disaster. Former Ford CEO Jack Nasser leaned to acquire daily rental companies, and auto repair industry firms. It captured all the value vertically and became so complex. So, it collapsed it. It affected everything in the company. They did not invest enough. They left apart product development and quality. Ford CEO Alan Mulally achieved the change by establishing very clear goals for everybody in the company. Every single week reviews the goals from around the world. Very clear strategy for the company and monitored them. Every body in Ford, I talked to, feels they are

doing the correct thing. The morale is very high just in three years. Very quick! Alan Mulally coming from the aerospace industry shares a lot of parallels with the automotive industry. They talk about platforms and how actions derive from those platforms. At Boeing Commercial Airplanes, he needed to talk to UAW. They trust him. At Ford, before they used to have a lot of operations duplication among Europe, North America, and South America. The obligated step was to communize platforms.

9. Does automotive industry have any early warning to find out modifications in the business conditions that could influence its results? Is there within automotive industry any awareness of the agile organization principles? Can you provide an application example?

Automotive industry is talking about implementing agility for almost 20 years.

Ford and Microsoft contract manufacturing to Taiwan. They do not want to control everything.

Another business case is Toyota with great benefit for the product development of a car. They applied the strong program manager style "susha" (Japanese style) concept for the platform development of a car, for example the Corolla. Susha knows the contacts, features, launch specifics about the product. This information is transfer to the so-called "book of knowledge". And this is the way to transfer information details from the old susha to the new susha.

The business scenario is changing. New people, new technologies, new regulations cause the product development to become so complex. Therefore the solution is the Product Lifecycle Development (PLC) software backbone. Let's say for example the instrument panel. You can get there to listen what the customer needs and in video form consult on-demand the clinic conducted by your marketing area. Therefore, designs process generates more robust products due to the early simulated iterations. In other stage, suppliers can visualize changes you need. Finance can get updates on how we are doing on the project.

Collaborative product development simulates everything. From manufacturing, ergonomics at workstations, and to the product experience.

Now we see quick changes in the technology and its business applications into the market, which represent a challenge for this model. So, a step further is to include customers in the product development for example in the styling aspect. Outside the automotive industry, "Dassault Systemes" made available a simulator with shelves from the supermarket. Just to be an observer of the customer's shopping experience. Simulate the business. And figure it out for the best design and the best product.

10. Does automotive industry had conducted collaboration programs with other enterprises or within regional clusters framework?

Saturn case is a good example. They wanted to create the best buying experience. They work with several other companies. With Nordstrom department stores which have an excellent customer experience. They really help you. Store attendants are well trained on the product features and how to sell them. And with Mc Donald's which is able to supply to a very high number of people and consistently to provide the same quality. Saturn worked with both, Nordstrom and Mc Donald's, to introduce the best buying experience in the automotive industry.

Another example in the 1990s was Chrysler with its all time best-purchasing department in the industry. Thomas Stallkamp introduced his concept of the Extended Enterprise® (EE). They went to the mines, continue with the bar steels, up to the manufacturer of the camshafts and the final machining. They knew the whole product process. They made aware to all the enterprise what the product was going for better quality. Tom Stallkamp used to say: if my EE is healthy and fit, we are going to benefit. The example on hand was Praxair and GE. Stallkamp found that Praxair, a supplier of nitrogen, oxygen, and other compressed gases and liquids, did not have a very good HR and personal policy. But GE Capital was good at managing his human resources. And that Praxair

was really good at logistics for compressed air tanks. Collaboration between Praxair and GE led to cross-share those particular business capabilities and from each other for the benefit of the EE.

11. Has automotive industry applied the concept of open innovation with its clients?

Not really. Ford "MyFord Touch™" software in which developers create apps is one of the few examples. Developers and customer can download them. A developer is in the Netherlands and it is paid for its contribution by development. Not being done for car aficionados around the world.

12. Does automotive industry pursue serving future mobility demands? How? Which strategic framework?

I hear automotive executives talking about "we are a mobility company" or "our goal as a company is to be an automotive mobility company". It is just talk. One alternative we have seen recently is between utility companies and automotive companies. Utility companies are not really interested in the grid. They may be interested in buying batteries. Batteries used to download electricity during energy peak demands in the grid. Therefore, grid stations will be used in two ways. Not only to recharge batteries, but to sell energy back to the utility company at an additional price depending on the peak demand time.

The cooperation and collaboration we are starting to see now between electric utility companies and car companies resembles that that happen almost 80 years ago between big oil companies and car companies. Now, all car companies are in collaboration agreements with electric utility companies.

Appendix B.4: Transcript of interview with Sebastien Stassin, Partner of Transportation Design. Kiska GmbH, Anif-Salzburg, Austria

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile innovating business model
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: April 14th, 2010. 14:00 – 16:05h CET

1. How do you see, in the current business conditions, the transition from automotive to mobility?

For me there are several parameters and fixed flaws from the major players. I would like to make in parallels. Which is one of the reasons in this inertia – concepts with electric cars, integrating mobility, not ownership of the car that the change to mobility is not happening overnight. Two years ago nobody really did it nor wanted. Now, people is starting to talk but not happening.

At the Stockholm summit, the initial statement was that we should not expect results. Otherwise, it would be naïve. Because what is only happening is that awareness is already in the public. In 20 years may not be the owner of the car, such as in some mobility alternatives with a total solution in one product. Other professionals in the industry may think of multiple solutions with new ownership systems. Then, it comes the parallel I referred before: these new schemes require an infrastructure to built them. In other words, you need to make something new. You cannot shut down what is now done in the industry. How do you built without putting the thing down. So, that is the reason the transition from car industry to mobility for the world is not going to happen overnight. Let's put the example of China, as a country, will not start from zero. Even tough, we witness in front of us that they are falling in the same pattern of the USA automotive industry model.

On the other hand, looking at the social theories on how to create a revolution. If you try to change the world, hopefully if you are very lucky will not to be killed. However, in comparison if you attempt to change a city it would be quite easer. Something you can envision could have a snowball effect at this level. This could accelerate a new system around. Important case studies come out of new communities. Impress the world to move the change. The example could be "A better place" within a scope of a small geographical base that could influence the rest.

Having said that the automotive industry suffers also from this natural factory inertia let's say at management level. For example, looking for a new interior with lightweight materials, the solution is not in savings but getting ride of it. Research and development is still at a component level. So, innovation cannot come. And the concept cars derived have their wrong target. The main reason for that the knowledge is dispersed without unity. Going back to the analogy: the small and dynamic maybe is smaller. May be a community or a utilities company, petrol (gas) stations, or even supermarkets. I do not believe that they may not be the champions. For small electric systems, perhaps partners not necessarily in the automotive industry could be utilities companies. Then, the big automotive companies as followers could make it at high scale. The comparison with companies in other industries could be Apple. And the question if it is really an innovator or it is the result of small companies' innovations. Similar scenario would happen in the automotive industry and not only from big ones. It is not naïve that big ones would be on the top of the pyramid solution besides any small or outsiders.

2. Do you agree with the following statement? Traditionally, global automotive industry has been successful in product and process innovations but needs further development in business model innovations. Please elaborate accordingly.

Yes. Just from hearing within the industry. How slavery is the change in the industry and its automotive margins. It is not a growing model, for sure not. Supplier is being force to deliver in 2 hours and at its responsibility to have a back up truck to avoid paying the penalty in case something happens to the first truck. The requirement is to deliver trucks but not inventory with a just in time system. This makes non-sense. Not a change on a small setting. Small companies entering cannot sustain. And the question at a social level; we cannot change it and it is so difficult. My hope is that will be enough competitiveness really to put the efforts on that and then steer a change in the direction of mobility. We witness a few electric concepts and we are moving in some projects, which functionally a revolution will not be able to do with a big car company.

3. From your experience and life inside the automotive setting, Could you mention an example of what you consider a business model innovation within the automotive or mobility industry?

A symptom of it is the slow transition. It is not a revolution but a transition. In my recent Zagreb experience, one journalist mentioned to me he still likes cars. If you interview in Eastern European countries they still like cars. Do they know cars? Do they like? Designers are extremely cars enthusiasts. General Motors (GM) can build 100 “skateboards” concepts, but due to the change implications the project is shut down. On the other hand, China would be the theoretical best place to do it. From the theoretical point of view and its implications with civilization. Western hemisphere countries faced the problem and the problems before regarding automotive industry that China has not face yet. However, still a lot of courage and power is needed. I doubt China will do it differently. Probably they will have a similar cycle as western countries. Visiting the case of people in China and the car companies, first of all, they want to produce cars not to supply cars. The requirement is to build factories to produce cars. Government will give you the money. People behavior is lazy. The same happens in the entire world. Innovation will last come from China. But China will be the only place possible.

Communications and global positioning satellite (GPS) is one of the things to introduce towards mobility without car industry. GPS influence the way you drive the car. Change your relation to the product. Although is not initiated by the producer of the car. Why should you have an interface in the car? How to find another need it service? To name some of them: charging stations, discharging, electric mobility. And again, will be not the car company. Maybe the provider of a range extender that everybody would like it, like a can of Coca-Cola®. In other words, a lateral opportunity materialized.

4. How do you see the business model innovation keeping the balance between fascination aspects and maximizing current value of the firm?

What will not change is not the product but the instinct of people to move. See the example of sport bikes. In the evolution of markets, perhaps this group is decreasing because is not politically correct with trendy environmentalism. However, instinct to move is not going to change in the future even in one thousand years. If they are not going to do it, they will do it in a car. People passionate of a car in fact progress on the concept, as we know it today: the I-what-to-show-off statement. For example, if I buy a Porsche is not really for mobility needs. You would not buy it for that only purpose for sure.

Then in an airplane it came the first class, tourist class and economy class. Why do you need it? Well, they want the privilege. Time is bought also. With automatic driving machines, you will not need to drive. Again we will see the privilege concept and the persistent influence from product to service.

5. How do you see automotive industry process of listening to customer business needs?

They are doing their best. I will not underestimate the extremely defined process, target groups, media, etc. Anyway, very detailed. They try to differentiate themselves. What I would expect is a power inversion such as that

in the television industry. Today, more options are coming from the Internet besides the cable TV. So, people are deciding (on demand and in real time) from themselves.

Conversely in the automotive industry, there is a business link to regulations to control the fuel economy, emissions, crash test impacts, etc. We have witnessed the recent China example of its automotive industry efforts to comply with international emissions, crash test, and weight regulations, because the automotive industry is a highly regulated business in terms of the product.

Car industry is able to listen and every inventor of car provides an image of the future. However, there are several regulations, lobbyist, and homologations that make so complicated the business process nowadays. In part, the end result is the typical segmentation of cars to fulfill all those industry standards. The most recent pedestrian impact requirement for example and several Front-end Module redesigns such as in the X5. Smart impact with another smart and offer the same safety. Therefore, regulations allow a car concept to be car concept.

6. Have you heard of automotive industry trend scouts? If yes, how will they operate?

Yes. We offer similar services. We generate our own scenarios. Trend scout of services to know the car that people wants to buy. What the trends are to car industry and then for the company specific itself. But it will not have an impact on general behavior of the car industry management. It is likewise deciding on how spicy or salty but not deciding on veggie or meat.

7. Does Kiska organization approach new product development in a rapid, improved, cost effective, and near to its customers than other industry players? Can you provide a practical example?

What we do is that we are used to be close to the innovation boarder. The only valid innovation comes from Silicon Valley. From design aspect in that area of the world, it really has that impact. If I compare it, it would be foolish. Kiska in

Central Europe is not the only one doing the innovation, but doing the maximum refinement level for intangible factors. Branding for example. It is not really remarkable, but remarkable ability to leverage brand by: refining the concept, improving it, and especially refining it. When it comes to technological innovations, we have another strength. Kiska leverage its own group of engineers. We look into composite materials, its industrialization, and invention of new materials. Building a complete product out of this composite material. Now, we use plastics in a very radical way. We know this is the right time with the right brand. Then, it comes design innovations for example steel structure even they have the same function. Integrated design development towards innovation. We always look at complex products and look for competency. We try to implement the holistic view. Not in isolation. Look for different angles. Innovation integrated. Comparisons with design competitors. You do not do a brand by product innovations only. A company selling innovations is like selling medicine. We use the right tool. For example image, but do not work on product only. For example: racing and its advertisement. Maybe, good brand but wrong product. Is it traditional or innovating brand?, or maybe, you conquered a maximum market share then you would need a product change.

Bottom line, what your target is, in a very holistic way, but in an integrated way. As a service company, we can be more neutral to provide the service at the right time. As a marketing research group, we will the best.

8. What is Kiska corporate culture? And, How is fostered the cultural fit among associates and team members?

We do not have a written corporate culture. Otherwise, we will be freezing it. We have a very horizontal system, where individuals are responsible but in a holistic way. Not interested in people specialist but interested in other fields. So, for this working team, they need to be open. We promote a lot. The company is very young. Outside transportation design very difficult to find product designers interested in the company non-tangible product. We want to promote that balance.

9. Does Kiska have any early warning to find out modifications in the business conditions that could influence its results? Is there within automotive industry any awareness of the agile organization principles? Can you provide an application example?

We have something of it. We are active in many fields with many clients. We have a very different source of information such as entrepreneurs and as an international company. By this, we can map from other business, but this mechanism is constant. For international businesses -it is quite interesting- that they are mainly production driven and now product driven without strategy of brand or service.

So, that is the way to have prediction better than others. With a recent client, we conducted transfer of technology from another field. They were trap in the image they have such and extensive use of being new and new, but they needed something really new. We brought expertise for them from other field to their industry. In five years would not come to us. The bottom line is to spot the right technology to consolidate the image.

10. Has Kiska conducted collaboration programs with other enterprises or within regional clusters framework?

We have conducted collaboration programs with universities and companies across industries. Not to mention that the owner of KTM has shares in us and we have collaboration with other clients such as Pankl for F1 engines. For new materials and technology, as well as the design side. More than fixed collaboration programs, we conduct project collaboration programs. We design and we focusing on the thinking intangible side. We are a big hand into design and implementation.

11. Has Kiska applied the concept of open innovation with its clients or other partners?

Not really. We did in certain cases. Because of the nature of the business, it forced us not to have a very standard process. However, there is not standard solution for every client. Open innovation, licensing, is not our focus. If it happens is not our initial target.

12. Does Kiska pursue serving future mobility demands? How? Which strategic framework?

Design consultancy with impact on mobility with two or three projects and cars. Working with several providers. For instance, plug-in systems for energy infrastructure for vehicles, concept projects, we are mainly an idea tank not at implementation level. From A to C complete product or brand work. What we see is certain dynamic behind this topic. So, we need to be a specialist not of one but several fields around this topic.

Appendix B.5: Transcript of interview with Mag. (FH) Peter Kuen, Cluster Manager, Automotive Cluster Vienna Region (ACVR), Vienna, Austria

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile business innovation model
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: April 23rd, 2010. 9:00 – 10:04h CET

1. How do you see, in the current business conditions, the transition from automotive to mobility?

The automotive industry is facing quite dramatically changes in the way of doing business, in the environment, and in the market conditions. New challenges demand a kind of cooperation among traditional players and with new players in the market. And the companies have to deal with. For example, Robert Bosch and Samsung working together to build batteries for new BMW electric vehicles. This is something new to traditional automotive companies. Bosch is investing in photovoltaic technologies also. Business cases are just rough estimations. They still focus on core business. Producing cars with combustion engines. Dramatically the automotive industry is not changing in the next 10 years. There is still a long way to run for the companies. However, they already started a smooth transition. For example, in Austria 5% of the infrastructure will be prepared for electric cars. On the other hand, out of these 5% infrastructure for electric cars, if you look into R&D investment, no more than 10% of it goes into new solutions. A lot of funding exists. For the particular case of electro-mobility, I do not know how it will take to have a good estimation. Looking into its customers and the money is what automotive industry makes. Customers are the drivers likewise in China with its impact. There are a lot of improvements.

2. Do you agree with the following statement? Traditionally, global automotive industry has been successful in product and process innovations but needs further development in business model innovations. Please elaborate accordingly.

Yes. Business innovations models are based on cooperation and collaboration. Finding the right partners is the key issue. Recent examples are Daimler with BYD in China and GM with Reva in India. For Tier 1 suppliers there are more configurations. An issue is that they look globally. It does not matter where they are from. All cooperations have not big progress for the future. People have to be aware that tradition and friendship is not the future. Previous unsuccessful experiences such as GM and Delphi, Ford and Johnson Controls, and PSA and Faurecia have demonstrated so.

3. From your experience and life inside the automotive setting, Could you mention an example of what you consider a business model innovation within the automotive or mobility industry?

Robert Bosch and Samsung for batteries for BMW electric cars.

4. How do you see the business model innovation keeping the balance between fascination aspects and maximizing current value of the firm?

There is always a special fascination but a lot of people realize the world is not the same anymore. Segments are moving one level lower. For example customers of BMW series 7 now are more inclined to BMW series 5. Audi has witness a similar trend. There is a link of emotions in fascinating cars or pure mobility. However, the question comes on why does people is buying hybrids. Just for pure marketing reasons being satisfied, since from the perspective of basic physics involved is not easy to understand why a heavier powertrain which renders a fuel economy of 10 liters per 100 kilometers instead of the corresponding 12 is being purchased. There is not yet a substantial

improvement. It is more the emotions and marketing involved. Like making a statement: "I am a good boy" caring for the environment.

5. How do you see automotive industry process of listening to customer business needs?

I do not know if they listen. They try to sell cars. If you order a car you can have it with different powertrain options or body configurations such as sport utility vehicles (SUV). Automotive industry needs to find a balance. Between needs and wants and the corresponding budget. For example, to get a big car when you really need it 3 times a year. Customer is not ready to tell the automotive industry what they really want.

6. Do you hear of automotive industry trend scouts? If yes, how will they operate?

There a lot of these trend scouts in the fashion industry. In auto industry there are also. I am sure there is a lot on going. What I believe is that more and more OEM companies are listening more to tier 1 suppliers. What systems they can develop in the electronics and communications areas. A case in hand is Johnson Controls with a screen similar to that we see in airplanes for entertainment and trip log. However, I do not really know if they exist systematically and whether they would have an impact for the business decision-making process.

7. Does automotive industry approach new product development in a rapid, improved, cost effective, and near to its customers than other industry players? Can you provide a practical example?

It is the same for other main industries. For example, cellular mobile phones industry needs to be faster due to technology changes. Auto industry is doing more, since it needs to work in the collateral safety issues. In other words, automotive industry is more demanding due to regulatory requirements.

8. What is corporate culture of ACVR partners? And, How is fostered the cultural fit among associates and team members?

It is so diverse. Strong management styles that go from patriarchal to fully team decision process.

9. Does ACVR partners have any early warning to find out modifications in the business conditions that could influence its results? Is there within automotive industry any awareness of the agile organization principles? Can you provide an application example?

No. Because of the regular business time and cycle. On the long term, they only have a rough estimation. And mainly present in small to medium enterprises.

10. Does ACVR had conducted collaboration programs with other enterprises or within regional clusters framework?

For business innovation models, we have the educational program. We offer automotive trainings and upgrades. We search and select the appropriate training and the trainers towards qualification of ACVR partners' human resources. In connection with electrical mobility (e-mobility), ACVR has participating in the Austrian Mobile Power AMP platform. The ACVR wants to be part of the effort, since ACVR is a network. A job we should be in there, due its characteristic for linking SME and the networking involved.

11. Has ACVR applied the concept of open innovation with its partners?

No. It is only limited to networking purposes.

12. Does ACVR pursue serving future mobility demands? How? Which strategic framework?

The answer could be referenced to previous response to question 10. However, I could say yes and add to the response that working together with politics for strategies to implement mobility alternatives in the region. Also by structuring funding systems. The ACVR provides input at the political setting level. A recent example is a European Union conference on project ideas and improving links with the participants together. One focus is to promote human resource qualification of partners and the second is to promote mobility and to get funding schemes. The University for e-Mobility is another initiative here in Vienna within the interregional cooperation project CENTROPE. For an innovating region, the main goal is to set a good framework having in common education and training of its human resource. Firms come together over a long period of time and work together. A recent example is the jointly offer of the Automotive Industry MBA program by the Vienna University of Technology and the Slovak University of Technology with the collaboration of the ACVR. This framework sets preconditions for open mind to move the change and things.

Appendix B.6: Transcript of interview with Mrs. Laura Milani, Director and Mr. Guido Guaschino, Institutional Relations, Istituto d'arte applicata e design di Torino, Turin, Italy

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile business innovation model
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: May 24th, 2010. 9:30 – 11:27h CET

1. How do you see, in the current business conditions, the transition from automotive to mobility?

M: Before I refer to this transition, it is necessary to see the political aspect. Many are speaking about the transition, but few are really thinking about it. Also, we need to see the aspect of society because mobility is moving from the infrastructure to the use. Society in a context and used for people. The mentality, the information, the systems and the possibility to use it on another services are there. Before that a cultural problem needs to be solved. G: In other words, a change of behaviors is not yet there.

2. Do you agree with the following statement? Traditionally, global automotive industry has been successful in product and process innovations but needs further development in business innovation models. Please elaborate accordingly.

M: I would link to my first answer. The new possibility is to link the collaboration of the social mood with innovation system inside the company. For example, the case of a well-known Italian OEM company, which is officially considered a private company, but in practice is not. Therefore, the result is development of products not more than social political products. Mobility is an argument or conflict. So, this point of view is just a private

initiative. The future is genuine social and private roles together. For me, it is important that a company puts a product in the market, but the real problem is in this last step. G: Yes, for example reducing emissions the technology is coming. Another example is the online matching of travelers in the metropolitan Westphalia, Germany. It is a different change from the car to the system. M: It is the difference between product and system and practice and theory. Today it is possible a mobility society. G: It is not only how to sell the cars but to look for the service aspect also. This little change is a challenge. M: It is true that you need a car, but it is important to create a new mobility system. Based on a new foundation.

3. From your experience and life inside the automotive setting, Could you mention an example of what you consider a business innovation model within the automotive or mobility industry?

M: It is not practical, but a virtual example. In Italy there is an electric power society proposition. And it could work as this. In two years you could have a Smart car from Daimler with electricity for utilities and car included in the same bill from Enel (Italian utility operator). G: Different levels of energy consumption with tariffs like t-shirts sizes: S, M, and XL.

4. How do you see the business innovation model keeping the balance between fascination aspects and maximizing current value of the firm?

M: Fascination is after usefulness. It is the same cultural problem. And a sort of sequence is If you need it or not whether is nice or not. A new mobility system is mobility consciousness. G: or just add Italian design ☺.

5. How do you see automotive industry process of listening to customer business needs?

M: The problem is not really listening to the customer, but not conditioning them and not to look to create them new needs. The target is not only for one

customer but the whole society. G: Such as the marketing campaign “Fiat 500 wants you” in which the public added its opinion to design their car. At the end it was more and exercise to allow public to have a “say” in its design rather than to own it. Pure marketing. M: The main concept behind was an original popular car, but the price niche was not so popular.

6. Have you heard of automotive industry trend scouts? If yes, how will they operate?

M: I have not heard of it with the trend scouts name. A similar departmental concept with a different name exists in some style centers and its function is to study trends. The function is more oriented with advertising and design. G: “chic” line is the best. M: Another example is Lancia eco-chic pink & black, but more marketing oriented rather than genuine mobility.

7. Does automotive industry approach new product development in a rapid, improved, cost effective, and near to its customers than other industry players? Can you provide a practical example?

M: In theory is long, but in practice not too long. For example, current development process time is normally three years, but some times is possible shorter. G: For example, Bertone developed a one car only within 6 months from concept to first SOP. M: it is different to create a new vehicle than redesign a new one. This takes between 5 to 3 years, but for redesign it is shorter the time span.

8. What is corporate culture of IAAD? And, How is fostered the cultural fit among associates and team members?

M: For us it is very important. The pair design and culture, but without this pair is not easy to speak. It is important to remember that this is a process at a first level and second level. With the contemporary aspect of design in Europe you can create new objects and services sustainable from the base. There is a social

attribute for satisfying its needs and not just because it is nice. The "nice" feature is the last step. The best quality is the combination of needs and nice feature. G: in other words, to respond to the needs that society requires. The meaning is more important than the beautiful design, the relationship with the object. M: Responsibility is very important. Design is not styling exercises. Not design culture.

9. Does IAAD have any early warning to find out modifications in the business conditions that could influence its results? Is there within automotive industry any awareness of the agile organization principles? Can you provide an application example?

M: Yes. An example is that we have this fixed point in Turin and collaborate with many universities and partners around the world to find the right approach for a mobility system and not the other way around. G: more than dictate what should be the design, we ask what should your design be. M: Also collaborations with several partners. Partnership is necessary to develop contemporary program, skills, and professors. Every year, we partner with one or two enterprises. That is our systemic approach. G: As an example we witness the recent Italdesign Giugiaro partnership with VW. M: It is impossible to think for yourself alone.

10. Does IAAD had conducted collaboration programs with other enterprises or within regional clusters framework?

M: Yes. With the public system, private, and associations. Our transversal approach allows us with all in every moment to promote the development of future professional skills.

11. Has IAAD applies the concept of open innovation with its partners?

M: Yes. With our partners in innovation, we share resources including human capital and sometimes they take them. We nurture an open culture.

12. Does IAAD pursue serving future mobility demands? How? Which strategic framework?

M: In this case the first academic bachelor program “Design of sustainable mobility and transportation means” which is first in Italy to start in October 2010. G: The skills and think tank as a sub-product. M: The new bachelor degree is important to underlay a new approach. Mobility is leaning with society, municipality, region and province. It involves economics and the public.

Appendix B.7: Transcript of interview with Mr. Michael Röck, Managing Director. Denzel Mobility Carsharing and Denzel e-drive GmbH, Vienna, Austria

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile business innovation model
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: July 28th, 2010. 10:00 – 11:25h CET

1. How do you see, in the current business conditions, the transition from automotive to mobility?

M: It is important to recognize that young people want to use the car not to own it. For example, someday they want to use the bicycle, another day the train, the subway, or the car to let's say to fulfill their shopping needs. What is changing in younger generations is the way of thinking and it will change for some people in the sense of paying for the use and not for the ownership. Carsharing business is not new.

In specific to Denzel case, we started the carsharing business in the year 1997. But there have been more and more discussions, since the transition of alternatives for internal combustion engines. Now, considering that the range of electric cars is limited. A lot of cities are willing to support the carsharing system. For example, the City of Vienna is taking a close look at this business.

Denzel is a very innovative company. The influence for that came from its founder Wolfgang Denzel. He was actually an inventor rather than a businessman. To mention an example, he worked on the development of a double camshaft overhead for Mitsubishi. He influenced the firm by his innovative spirit and in particular for the case of carsharing business as a pioneer. Denzel has a business relation based in Switzerland. Then, at that time

it was an opportunity for a business model innovation. At the beginning, carsharing and rental car was one company. Carsharing was a small company targeting a small group of "crazy" people and early "greener" people. In 2007, we decided to look deep into Denzel operations and focus on our key business and get rid of business not focus on our core strategy. As a result, the fast repairs business environment changed and it was in fact a loss for Denzel operations. In the case of rental car business, we look into the business and found that it was not focused but our focus was on carsharing. So, we spun off the carsharing business unit and sold the rental car business. From our joint venture with Mobility® carsharing in Switzerland, we got the booking system. We use the same infrastructure as they use and Denzel is responsible for the hardware aspect e.g. vehicles, maintenance, parking places and the market in Austria. Therefore, after 3 years we really developed the business not only for "green" mind but also for a different focus mind on the ownership of the vehicle. Our transition was from a small business unit and we expanded. Currently, our business model is based on the premise that if a customer requires a car for more than 12 hours, we move them to a different service such as rental car. We handle agreements with rental car companies to get preferential rates to our customers. Our site provides to customers with a calculator to find the decision point to carshare or to rent-a-car for a particular case.

2. Do you agree with the following statement? Traditionally, global automotive industry has been successful in product and process innovations but needs further development in business model innovations. Please elaborate accordingly.

M: Yes. They need to develop a new business model. As far as I know one original manufacturing company (OEM), which is Daimler AG, is experimenting with carsharing business model. The name of their enterprise is Car2Go. They have a different concept compare to what we have. Their concept is based on one-way system. We have 200 places and our customer get back the vehicle to the same location. In the case of Daimler carsharing, the model is

different. We believe a two-way system is more in accordance to cleaver mobility. Why? Well, if you calculate and analyze it, Why should not go by public transportation such as train or subway instead? Environmentally speaking not adding traffic to the city. Why not just to take the train? The people or user should not go one way. Use public transportation instead for that purpose. In our experience from our customer the usage mode mix is 90% by public transportation and 10% by individual mobility using carsharing for their travels. It is not an exchange of modes of mobility. For example from a total travel distance of 100 km, the combined trip will be 70 km completed by public transportation such as train and 30 km will be completed using carsharing. And that is basically how we are different from Car2Go. So, that is the reason we have collaboration programs with Vienna public transportation system "Wiener Linien" and Austrian Federal Railways (ÖBB: Österreichische Bundesbahnen). These collaboration engagements have the concept of carsharing as a supplement to public transportation for the "last mile". But to go every day to work, I will go by "Wiener Linien". Other aspect to look is that young generation has a totally different mentality. Priorities are on nice vacation, the latest iPod, and you name it. They have a different focus of life but apart from owning a car. They want to be mobile. Even to have the option for a bicycle for the shopping trip. For that reason, we are developing a concept to create a mobility card, which includes several services such as carsharing, public transportation, railways, and other suggestions. You have to sell mobility not the car. The mobility card concept is already currently available in Hanover, Germany. There, they create a card similar for that purpose, which involves several organizations (transportation service providers) under Hanover's public transport corporation (The üstra Hannoversche Verkehrsbetriebe AG).

3. From your experience and life inside the automotive setting, Could you mention an example of what you consider a business model innovation within the automotive or mobility industry?

M: Carsharing system in Austria, Daimler and Hanover mobile. The only is OEM involved in carsharing I know is Daimler AG. From the OEM perspective,

carsharing was a business for a small group of "crazy" people. So, they (the OEM) did not take it so serious.

4. How do you see the business model innovation keeping the balance between fascination aspects and maximizing current value of the firm?

M: There would be target groups of people. Not a 100% on a niche. For example, as I mentioned before the younger generations lifestyles are different from previous generations. In my case, I still recall that when I got my driver's license, the following day I was already looking to get my car. Let's look also a different markets such as in China. Due to my other responsibility in new product development, I have been in Shanghai several times. I can tell that the car population is already at levels of traffic congestion. Registration of a car is very expensive and a new restriction allowing only to register cars with environmentally friendly powertrains. It is not free. Special limits imposed by the local government. That is one issue. Another issue is related to the Chinese market. Their population is about 1.30 billion and they have around 150 million cars. On the other hand, the USA market has a population of 300 million with around 200 million of cars. Perhaps, China or India would be looking for ownership but in the cities is going to be different scenario. We need also to take into account the social status in these countries as we witness also in Eastern European countries. In Mumbai, there is an alternative, which is the English-kind of taxi. However, you see taxi traffic congestions in the city. China solution on the other hand went to the developing of subway systems, which include very well equipped and air conditioned stations as well as fast trains within mayor cities. They are also more prone to changing from internal combustion engines to electric motors. So, China is strategically looking more for electrical mobility, since they have limited oil reserves. Instead, power utilities use coal and nuclear energy.

5. How do you see automotive industry process of listening to customer needs?

M: In the car dealer business in general there is an OEM saying: whatever we produce they are going to sell it. Government and non-governmental organizations (NGOs) ask to build environmentally friendly cars. So, somebody have to do it. OEM could do it in an economic way. However, Why is taking to long? For many people the real driver is related to economical aspects. Who is going to buy it? If somebody is not buying, there is no business reason. Denzel e-drive GmbH experience with the Thinkcity electric car show us that this vehicle has been bought mainly by corporate customers such as "Wiener Linien" and other sort of companies for its engineering development. Another answer to why is taking to long question is the lack of charging infrastructure.

6. Have you heard of automotive industry trend scouts? If yes, how will they operate?

M: No. (Interviewer provided a little background on the term to trigger thoughts) Then, the answer would be yes. Actually, I do that. That is one part of my job to ponder what could be a future business for Denzel. While promoting business relations in China, India, and Norway, I am able to recognize future trends and judgment for the development of carsharing and Thinkcity as well as China and India markets.

7. Do Denzel Mobility carsharing and Denzel e-drive GmbH your organization approach new product/service development in a rapid, improved, cost effective, and near to its customers than other industry players? Can you provide a practical example?

M: Yes. It is in the tradition of our company. Company focus is wrap up in our slogan "experience mobility experience Denzel". Denzel business activity is spread in different markets. We have 14 automobile brands. This MegaDenzel facility in Vienna Erdbergstraße is the largest auto dealer location in Europe with service location handling a volume of around 80,000 repairs per year. We are a tire importer also for Central and Eastern Europe. Denzel has a specialty body repairs business unit called Denzelcare for body repairs in premium car

brands. Denzelfly offers the service to pick up your car at the airport to do the auto service, while you travel. We offer a one stop shopping experience, since Denzel provides facilities for car registration, insurance, finance, and the vehicle. Denzel is also a software developer for car dealers business, which goes from showroom, outlet, book keeping, and processing services. Denzel is the largest provider of this software application for the Austrian dealer market.

8. What is corporate culture of Denzel Mobility carsharing and Denzel e-drive GmbH? And, How is fostered the cultural fit among associates and team members?

M: Denzel carsharing is very innovative, very open minded to do business. The corporate culture is promoted in a way of responsibility. Employees have very large possibilities as if it were their business. Every manager or salesman is giving the importance of his/her work and is part of Denzel success. Once a year, there is a gather at one place in with a central theme challenge sport event. This activity lasts for two days together to experience the feeling. We are a 1,000 thousand-employee company. To sum up, people need challenges.

9. Does Denzel Mobility carsharing and Denzel e-drive GmbH have any early warning to find out modifications in the business conditions that could influence its results? Is there within automotive industry any awareness of the agile organization principles? Can you provide an application example?

M: It is a combination of both early warning and agile organization. For example, at Denzel carsharing we are in registered in Facebook and members direct information to our team. They send comments to fleet people and we get Facebook feedback. On the economic and financial aspect, we have a way to strict regulations for controlling every month.

Agile. We do not follow some policy as agile but our CEO is always trying to find right person to right issue. Change management is in between also. Steering

in the new direction is key. We foster to be faster to change in the direction of the needs of the customer. Purchase price, quality, and other attributes such as environmental decisions. Denzel Green Drive is giving what nobody is giving to you: the technology data and comparisons. As of March of this year, we opened a special show room for that purpose.

10. Does Denzel Mobility carsharing and Denzel e-drive GmbH have conducted collaboration programs with other enterprises or within regional clusters framework?

M: Mainly with public transportation companies such as "Wiener Linien" and ÖBB, and similarly in Salzburg, Innsbruck, and Graz. The objective is to reduce the annual fee to a minimum.

11. Has Denzel Mobility carsharing and Denzel e-drive GmbH applies the concept of open innovation with its partners?

M: Yes. We have just contended for a government eMobility program, which consist of government funding (30% to 40%) for related special projects. We have two projects: one in partnership with ÖBB and electric vehicles and another with "Wiener Linien" with a mobility card. The tender process is open.

12. Does Denzel Mobility carsharing and Denzel e-drive GmbH pursue serving future mobility demands? How? Which strategic framework?

M: We do that by different ways. We did market research to better understand the needs with the University of Vienna. Also with the WU, for example with this China and India business initiatives we ask what is the customer expectation of those countries. 3 master projects gave it to students. Scientific research and gave to us. We very often do it and for carsharing business also. We have our own call center. We study people patterns of carsharing membership and ask why and what we may improve. A carsharing member quitted for example, because he has taken a carsharing for a specific occasion

and was not available car. That for example, it is not acceptable. Another customer how was single left because is he was fine with the membership, but now with family. So, his life style changed it. So, we also collect patterns and data on hours of usage for example. The goal is to provide a carsharing service simple and not complicated.

Appendix B.8: Transcript of interview with Dr.-Ing. M.S.M. Thomas P. Meichsner Managing Partner, COO, TechMag GmbH, Heppenheim, Germany (via conference call)

Subject: Management of Technology & Innovation.
Title: Driving from Automotive to Mobility
Subtitle: Agile business innovation model
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: August 18th, 2010. 9:30 – 10:26h CET

1. How do you see, in the current business conditions, the transition from automotive to mobility?

M: First of all. If you follow the trend in last 100 years, it will show you that automotive and mobility is an evolutionary process with several changes in the meantime. 100 years early prevailed animal propulsion, especially in farming area. We started from a pure mechanical background. Comparing with other industries a similar pattern can be recognized going from mechanical to electronics. If you see the electronics of car now is more in the electronics side. The value content is leaning more and more to the electronics and software. On the other hand looking as a system, same it will happen for automotive to mobility like in case of computer and mobility. Combining engines, chassis, and wheels and you are looking at the end at a system. An example of a system level will consider variables such as time, routing, taking you to a train station, inquiry for parking available, such as in Vienna, and then take the train to Frankfurt. Putting emphasis on a systems approach. Mobility is a fundamental desire of people to move from one point to other considering time and cost involved. Going back to the history of automobile, around the time the earliest Mercedes automobile started Benz' wife was driving and could only get the fuel from the closest pharmacy, because evidently there was no refueling system available. Now, the electric car is facing a similar challenge. Just to mention, one alternative proposed could be wire rails in which your vehicle positions

over the inductive rail to get your vehicle recharged. There are other alternatives proposed.

2. Do you agree with the following statement? Traditionally, global automotive industry has been successful in product and process innovations but needs further development in business innovation models. Please elaborate accordingly.

M: Yes. It is true. In other industries for example, let's look at Apple®, the elements they use for computers are available to others, but the competitive advantage lays in its software and services.

3. From your experience and life inside the automotive setting, Could you mention an example of what you consider a business model innovation within the automotive or mobility industry?

M: E.ON power and gas supplier in Germany. They started to install the first public battery charging system on the streets. They also initiate alliances with automobile companies. On their side of automotive companies, Daimler, has a share on the highway toll system at the front end of mobility to have influence in the information about mobility services and billing systems, a share into Chinese automotive BYD (Build your dreams) to participate in the development of electric vehicles, a share into other battery companies, and shares in Tesla. They invest money around their core business.

4. How do you see the business innovation model keeping the balance between the fascination aspects and maximizing current value of the firm?

M: I would like to answer your Question from the perspective of the customer. To be successful you need to listen to the customer and address their needs. The future is that availability of oil, based on cost and fuel reserves, will not be accessible to everybody. Toyota Prius has not only the component of a green product, but some kind of back up in case fuel is not available creates an added

value to the customer. Users have a pattern distance of no more than 50km. The product needs to warrant mobility at any time. Electrical car could be cheaper based on the current conventional automobile structure and built-complexity. Mobility is a need of people. So, customer will ask for different products at a fair price not the cheapest.

5. How do you see automotive industry process of listening to customer business needs?

M: I don't see that the process is very efficient. GM did not listen to customer needs but instead of focusing only on profitability. They overlooked the need for smaller cars. When the financial crisis came, nobody bought big cars. That was the root cause of going bankrupt. This is an example of the automotive industry process when does not work well, such as in the case of GM. On the contrary, BYD is a good example of this automotive industry process to listen to customer needs. Also, we see the example of VW as a large company trying to be in each niche. Perhaps a strategy destined to failure, since automotive industry is characterized by a lot of capital investments, which gives little room for flexibility in changing markets.

6. Have you heard of automotive industry trend scouts? If yes, how will they operate?

M: Yes. They search for where people's trends are moving. Trend scouts look at the growing generation 10 years from now or even younger generations. They study people behaviors and what kind of car they will drive, what is their taste and way of dressing, what films they watch, and which computer games they play. The trend is getting closer to the computer game devices.

7. Does TechMag GmbH approach new product/service development in a rapid, improved, cost effective, and near to its customers than any other industry players? Can you provide a practical example?

M: In order to become more fuel efficient -and this is a trend from 100 years, a reduction of the weight of the device you handle (vehicle) needs to be reduced. A very heavy car will have higher fuel consumption. For the case of electrical power vehicles in order to extend the range, there is a need for products and materials lighter than before such as it was in the past for the plastics. However, magnesium provides superior metallic properties such as stiffness and thermal stability. The idea of magnesium is because is 70% lighter than steel and 30% lighter than aluminum. Besides it is economically available. TechMag's patents put us in a very cost competitive for the coming high customer needs. So, we are able to provide material excellence such as carbon fiber in which magnesium is cheaper. Besides materials, the other two matters to look in the automotive industry are how is provided the energy and services such as in the case of electrical vehicles.

8. What is the corporate culture of TechMag GmbH? And, How is fostered the cultural fit among associates and team members?

M: The idea of TechMag is a network organization. Very flexible, very lean, very fast moving: the virtual network organization. We have a joint venture in China, contracts in the automotive industry, patents licensing.

9. Does TechMag GmbH have any early warning to find out modifications in the business conditions that could influence its results? Is there within automotive industry any awareness of the agile organization principles? Can you provide an application example?

M: Yes. Trend scouts tell us what kind of product is needed. Very quickly the ideas materialize into design to produce them cheaper.

The first aspect is that technology must be flexible. Issues such as gasoline alternatives and that the production capacity requires a lot of investment. How do you deal with them? The current trend is that OEMs who wanted to own manufacturing plants, today may not need them anymore. This is production

technology. The other aspect is sales and headcount organization. For example GM in Detroit, the question is if this is the future to organize your business centralized in headquarters. This is contrary to a virtual overhead. The point of agility is very exciting in marketing, by doing e-mail personalized for different channels. The question could be how to talk directly to your customers. With respect on how to operate product growth and cutting plants, you need a minimum production volume, a minimum size. How do you get the breakeven point: rent space, temporary workers, flexible machines, different supply chains, to make it profitable in all kinds of situations.

10. Has TechMag GmbH conducted collaboration programs with other enterprises or within regional clusters framework?

M: Yes. We are in the process of being tune-up. You need them to have maximum information.

11. Has TechMag GmbH applied the concept of open innovation with its partners?

M: Yes. Plant-in-plant. Instead of having a production site for ourselves, we cooperate with our partner in order to produce the parts at an existing plant utilizing the existing infrastructure.

12. Does TechMag GmbH pursue serving future mobility demands? How? Which is the strategic framework?

M: Based on a different lightweight level by enabling to improve mobility with an extended range.

Appendix B.9: Transcript of interview with an Innovation Manager, Utilities Company, Vienna, Austria

Subject: Management of Technology & Innovation.
Title: Driving from Automobile to Mobility
Subtitle: Agile business model innovation
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: November 10th, 2010. 9:38 – 10:40h CET

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Appendix B.10: Transcript of interview with Dr. Rainer Schmid, Carsharing Member, Vienna, Austria

Subject: Management of Technology & Innovation.
Title: Driving from Automobile to Mobility
Subtitle: Agile business model innovation
Interviewer: Juan-Carlos Legaspi, Dipl.-Ing., M.Eng.

Date: December 15th, 2010. 15:00 – 16:40h CET

1. Could you describe your family in the context of needs for mobility purpose?

S: I live not so far from the 18th District here in Vienna. There are very good connections with the public transportation system. Actually, the stop of the tram is in front of my house. There is around 1 kilometer from my house to my work by foot. My wife works close to downtown also in the 9th District. She has driver's license but does not drive. Both of our children live with us. My daughter now lives in one apartment and our son lives with us. The University of Vienna is very close to us also, around 2 to 3 kilometers from the house. My son takes one tram to go to the University.
Twelve years ago my last car broke down and have to replace it. I wanted to find a second-hand car. It happened to me during the winter and then I started to look for a replacement. In the meantime, I find out I did not have to have a car. At that time I used to pay a monthly parking permit at the hospital roughly 24 € a month but now is between 50 euro to 70 €. Then, I started to use a bicycle to go to work and use it in general for other transportation purposes. My son does the same. My wife uses public transportation, since the parking situation is very difficult and expensive at her work place.

2. Could you summarize the number of trips purpose you need to make in a weekday and during weekends? Please include the travel modes if possible.

S: Before, when I have the car, I did not use the car very extensively. I used roughly for 5,000 to 7,000 kilometers per year. The purpose was mainly for shopping or going outside for excursions during the weekends. Also, we used to arrange the normal transportation for children activities up to when they grew up. The car was mainly for vacation, not other emerging needs. Basically for comfort or convenience. When I use to have the car, I took my wife to her work place and then I drove to work.

3. How do you and your family get interested in carsharing services?

S: For certain purposes you have the need to use the car. For example, we used the car for larger shopping trips or transporting items from the shop or sometimes even to see friends outside the city in the countryside. We need a car very infrequently. Now, on how we get into carsharing. Currently, for short trips I take a cab or someone or my friends lend me a car but sometimes becomes difficult to organize. So, carsharing is a very good option.

4. Please tell me a typical day, perhaps a weekend, when you use carsharing with the whole family?

S: In those days my sister has a house close to the countryside. When we wanted to see her it was the easiest way to do it. The children were in their 18 year-old.

5. What is the name of the carsharing organization (CSO) you have membership? For how long have you been a member of carsharing?

S: Denzel Drive. Now, it has the name Denzel Mobility Carsharing. For at least 7 years ago.

6. Could you explain me in your words how the carsharing system works for you? Also, please elaborate on fees and charges you incur for the service?

S: The main principle or why it works is that you order the car on the Internet. This method has been available, since the beginning I got the membership. It is a very convenient way for an instant reservation and acute. Now, it is more convenient the Internet platform. There are at least 5 to 6 locations, or even 7 locations were they have car locations around 2 kilometers from my apartment. So, there is a good chance I got a car when I need it without long reservation time. Longer reservation is needed only when I need a car in a very specific time. If there is no car available, I need to go further to the next station. I believe there are around 30 stations.

So, first is the reservation on the Internet, then if you get the car, then go there and open the car as a member you have a key card with a chip which allows you to access the car. You have to use the car within the period unless you extended it electronically either by phone or with the small computer interactive intelligent display inside the car that allows you to extend or reduce the period. If you have overtime you have to pay a penalty. You better do not do it or make a longer reservation. Renting fee includes gasoline, you get the car, but if the car does not have a full fuel tank, you should not return the car with less than a quarter. Then, if I have to get gasoline you can go to a BP gas station. In the interactive display there is a card to refill the fuel tank.

The car is parked at certain parking lot underground. The fee I believe is 40 € a year. Then, depending on the size of the car, even vans, you pay for the hour and for the kilometer traveled, so the smallest category you pay is like 2.50 € per hour and 40 cents per traveled kilometer. So, the longer the driven distance, the higher the cost charges. At night, the fee is lower. At the end of your journey, you have to return the car to the same parking lot where you pick it up. I use carsharing 3 to 4 times a month.

7. Are you satisfied with the service offered? Are you aware of new services offered by your CSO in case they exist? Loyalty services, Extensions of services, Discounts to other services, or membership rewards for example.

S: In general yes. The cars are very clean never a problem nor damaged car nor that the organization did not inform. I receive newsletters by e-mail. For example, they changed recently the fees to a cheaper charge for journeys above 100 kilometer.

8. Do you prefer the two-way carsharing service or do you prefer one-way? What is your average duration per round trip or distance?

S: It would be interesting if could be organized. But it is not available now. In average I make the car reservation for 6 h. and travel between 30 to 60 kilometers. If you go to a second place you end with more kilometers. For shorter distances, there are not advantages. You better take a cab.

9. Mainly during the time you are a carsharing member, Do you still keep a car (ownership)? If not, how was the transition to avoid car ownership?

S: I was considering maybe a tiny car to visit and see friends in Italy or for nicer trips more frequently around 200 kilometer which with carsharing could be around 100 €. In similar organization within Denzel, there is not integration of systems for example in the south of Austria in the countryside. Contrary is the case in Salzburg, Innsbruck, and others cities. I can use it in all Austria but for 2 days south of Austria, you do not need carsharing but distinct service such normal car rental. Maybe, GPS technologies can make available some seamless switching of services. In general, there is a good citizenship attitude of carsharing members.
I mainly gave away my car also because of the parking fares and in addition the difficulty to find parking space in the proximity to my apartment. For example, a trip of 5 minutes driving from work to home plus 10 minutes or more of driving searching around to find a parking space.

10. Can you list some of the economic benefits you notice from carsharing versus car ownership in this period you have been a carsharing member?

S: Very easy to calculate. Carsharing cost per month maybe around 200 euro. For a car is at least 5 times more if I owned with all the cost of ownership, investment, repair, etc. You have to decided ahead and plan your journey, not like having the car owned right away. Car sharing use is very limited only for the purpose in the City. Now, I go every place by bicycle.

11. Regarding the fleet, would you suggest some particular design features for purpose carsharing automobiles?

S: Not really. Modern cars are very well designed. Just to get accustomed. I select the carsharing car just by cost no car styling preference or for example to transport bulky items.

12. From your perspective as a member of carsharing, what suggestion could you make to the service in general? Have you experience issues with reservation of automobiles? Or vehicle availability?

S: lot of things or advances. For example, why do we not use electric in the city for carsharing? It should be easy to drive no more than 100 kilometer. Perhaps, it is investment and virtual reality structure. I refer to virtual reality on the emotional elements surrounding the established car. Nowadays, they have those elements nothing to do with rationality. What type of car, size, space, and power have in fact to do with selling a car but just for emotional basis. Virtual reality. It is a tool. Besides, the designs or styling I abhor the way they look like a racing car, when lawfully you cannot run them at such speeds within city limits. Besides, they should take space from the inside. The unused interior space relates to fuel economy to carry such dead weight that requires more horsepower. I believe the whole issue has to do more on policy making but not safety requirements to the automobile industry. For example, there is no reason to allow for a maximum speed 130 kph within some city limits.