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**POLITECNICO DI MILANO**

School of Industrial and Information Engineering

Master of Science in Management Engineering



**DEFINING LUXURY CARS:  
A COMPREHENSIVE STUDY OF CRITICAL  
SUCCESS FACTORS AND MANAGERIAL  
STRATEGIES**

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# EXECUTIVE SUMMARY

## I. Theoretical background & literature review

Luxury is a concept hardly to define as related to the spirit of the age that defines the beliefs and the driving principles of society in a specific period of history. Indeed, luxury has developed its meaning from a negative conception during the ancient Greek period to becoming more related with the emotional aspects of experience during the modern society.

Regarding a pure academical definition there is no unanimous consensus of what luxury is. Nevertheless, a promising approach adopted by several researchers is to obtain a definition by creating a list of attributes that characterize luxury goods according to customer expectations. A comprehensive set of features obtained by merging the most complete contributions, encompasses premium quality, heritage of craftsmanship, exclusivity, emotional appeal, elements of uniqueness, global brand reputation, superior performance, association with a country of origin, recognisable style and design, creation of a lifestyle, authenticity.

Such list of attributes has multiple applications. In this research they are going to be studied according to both the Operations and Supply Chain Management school which considers them as Critical Success Factors (CSF) and the Marketing school that concentrates on the reasons why consumers buy a certain product.

A second section of the literature review regards the studies examining what drives people in the consumption of luxury goods, a fragmented subject due to the lack of a global recognised model. However, most of them agree on the fact that one the main factors shaping the purchasing behaviour of people is the seek for status consumption: people want to signal their status to other individuals.

To better understand such phenomenon it has been considered the Self Congruency Theory, stating that people tend to buy products aligned with their self-image. Such self-concept is developed through the interaction with others in the reference group: people use symbols to express something about themselves to the other members of their social group and to be recognised as members of the group from outsiders. Another related theory on the topic is the one of Planned Behaviour, that studies how self-identity changes with age and consequently what are the variations in individuals' motivations that drive their behaviour. A further development is the Functional Theory of Attitudes proving that people have

attitudes according to the psychological benefit they derive and classified such attitudes in the three main categories of social, hedonic and utilitarian function.

From the study of the motivations behind the desire of luxury consumption, researchers created models to classify the typology of luxury costumers. Even in this case there is not a well establish model on which everybody agrees. However, the most adopted and complete appears to be the model presented by Brun and Castelli (2013) that classify the possible CSF in three major dimensions: technical aspects, symbolic value and social value. This classification allows to identify five categories of customers according to the relative weight given to each dimension during the purchasing process: hedonist, tech addicted, quality lover, fashion victim and luxury admirer.

However, this classification is a general model with the goal of mapping common luxury clients and helping managers to align company's strategy to their targeted customers. The application in a specific context, like the one of the luxury automotive industry, may need a more focused and specific model to distinguish all the peculiar components in the motivations that drives luxury automotive consumption.

Another relevant subject studied in the scholarly review is the identification and classification of the models and managerial strategies that companies could implement to win competition and align with consumer requests.

Firstly, its is presented the marketing context, where the existing literature highlights that the strategies adopted for mass markets not only are ineffective when applied to luxury market but are also harmful to the brands as they dilute the symbolic value. Thus, completely new models have to be defined to account for such specificities. The reference model considered is the "Antilaws of marketing", defined by Kapferer's book "Managing luxury brands" (1997) and later updated by the same author. The main concept is that brands should always maintain a distance with their customers, without making compromises to increase sale. Moreover, luxury brands should lead the taste of a specific period of time, pursuing the founder's vision and not being affected by trends

Secondly, it is reviewed the implementation of Critical Success Factors theory in practice. This leverages on the idea that a successful realization relies in the alignment of the supply chain to the key characteristics required by the luxury market. Indeed, nowadays

competitive scenario is more than ever dynamic due to socio-economic trends and the role of the activities performed from the procurement to distribution have become essential in companies' organizational strategy. The majority of luxury companies have to deal with multiple layers of suppliers, outsource activities and control the effectiveness of distribution to the final client while offering the best service level. Although, it has been studied that it does not exist a universal set of practices to facilitate the strategy formulation which fits all the possible luxury companies since they all operate in different environments and have peculiar characteristics. Each brand has to find the alignment between its value chain operations and the expectations expressed by its consumers.

Regarding specifically the SCM strategies that luxury companies should implement it is not completely clear if and what models elaborated for mass market goods are applicable also to the field. Therefore, a brief review of the most important contributions seeks at analysing the contingent variables they rely on. Concurrently, two SC models, by Caniato et al. (2011) and Luzzini & Ronchi (2010), are also investigated since address specifically the luxury industry.

Finally, the last part of the review is dedicated to the presentation of the automotive industry, one of the most relevant sectors in global economy. The application of the concepts formerly presented becomes difficult when trying to define luxury automotive. In fact, literature studies providing a definition and a set of strategies for this sector are almost non-existent.

A first issue arises when trying to distinguish which car brands and models could be defined as luxury. This is particularly challenging after the phenomena of "democratization" developed in the recent years that aimed at enhancing the accessibility of luxury goods. Two possible segmentations provided by the regulatory authorities European NCAP and American EPA do not result to be effective. Indeed they consider only the variables "dimension" and "body type" while do not contemplate other characteristics important for luxury cars such design, engineering, price. Therefore, it is possible to say that there is a significant gap in literature about luxury cars. It is essential to understand which are the specific Critical Success Factors for this sector to obtain a formal definition of it.

The only field of luxury automotive addressed by a couple of studies is the one regarding Supply Chain Management. Indeed, it is possible to extract some guidelines tailored for

companies producing durable complex products, that are those with high level of complexity, lasting for a long time and that people do not buy very often. Car manufacturers clearly belong to this category and as a matter of fact face significant challenges in operations management due to the high number of components, several suppliers and sophisticated production. The strategic suggestions regard the activities of purchasing, manufacturing and distribution. Among these, the most interesting are the outsourcing of only non-core activities to different suppliers according to the type of components, a long-term levelled production plan that has to comply with flexibility for customization and last-minute order change, and a distribution aimed at effectively convey and communicate company's CSFs to customers.

## II. Research Questions & Methodology

Scholarly writings review has been essential to identify the so-called literature gaps, that represent the starting point for the formulation of the research questions and framework.

Luxury emerges as a relatively new concept which should be furtherly investigated, especially the automotive segment. Indeed, the luxury automotive industry presents a variety of peculiarities which have not been addressed by any past study. It lacks a proper definition that establish when a car could be considered luxury, there are no studies on the motivations driving luxury car consumption and is missing a specific framework which describes the main activities or strategies adopted by the manufacturers.

For these reasons, the focus of the present thesis concerns the following research questions:

RQ1. What are the specific Critical Success Factors for luxury car manufacturers?

How are they different from the list by literature for the general luxury market?

In accordance with the metatheory (i.e., principles of good theorizing) it was decided to define luxury automotive by specifying the properties that an entity must possess to be included in the concept. Critical Success Factors (CSF) have been firstly derived from the literature, by unifying the lists that scholars have proposed during the past years to define luxury. However, the set of features is still too general, thus requiring an expansion to better fit the peculiarities determinant in the purchasing process of a luxury car.

RQ2 Is it possible to identify distinct clusters of consumers which show a common pattern in valuing the single attributes?

Once derived the complete list of attributes that define what luxury is in the automotive field, the direct consequence is a classification of automotive customers based on the importance that they attribute to each feature. The aim is to create a classification that could help managers in better addressing the specific needs of customers according to their belonging to one of the different clusters.

RQ3 What are the most successful strategies in the field of marketing and supply chain that luxury car companies should implement?

Having analysed the demand side of the business, the analysis wants to go deeper by highlighting also the best practices put in place by the brands in the management of the supply chain and marketing activities. The goal achieved by comparing theories from

literature and what is actually done, highlighting the biggest differences. Moreover, in the attempt to discover if peculiar strategies adopted by brands could be considered successful practices the research has been extended by also studying car manufacturers' latest financial results.

## Methodology

Regarding the methodology adopted in the thesis, the initial part entails a systematic assessment of the existing literature on luxury industry and luxury automotive sector. Indeed the literature research has begun from the reference paper "The nature of luxury: a consumer perspective" (Brun & Castelli, 2013) and proceeded with the analysis of the documents that have cited it and the citing papers. The review process was completed with the search of some key words inherent to the subject.

Afterwards, having identified the research objectives and the relative research questions, it has been elaborated an organized research strategy. Firstly it has been performed a competitive scenario research of luxury car manufacturers aimed at understanding the salient characteristics that these brands deliver to their customers. Such analysis is fundamental to create a model to answer the research question RQ1.

The following section includes the validation of the list of critical success factors defined by the model to describe what luxury is in the automotive context, answering to RQ1 and RQ2. To do so, it was necessary to obtain a large amount of data from actual luxury automotive owners. Therefore, it was adopted the survey research method as it is the most suitable approach to gather large amount of data by studying a sample and from the results, generalize assumptions to the entire population. The studied sample of companies comprehends the most important brands of the luxury automotive sector which are able to sell more than 1000 vehicles per year as smaller brands are difficult to study due to lack of information. In order to avoid or minimizing the risk of gathering misleading answers from people who do not own luxury cars it has been planned to reach the desired respondents using three channels: official owners club, private Facebook groups and internet forums dedicated to a specific brand.

After data collection and data cleaning, has been performed a proper analysis on the responses to test the validity of the model and understand patterns of behaviours among consumers. The study began with a factor analysis, a multivariate statistical method that

allowed to reduce the total number of variables by grouping them into factors. Later it was performed a cluster analysis to classify customers based on their answers to the survey, and thus addressing RQ2. Indeed, cluster analysis is a technique to group similar observations into a number of clusters based on the observed values of several variables for each individual.

Once concluded the analysis on the demand side of the business, the focus has been moved on the managerial aspects of the business to find an answer to RQ3. Thus, the last section implements an hybrid methodology for data collection. Indeed, it is a combination of structured interviews with company managers of luxury car brands and documentary analysis of official data collected from companies' websites, financial statements and confidential reports. Leveraging on the information from the presented sources it has been possible to adopt a case study approach that compared the practices suggested by models in the field of supply chain and marketing with the actual actions implemented by supercar brands. The purpose of this last section is to understand which guidelines are actually followed by leader companies and thus discover the most successful practices.

Ultimately, a final brief section concludes the analysis on the company-perspective by analysing the financial performance of luxury car manufacturers. Such process allowed identify which ones achieve remarkable results thanks to a successful company management, and therefore could be appointed as best-in-class players for delineating best practices.

### III. Findings

Luxury automotive industry was lacking a proper definition, a set of characteristics that could be used to delineate it and discriminate if a car could be defined luxury or not. For this reason, the Critical Successful Factor theory has been adopted, by creating a model which proposes a list of features that have to be present in products in order to belong to the luxury class.

The data collected from the survey allowed to obtain a confirmation of the CSFs model. All the 20 characteristics have scored the entire scale of values according to the relevance assumed during the purchasing process for that client. In addition, it has been possible to gather suggestions from the respondents which highlighted few supplementary variables currently not included in the model that could be better investigated in future researches.

The factor analysis allowed to resume the initial 20 variables into 5 factors, which have been named Social Appeal, Brand Origin, Technical Aspects, Uniqueness, and Innovation.

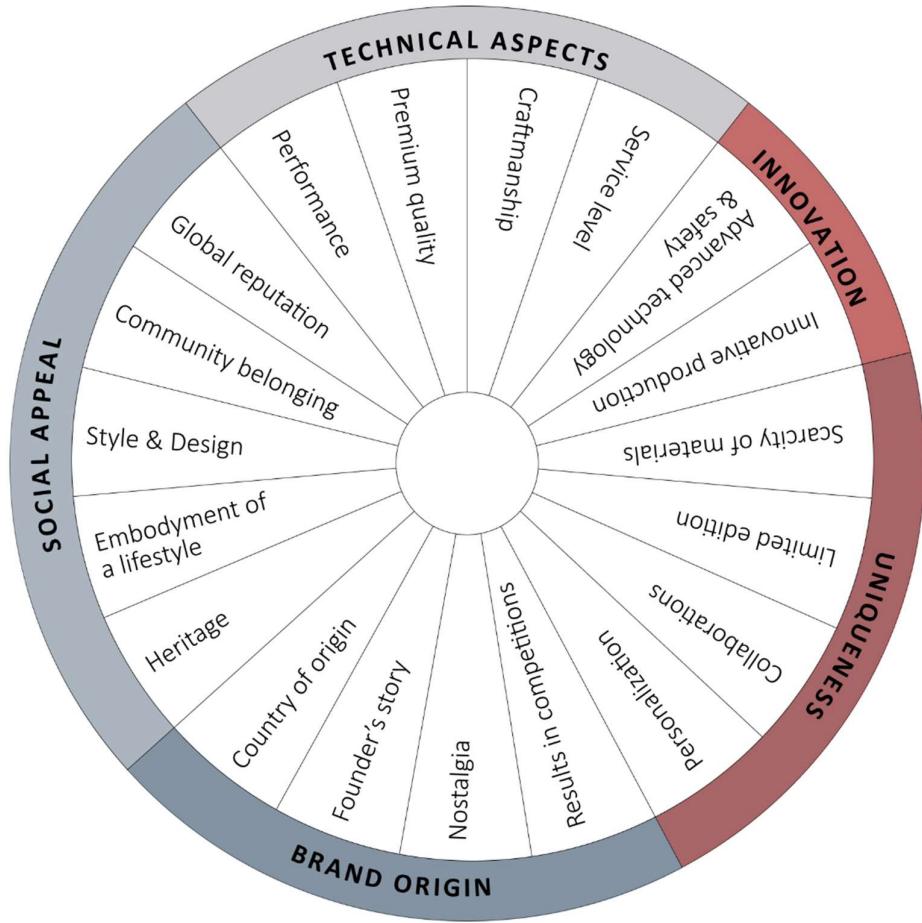
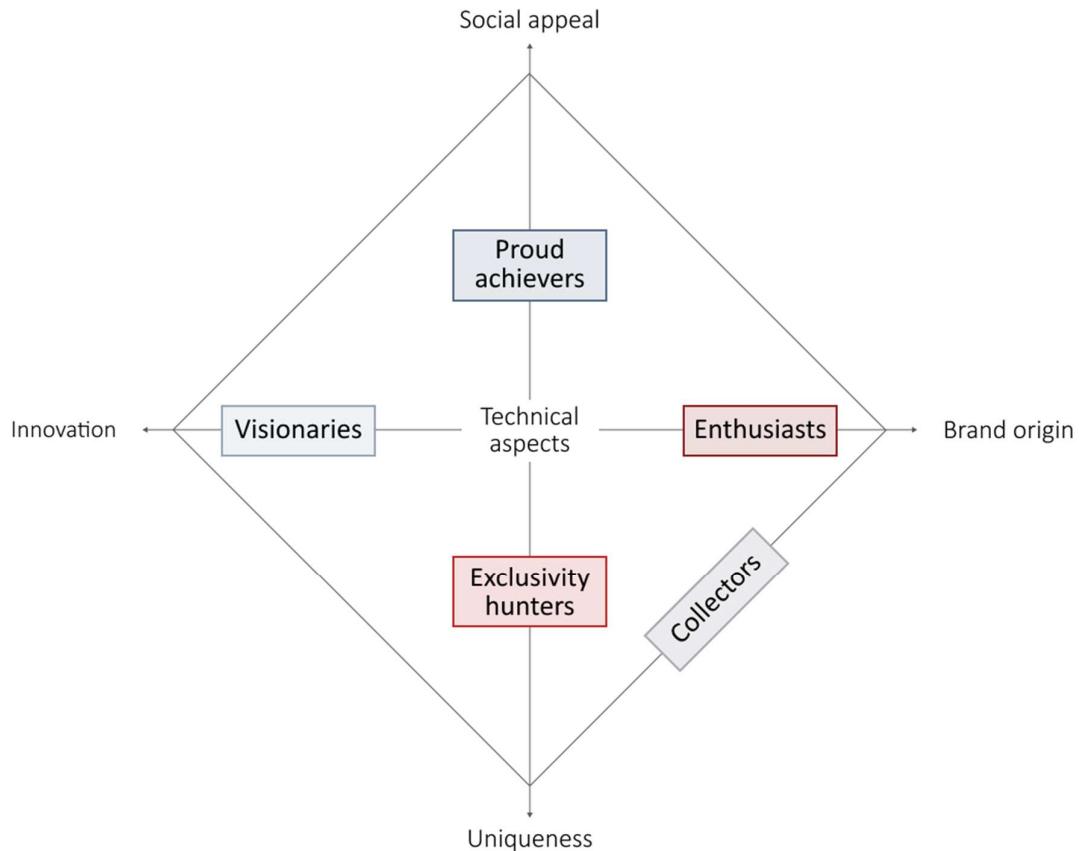


Figure 1 – CSFs model to define luxury automotive

Regarding the cluster analysis, it lead to 10 separate groups of customers which though presented common behavioural patterns. Therefore, guided by suggestions from the literature, it has been decided to proceed with a visual grouping technique, based on the aggregation of those clusters having the same two factors with the highest value.



*Figure 2 - Clusters of luxury car customers*

The result of the advanced grouping generated five macro-clusters of customers with similar values and purchasing behaviour. These are described hereafter:

- Proud achievers: people attracted by technical characteristics but also heavily influenced by social aspects with the tendency to search for social approval and conformism.
- Visionaries: clients strongly concerned for innovative and technical aspects of their cars. Specifically, elements such as the engine, driving experience, materials of interiors, infotainment and Advanced Driver Assistance Systems are demanded at an exceedingly high level of performance and with the latest technologies.

- Enthusiasts: customers belonging to this group have a strong passion for supercar word and the legends behind the manufacturer. They certainly are strongly attached to the tangible aspects such quality and performance, but also car-related activities and services are considered extremely relevant.
- Exclusivity hunters: owners of special luxury cars moved by their willingness to drive exclusive cars, built according to their personal taste and with the desire to distinguish from others.
- Collectors: very peculiar customers appointing a strong value to brand origin and uniqueness of their car. Their vehicle does not have to be the latest model presented but embodies their desire for something personal with a strong emotional attachment and aligned with own values.

Lastly, the results from the analysis on marketing and supply chain managerial strategies have been interpreted to answer RQ3. Regarding marketing, strategies in terms of positioning, pricing, scarcity policy and location of core activities lead to the conclusion that almost none of the suggestions from the literature is actually followed by the leaders of the industry. Such outcome, even if unpredicted, is partly justified by the emerging trend of “democratization” that has pervaded luxury industry in the latest years. Indeed, with the aim of attracting new prospect customers, manufacturers have introduced of entry-level models that are managed according to premium market principles. Conversely, only the top end segment of the product range has been found a good correspondence with literature guidelines. These cars are reserved to the most loyal customers which are passionate about the brand and have been already introduced to company’s history and values.

On the other hand, regarding supply chain strategy the models available in literature are originally crafted for mass market goods and thus their validity is not granted also for luxury automotive sector. The analysis comparing the practices suggested by the contingent models and the actual activities for supply, manufacturing and distribution, showed that very few models maintain their validity in the supercar industry. Indeed, possible guidelines for luxury cars are limited to only those elaborated specifically for luxury industry and two models that have encountered a match with real world practices. A brief summary of these entails the outsourcing of only non-core activities and components, creation of a long-term trustworthy partnerships with suppliers, strong co-creation and co-innovation with partners

and pre-scheduled linear production process complemented with an agile organization for last minute personalization requests. Moreover regarding distribution, the approach adopted is B2B2C mono-brand stores with license contracts that maintain the dealer under a strict control

At last, the results of the financial analysis have highlighted that the majority of luxury car brands are quite inconstant in their performances and often do not outperform substantially premium or mass market players in the same industry. The solely exception is Ferrari, that resulted to be the best-in-class on multiple indicators and has established throughout the years a leadership role within the sector. Therefore, its strategies presented in marketing and supply chain sections could be considered as guidelines for achieving a flourishing management in 2021.

#### IV. Conclusions

The outcomes of this thesis provide novel considerations to the academic world but also useful knowledge for the managerial ones. As stated at the beginning the topic of luxury automotive has been unexplored in the scholar panorama till today therefore this work will create the ground base further specific researches on luxury cars.

Firstly, the CSFs model supports the definition of luxury cars and allows to identify what are the necessary characteristics of an high end car. Moreover, summarization of the 20 variables into the five key factors allows the agile application of the model in a wide variety of applications.

The identified clusters of luxury car customers represents a new way of classifying clients that leverages on solid behavioural theories presented in the literature review. More significantly, company managers could adopt these categories to study their targeted customers and consequently align brand strategy towards them.

Lastly, those marketing and supply chain practices from literature that encountered a match with the actual activities are strategic guidelines suggested to manufacturers' managers. Moreover, Ferrari's strategic organization that has been discovered throughout interviews represent a guidance that the other players of the sector should aim to reach since the company emerged as the most successful company from a financial perspective in addition to being one of the most praised brand by owners.

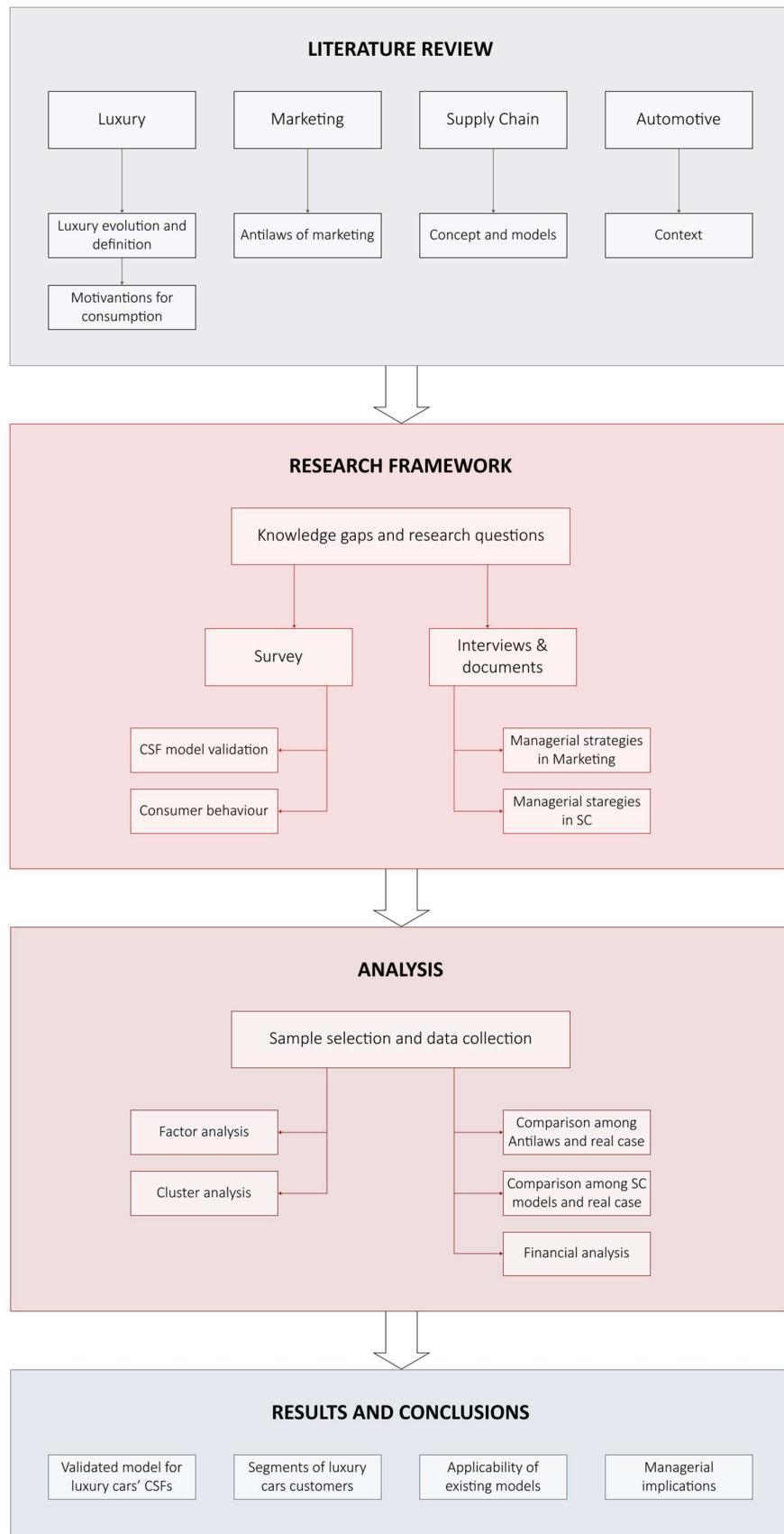


Figure 3 - Scheme of the process followed during the research



# INTRODUCTION

The term “Luxury” refers to a vast variety of products ranging from the well-known fashion goods to more complex products such as private yachts, jets and vehicles. In such heterogeneous context luxury automotive industry proved to be the leading sector in terms of overall value of the market.

However, despite the predominance of the above-mentioned sector, there is an overall lack of studies and researches on the subject. Indeed, the majority of the models and theories regarding luxury are mostly developed from literature studies on fashion luxury industry, that presents considerable differences with the automotive one. Conversely, the other portion of the existing literature is stemmed from the analysis of mass market automotive industry that does not consider emotional and symbolic implications as well as the limits that luxury world has to deal with.

The need for specific studies on the subject appears even more crucial when is considered the context our society is currently living in. The world is moving at a fast pace and with new challenges emerging a formalized understanding of the most valuable sector in the luxury industry is needed.

Indeed, the globalisation encouraged companies to increase their yearly sales volume, sometimes to the detriment of a more complex management and risk of diluting brand's value. Meanwhile the opportunity of entering in completely new markets, such as the emerging countries, has exposed companies to the risk of failure coming from an incorrect understanding people's taste from different cultures and traditions. Moreover, the global expansion has implied an operation scale up in term of supply and distribution, awarding the companies able to adapt while putting in serious financial troubles those unable to take action to such change. Moreover, one last aspect to consider is the increasing number of disruptions, like electrification and connectivity, that have caused an increase in the competitiveness of the market.

All these phenomena have impacted the way companies organize their business and manage their operations. Hence, a formalized description of the strategies adopted by the best-in-class companies would shed a light on the managerial practices that allow luxury automotive industry to be the most valuable segment in the field of luxury.



# LITERATURE REVIEW

In this chapter is presented the theoretical background describing the current state of the art of the literature panorama. This has a fundamental role within the thesis because solid basis is necessary to successfully conduct the research part and therefore it has been organized following a precise structure.

## Literature Review Structure

The object of the thesis is quite broad due to the necessity to investigate luxury automotive industry within multiple elements, from the peculiar characteristics of luxury cars and their customers to the activities pursued by companies. This arises from the scarcity of scholarly writings hitherto available on the subject, requiring the formation of a ground knowledge on which future research could built on. Therefore, the literature review has been conducted systematically in order to create a logical path that encompasses the various sub-fields in a coherent and structured way.

Being luxury automotive understudied, the literature review concentrates largely on luxury market as a whole, where is possible to understand the general concepts to then inspect for the specific luxury car industry. Thereby, the structure is the following.

Hence, firstly it is presented a luxury market overview that allows to understand its architecture and frame it within world economy. Then, the evolution of the concept of luxury is searched throughout the main connotations it has assumed till nowadays and the formal definitions provided by scholars on the term.

Once it is clear what is meant by “luxury”, the motivations that drives the consumptions of such goods are searched with the aim of summarizing the main theories and models. Likewise, also the attitudes and benefits gained from people are examined to discover the different customer classifications frameworks proposed by academics.

Afterwards, luxury market is examined from a company perspective defining the models and the strategies that brands can adopt to win competition. The field of study mainly regards marketing and supply chain that are the areas characterized by higher interest from scholars.

Lastly, the final part contextualizes automotive industry trying to extract all the relevant knowledge useful to understand luxury car market features.

## Introduction to luxury market

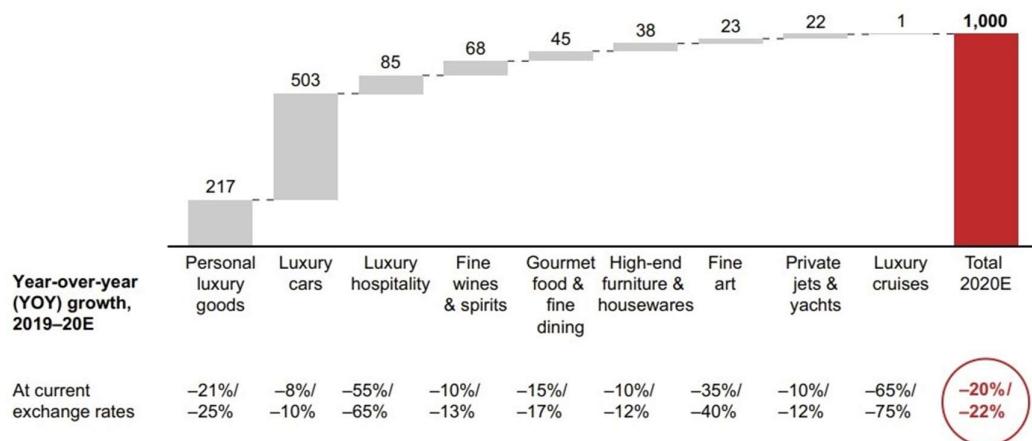
Luxury market has continuously grown in the last decades, with a robust trend around +6% yearly from 1995 till 2019 when it has been estimated to be worth around €1.3 trillion globally (Bain & Company, 2019). The performances have been solidly in continuous expansion, overcoming with no difficulties temporary recessions during economic, financial, and political crises like the one happened in 2008 when it was able to recover the contained decline of 2009 (-7,5%) and exceed 2007 levels already in 2010.

However, in 2020 World's economy has been dramatically affected by Covid-19 pandemic, causing severe consequences in almost all the sectors. National restrictions and lockdowns aimed at preventing the spread of the virus forced stores to stay closed and tourism travels were stopped. Therefore, also luxury market registered a negative result with a significant decrease (-22%), going back to valuing €1 trillion as in 2015 (Bain & Company, 2021). The unprecedented damages forecasted at the beginning of 2020 have been mitigated thanks to a partial restoring of daily life activities in Western countries and, most of all, a strong phenomenon of revenge buying occurred in China just after its return to normal life (PwC, 2020). In fact, mainland China has been the only region worldwide to close the year with a positive sign, growing its consumption by 45%.

When speaking about luxury market the common imagination recalls mainly the personal luxury goods sector that includes apparel, leather goods, shoes, jewellery, watches, perfumes, and cosmetics. This specific segment is most renowned and subjected by several studies by the major worldwide consulting firms that yearly publish detailed reports which contain extremely reliable data. Although, going more in depth with the analysis it is possible to identify other 8 luxury segments proposed by Bain & Company in their yearly reports, that encompass a wider variety of goods and services: luxury cars, personal luxury goods, luxury hospitality, fine wines and spirits, gourmet food and fine dining, high-end furniture and housewares, fine art, private jets and yachts, and luxury cruises.

The market is dominated by the sales of luxury cars, that together with luxury hospitality and personal luxury goods account for nearly 80% of the total. All the segments, expect for fine arts, were characterized by continuous and steady growth until 2019.

Specifically, in 2020 sales of luxury cars was the least affected category which continued to dominate the market and declined just by 8-10% at current exchange rates. On the contrary, luxury hospitality severely declined, by 55-65%, with occupancy rates decreasing by over 30 percentage points globally. The “core of the core” of luxury segments, personal luxury goods, contracted for the first time since 2009, falling by 23%.



*Figure 4 - 2020 worldwide luxury market value by segment.  
At the bottom: YOY growth percentages for each luxury market segment*

Nevertheless, it is expected a recovery of 50% of 2020 profit loss already by the end of 2021 and re-join again pre-crisis level in 2022, following the steady trend of growth which was previously characterizing this market (Bain & Company, 2021).

Talking about luxury industry outlook, the transformational stimuli originated by the pandemic will concern also the luxury market, which is expected to drastically transform by 2030. “We will not talk of the luxury industry anymore, but of the market for insurgent cultural and creative excellence” (Bain & Company, 2021). The main values of this change are going to be excellence and revolution. In particular luxury players will have to adapt their operations and offering to meet the new customer requirements, especially the younger generations that are bound to drive 180% of the growth from 2019 to 2025.

## The concept of luxury

Luxury is related to subjectiveness and has not a proper formal definition and this caused the concept of luxury to change meaning according to the spirit of the age prevailing at a given moment. Thus, a brief overview on the evolution the concept of luxury is here presented.

In the ancient Greece, luxury had a negative acceptation as it was regarded as a threat to society since it would soften men and divert their focus from political life to the private dimension, with excess in pleasures.

The Romans gave to luxury an ambiguous meaning: the term “luxury” comes from the Latin “luxus”, which means “soft or extravagant living, sumptuousness, opulence”, and shares a root with the term “luxuria”, which means “excess, lasciviousness, negative self-indulgence” (Brun & Castelli, 2013).

Later the term gained a more positive sense as it became being associated with the Latin root “lux”, which means “light” referring to the common characteristics of precious objects, formed by gold and gems. Such accessories were used by elite people to distinguish themselves from folk people. It was in the spending habits of individuals during the Italian Renaissance that the modern idea of consumption of luxury firstly appeared. However, the modern association of luxury, related to “sumptuous surroundings” and satisfaction of non-basic necessities, started with the emergence of the bourgeoisie after the French Revolution (Wolf et al., 2016). This transformation had a role in shaping the different interpretations of the concept of luxury, relating it to the concept of status symbol, indulgence, and leisure time.

The modern industry of luxury goods had its origin in Europe during the nineteenth century: during the industrial revolution, the first companies were established to intentionally create products above the average in order to satisfy the lifestyle of the social elite of the time. Before the creation of such companies, that kind of products were the results of craftsmanship and knowledge which was passed on through generations. Given that the industry required relatively high volume and the potential local growth was limited, the companies had to expand sales abroad to reach larger base, starting the trend of global luxury and increasing the reputation of exceptional quality brands (Brun & Castelli, 2013).

If, before industrialization, products were considered luxury for their superior quality, durability, performance or design, then, the image of brand started to become a central aspect for effective positioning in the luxury market, with an increased relevance of emotional and experiential aspects.

Nowadays customers seek products with high quality, reliable performances but simultaneously they want to be emotionally involved in memorable experiences (Brun & Castelli, 2008). Indeed, both market and consumption behaviours are changing, especially due to democratisation of luxury. Luxury has become more available to a larger segment of the population worldwide, the market has become more heterogeneous and luxury perception is assuming more and more contextual (K. Wiedmann et al., 2009) and subjective dimensions (Kapferer & Laurent, 2015).

Consumer market has been influenced by the transition to an experience-based economy. In such context, luxury is more an emotional outcome associated to an experience of owning a product or a brand. Emotional value and desire for pleasure are the main motivators of luxury consumption, even over functional and utilitarian motivations. It's clear then that luxury is a liquid concept, depending on the spirit of the period, adapting to cultures and society.

## Definition of luxury

In latest decades the endeavours to come up with a univocal definition of luxury are multiple. Being a multifaceted notion, it can be approached from different angles, each creating a prism for analysing the concept, and therefore it is difficult to come up with an universal definition.

Economists have equated luxury with anything that is beyond necessary (Kemp, 1998). In fact, typical economic definitions of luxury focus on the expensiveness of products or services, priced above their functional value (Yeoman & McMahon-Beattie, 2011) whose ratio of functionality to price is low (Nueno & Quelch, 1998).

Sociologists study luxury as dynamics of competition among groups and classes within society, emphasizing its social stratification role. Luxury is described as a reflection of elite's taste, whose function is to demonstrate power and impose their taste on others in society (Bourdieu & Nice, 1984).

In academic field different scholars give a personal interpretation of luxury that might change one from another. There is a wide variety of definitions, almost as there are researchers, and these descriptions change over time. However, one thing seems to be universally agreed, the concept of luxury does not refer to specific products belonging to a sector but transcends the traditional industrial classification by comprising the top segment within various industries (Caniato et al., 2011). Thus, every product category can have luxury or premium or stock-keeping units (Ponticelli et al., 2013). The high-end segment of conventional industrial sectors is hereafter conveyed as the “luxury industry”.

Going thought the literature published in the last decades it is possible to identify 3 main approaches used by academics to define luxury based on:

- Attributes from customers point of view
- Type of value delivered
- Difference with ordinary products

The first one defines the term luxury leveraging on the attributes and concepts that people associate to it. The foundation relies on the studies developed by Veblen in 1899 who indicated that luxury goods are not consumed for their intrinsic value but for other reasons such to impress others and signal wealth (Piccione & Rubinstein, 2008).

The concept behind this first approach is that something to be classified as luxury needs to be related to certain attributes. Among the first and most influential scholars in this field there is Jean-Noël Kapferer (Kapferer, 1997), who presented his own definition of luxury using a list of the core attributes that a luxury brand must possess. Later, many other academics followed these works and continued to describe luxury using a set of characteristics that they assumed peculiar to this world, among which is worth mentioning the contribution of Dubois (2005), Brun and Castelli (2013), Kapferer & Michaut (2016).

A second approach suggests that luxury should be defined considering the value that is delivered to the customer. Reddy and Terblanche (2005) divide luxury brands into two categories: those that have symbolic value for the customer and are valued more for the associated lifestyle than for functionality, and those that primarily have value due to their technical features. Similarly, Berthon describes luxury in relation to three spheres that are material, individual and social, leading to the three respective dimensions of luxury: functional, experiential and symbolic (Berthon et al., 2009). More specifically, the functional dimension is considered objective, the experiential depends on subjective values, and the symbolic one is related to social collective values. In this conceptualisation there is a continuum, where every product or service is positioned differently depending on the occasion, the market segment and the individual consumer's preferences.

The last and third approach aims to define luxury products by understanding what the difference with ordinary products are. Likewise, the first approach the focus is on the customer, although here it is adopted a perspective typical of the marketing world. Researchers have investigated if and how luxury is differentiated from a common high-quality product and what are the peculiarities of the purchasing process. This approach is the newest among the three, carried on by Romaniuk and Sharp (2016) from the intuition that luxury brands also sell to people other than those who are wealthy, and in fact average-income earners from the middle-class are more numerous and buy more luxury products than billionaires. Nevertheless, the study on how consumers perceive luxury products compared to other products in the same category is unclear and subject to different theories.

Having a clear overview of what are the main approaches and difficulties in defining the concept of luxury, it has to be said that in practice there is not a clear distinction among them. Indeed, a list of attributes (first method) would imply using characteristics that

describe value delivered to customers (second method) or features peculiarly different in luxury goods (third method).

Still, the guiding principle of the present work is to stay coherent with the creation of a set of characterises for defining what luxury is. In fact, according to metatheory (i.e., principles of good theorizing), a good definition of a concept clearly specifies the properties (i.e., defining characteristics) that an entity must possess to be included in the concept. Moreover, have been considered that three most prominent and cited scientific works attempting at defining the concept of Luxury (Brun & Castelli, 2013; Kapferer & Michaut, 2016; Sjostrom et al., 2016) share the same view agreeing on using a list of attributes to define luxury.

### Critical Success Factors and their applications

As just mentioned, multiple scholars tried to describe luxury using one or multiple attributes. These have been conceived leveraging on previous literature as well as considering the socio-economic context of the moment.

A detailed review of the literature studies provided by Brun and Lideo (2019) analysed the characteristics cited in the three previously mentioned contributions on the panorama, investigating the origins of every single attribute and comparing the choices of the authors.

<b>Brun and Castelli</b>	<b>Sjostrom et al.</b>	<b>Kapferer and Michaut</b>
Premium quality Heritage of craftsmanship	Premium quality and craftsmanship Pedigree and heritage	High quality Heritage
Exclusivity Emotional appeal	Paucity, exclusive and limited Premium price	Prestige, Minority, Rarity Pleasure, Dream Expensive
Uniqueness	Unique	Personalized services
Brand reputation Technical performance	Brand architecture and name Performance and reputation	Innovation
Country of origin	Country of origin	
Recognizable style and design	Recognizable style and product	Beauty, Fashion Timeless
Creation of a lifestyle	Authenticity	Art

*Figure 5 - Comparison of the attributes to define luxury by Brun & Lideo (2019)*

One important aspect is that in order to create a discriminatory definition, the list should be composed of attributes with their relative level (Kapferer & Michaut, 2016). For example, using just the adjective quality is not enough, to discern luxury is the highest quality that matters. Here beneath is presented a table with a summary of the review of that same paper.

Despite the researchers do not share the exact same view, the majority of the elements is in common, showing that lately the academic world is reaching a general consensus of what luxury is. Therefore, unifying the three lists allows to obtain a definitive distinctive set of attributes to define luxury that hereafter is explained in the details.

- Premium quality is delivered to customers by using superior materials and maintaining elevated standards of conformity along the whole Supply Chain.
- Heritage of craftsmanship leverages on expertise and a human touch in the production originated from an artistic process.
- Creating exclusivity through the use of naturally scarce materials, limited editions, creation of waiting lists, restricted distribution.
- Strong emotional appeal with a marketing approach that triggers a sense of dream, enhanced shopping experience and an atmosphere reflecting the values associated with the brand.
- Elements of uniqueness that make every product different from each other using extreme personalization and hand-made details.
- Global reputation of the brand conveying the idea of world-class excellence.
- Superior performance than mass market goods and services, often present in the form of best-in-class technical performance with a focus on innovation.
- Country or region of origin is a signal of excellence for a certain product category.
- Style and design is a distinctive characteristic for products that are beautiful but also recognizable thanks to iconic timeless designs, patterns and colours that consumers spot without the need to see the label.
- Creation of a lifestyle that embodies the values and the personality of the brand.
- Brand authenticity refers to being trustworthy and consistent with the mission of the Maison.

The presented list obviously doesn't include all the possible characteristics that a luxury good or service possesses but represents a general definition that helps to understand if something could be labelled as luxury or not.

Moreover, scholars that have contributed throughout the years to craft these attributes affirm that it is not necessary for a luxury product to present the entire set of characteristics. Indeed, some attributes, such as exclusivity, are nearly always mentioned in literature suggesting that this factor is common to all luxury products (Catry, 2003). Conversely, other characteristics, like brand and recognizable style, tend to be highlighted frequently when describing fashion goods, while quality and performance are common for sports cars. Following the same reasoning, Reddy and Terblanche (2005) in their research elaborated a distinction of luxury goods and brands in technological or emotional depending on which attributes predominate.

From a metatheoretical perspective, luxury definitions should be more specific explaining if all defining characteristics have to be included, if it is possible to skip some or if there is a minimum number to be outlined as luxury. This is a critical point that could be addressed using two angles.

From a product viewpoint, the set of attributes could be taken to a more specific level, indicating for each of the 9 luxury market segments (identified by Bain & Company) what are the precise characteristics that determine its being luxurious. In other words, ad hoc list of attributes could be created to define all the luxury goods in a considered industry.

From a geographical standpoint, Kapferer and Michaut (2016) identified globally three core characteristics: high quality, expensiveness, and prestige. These three attributes have been nearly always mentioned by customers of different products around the world when asked to describe “luxury” with four characteristics, while others have been substantially less cited as a whole. The authors have interpreted these results as a curve with a long tail which, after the three universal characteristics of luxury, indicates the effect of national differences on the subsequent items quoted, which diverge significantly from one country to the other.

Therefore, it is evident from these two considerations that product categories and countries cannot be treated wholly the same when dealing with luxury industry because customers have different perceptions.

## Applications of CSF

Regarding the role of such list of attributes, there are multiple applications that have been experimented by scholars. In particular, the characteristics could be regarded according to two perspectives:

- the Marketing school of thought regards them as “attributes consumers associate with luxury” (Kapferer & Michaut, 2016; Sjostrom et al., 2016);
- the Operations and Supply Chain Management school of thought considers them Critical Success Factors (CSFs) which a company shall nurture to “pursue a luxury positioning for their brands and products”(Brun & Castelli, 2013).

The former perspective aims to comprehend luxury purchase intentions, investigating the reasons why consumers would want to buy a certain brand or product. The latter, concerns managerial choices, exploring the actions that a company should pursue to be successful in the luxury market.

Nevertheless, Critical Success Factors are defined as those features in terms of product or service design that allow a firm to succeed into a specific market segment; customers select the firm’s product and not the competitors’ ones because of those specific features (Rockart, June 1986).

For what regards classifying luxury goods and brands, academics and practitioners elaborated theories with different categories based on their degree of luxury and, for each of them, have been also indicated the primary CSFs associated.

Fernie et al. (1997) recognized that, often, luxury fashion companies, in addition to their exclusive haute couture products, manufactured diffusion lines offered at a lower price, available in relatively large volumes to initiate customer to the lifestyle related to the brand.

Dubois and Czellar (2002) observed two main categories differentiated by increase of exclusivity and desirability. From prestige brands, characterised by high quality or performance, to luxury brands, which ultimately comprise perceived comfort, beauty and refinement.

Catry (2003) categorizes luxury market into two categories: exclusive goods and accessible lines. Exclusive goods rely on rarity, constrained manufacturing capacity and limited

editions. Accessible lines are more focused on exclusive shopping experience, heritage and combination of brands.

From the observation of luxury customers, Silverstein & Fiske (2003) identified a distinction in two categories of products: “new luxury” that opposes to “old or traditional luxury”. The main difference is that the former is characterized by consumers that are more interested in the image associated with the brand less than the product itself, while the latter targets elite consumers and relies on authenticity, heritage, craftsmanship, and rarity.

Beverland (2004) divided luxury products in four classes: the mass level, the premium level, the super-premium level, and the icon level. These categories have as main difference the increase of exclusivity as critical success factor.

One of the most interesting classifications was developed by D'Arpizio for a Bain & Company report (2007). Its classification in the three segments Absolute, Aspirational and Accessible has been acknowledged and adopted as a standard by several scholars and consulting. The so called 3 A's are categorized based on price positioning and renowned presence on worldwide market. The co-existence of exceedingly high price positioning and world-renowned brand corresponds to Absolute brands. When price positioning is exclusive but attainable or the brand is not globally renowned, positioning is described as Aspirational. Non-prohibitive prices or a clear mission towards accessibility place companies in the Accessible segment.

Hereafter it is presented a brief overview of the three categories with their most relevant CSF.

- Absolute luxury brands: this segment includes brands that have been historically associated with luxury and manufacturers of precious products that traditionally drove the market. The CSFs with higher importance are exclusivity, uniqueness, heritage of craftsmanship, superior quality.
- Aspirational luxury brands: they express the sentiment of being aspiration for the middle class and in fact they acquired their status by being recognisable and distinctive. The most relevant CSFs are superior quality, brand reputation, emotional appeal, exclusivity.
- Accessible luxury brands: this segment comprehends brands that are more affordable than the other categories, they are the expression of the phenomena of democratization of luxury that is available to everyone. Accessible goods and

services are entry-level step to luxury world and consumers purchase brands to own a status symbol.

Absolute	Aspirational	Accessible
Exclusivity	Superior quality	Brand reputation
Uniqueness	Brand reputation	Customer satisfaction
Heritage of craftsmanship	Emotional appeal	Superior quality
Superior quality	Exclusivity	Emotional appeal
Emotional appeal	Heritage of craftsmanship	Accessibility

*Figure 6 - Most relevant CSF for each luxury category by D'Arpizio (2007)*

## Reason of luxury consumption

Luxury market is one of the most profitable and it is increasing its value year by year, yet researchers agree that the reasons behind luxury consumption have to be better defined and investigated(Shukla & Purani, 2012a). Moreover, each study addressed the problem from different perspective, adopting different terminology, causing a fragmentation in the literature and a general lack of a comprehensive overview. Thus, the goal of this section is to provide a complete list of the main models, trying to highlight the similarities among them.

Silverstein & Friske (2003) identified four “emotional pools” affecting consumer behaviour:

- Taking Care of Me: the pool of customers driven by hedonistic motivation, willing to reward themselves and having the possibility to rejuvenate.
- Questing: the hedonistic research of the pleasure of experience.
- Connecting: based on the desire of creating and deepening existing relationships, such as finding a mate
- Individual Style: the desire of signalling status to others.

When focusing on luxury goods, Vigneron and Johnson (2004) identified two main dimensions of luxury value perceptions: personal perceptions and non-personal perceptions.

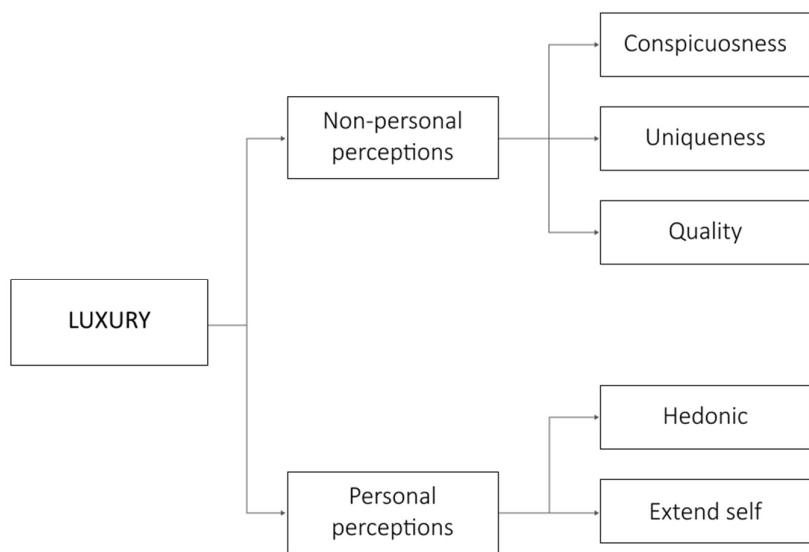


Figure 7 - Vigneron and Johnson's model for luxury consumption reasons

The first ones can be furtherly classified into perceived hedonic value and perceived extended self. The second ones are distinguished in conspicuousness, perceived uniqueness and perceived quality.

Wiedmann et al. (2007) extend the framework proposed by Vigneron and Johnson adopting four dimensions:

- Social value, which contains conspicuous value and prestige value.
- Functional value, further classifiable into usability value, quality value and uniqueness value.
- Individual value characterised by self-identity value, hedonic value and materialistic value.
- Financial value which is best represented by price as indicator of the value of products.

Truong et al. (2009) focused on the motivations driving the social segments of luxury consumers, highlighting that they tend to buy luxury for different reasons such as the willingness of emulating the traditional elite, the superior quality of the product, self-rewarding tendency and lastly for hedonic motives

For these categories of customer, the status gained by acquiring luxury goods is the major driving force for consumption. Consumers with conformist behaviour desire products that display loudly the luxury brand logo as it shows their belonging to the upper class. Typically, these customers are less knowledgeable and use famous brands as a risk reduction strategy, as proven in the luxury wine consumption by Wolf et al.(2016).

On the basis on the former model Shukla & Purani (2012b) developed their own knowledge, proposing five dimensions of luxury value, namely:

- self-directed symbolic value: is the extent to which customers attach or associate psychological meaning to a product. Customers driven by such motivation buy luxury goods to feel good about themselves.
- other-directed symbolic value: social environment and interactions with the reference group strongly influence and even shape consumers' consumption experiences. "As luxury goods possess a desirability that provide the user with a perceived status, other-directed symbolic value perceptions become critical in the context of luxury goods" (Shukla & Purani, 2012b).

- experiential/hedonic value: it relates to the multi-sensory, fantasy and emotive aspects of one's experience with products.
- utilitarian/functional value: concerns the extent to which a product has the desired characteristics, is useful, or performs a desired function. It is the opposite of the hedonic value, characterised by a more rational approach to the product by the client. Consumers expect a luxury product to be usable, of good quality and having all the product-specific “hard features” that allows the product to be clearly distinguishable from mass goods.
- cost/sacrifice value: “Conspicuous consumption involves spending money on frivolous luxuries or indulgences today, rather than saving or investing those resources to promote long-term financial stability. For all but the world’s wealthiest individuals, the benefits derived today from consuming and displaying expensive status linked products come at the cost of tomorrow’s economic security” (Sundie et al., 2011).

Schade et al. (2016) applied the Functional Theories of Attitudes (FTA) as a conceptual framework to investigate the motivations for luxury consumption across different age groups. These theories suggest that individuals have different attitudes according to the psychological benefits they obtain and that attitudes can serve different functions, like expressing oneself (Shavitt, 1990; Wilcox et al., 2009).

In the context of luxury brand consumption, several authors have proven the applicability of the FTA as a conceptual framework (Bian & Forsythe, 2012; Wilcox et al., 2009). Functional Theories of Attitudes identify three main attitudes according to the psychological functions that they serve, namely: social, hedonic, and utilitarian.

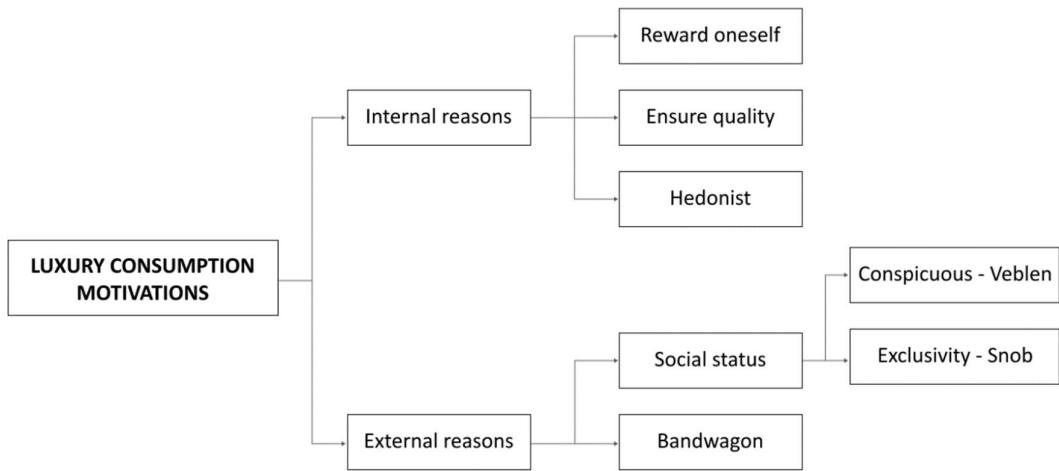
Social attitude functions are directly linked to personal identity and play an important role in social interaction and self-expression. Through those functions, individuals express central values, establish their identity, and gain social approval (Shavitt, 1990). Moreover, social functions can be additionally distinguished in two dimensions: social-adjustive and value expressive. Literature links the social-adjustive function to the compliance with peer pressure, while the value-expressive function is closely related to the expression of one's own identity to a reference or aspiration group. Instead, hedonic and utilitarian attitudes correspond to what has been presented by the previous literature.

Finally, according to Eastman & Eastman (2015), the reasons for consumption can be classified into external or internal. The internal motivations focus on expressing inner values and tastes rather than caring for a group. They can be further classified into hedonic, self-rewarding and perfectionist.

- Hedonic provide substantial intangible, emotional benefits to consumers. These desires, in turn, can be triggered by lifestyle, emotions and culture.
- Self-rewarding motivation means that consumers purchase luxury products ultimately as a means of rewarding themselves for their hard work and effort.
- Perfectionist can be triggered by craftsmanship, functionality, utility and element of innovation and uniqueness.

Conversely, external drivers of status consumption are interpersonal and could be distinguished in the ones seeking for social status and to fit in.

- Social status contains different subcategories according to the relation that the individual wants to have with the others. It could be to signal wealth and demonstrate success to others (conspicuous) or to be seen as elite and thus distinguish themselves from all other individuals (snob). Indeed, these same behaviours have been studied by Vigneron & Johnson (1999) that identified two external effects influencing consumption: Veblen and snob. The first one takes the name from its author, Veblen (Veblen & Galbraith, 1973) who considers conspicuous consumption driven by the desire to impress others by paying very high prices as an ostentation of wealth. On the other hand, price is an indicator of exclusivity and non-conformity as snob consumers avoid using mass brands. People subjected to snob effect decrease their demand for a product when others are purchasing it and their intrinsic desire for distinction encourages to purchase products of higher aesthetic quality and scarcity.
- The willingness to fit it is the other external driver for luxury consumption. It is the desire to conform to a particular style, behaviour, or attitude of a social group, also known as the bandwagon effect. Consumers are motivated to create a positive social image by acquiring and consuming luxury products that are used as status goods to signal the membership to an elite group.



*Figure 8 - Summary of the main motivations that drive luxury consumption*

Another study on the reasons behind conspicuous consumption is provided by Sundie et al. (2011). The authors theorize that “conspicuous products such as luxury cars might serve for humans an analogous function to that served by tails for peacocks: it is an adaptive communication strategy aimed at obtaining reproductive rewards” (Sundie et al., 2011). However, Gangestad & Simpson (2000) noted that the result cannot be extended to all males due to sex differences in human life history, defined as a set of general strategies and specific tactics by which an organism allocates energy to survival, growth, and reproduction (Crawford & Anderson, 1989). Sundie et al. found out that mating motives triggered conspicuous consumption among men following an unrestricted, low-investment strategy while, in contrast, the same motives did not influence the spending or the desire for flashy products for restricted, high-investment men. People when allocating their resources and energies either pursue a long-term high-investing strategy or on the contrary they can engage in a short-term non-investing strategy. “Male mammals can, typically, provide offspring by investing minimally while female mammals need to invest considerable time and energy for internal gestation and nursing. Thus, sexual selection is based on such asymmetry in minimum investment, leading females to be choosier when selecting a partner and leading males to be generally more competitive for sexual access to female” (Trivers, 1974).

They also highlighted how conspicuous consumption depends on the specific context: indeed, when urged with mating-related stimuli, unrestricted, low-investment men displayed an increased motivation to conspicuously consume as they interpret these contexts as opportunities for short-term mating. However, when explicitly primed with a

desire for long-term mates, the same men did not increase in their conspicuous consumption tendencies.

Lastly, it must be noted that motivations for consumption are not static with time. Indeed, according to the Identity development theory “the transition from adolescence to adulthood involves a progressive strengthening in the sense of identity” (Waterman, 1982).

This leads to changes in the individual’s values during the lifetime and to a modification of the relevance of needs (Sheldon & Kasser, 2001). Values and human needs tend to change considerably during adolescence and young adulthood while they tend to remain quite stable during middle and older adulthood. Based on the “Identity Development Process” the following periods of identity development are present in Western societies: childhood (0–11 years), early and middle adolescence (12–15 years), late adolescence (16–25 years), young adulthood (26–39 years), middle-aged adulthood (40–59 years), and older adulthood (60 years and older).

In late adolescence people show a weak personality and mainly seek approval from their peer group. They feel pressured to conform to the opinion and behaviour of their social reference to avoid being an outsider and peer pressure (Gil et al., 2012). Late adolescents do not have the need to communicate such weak sense of self identity and thus are influenced to the bandwagon effect previously presented. On the other hand, young adults reveal a stronger sense of own identity and consequently their behaviour focuses less on peer group acceptance. These group of individuals try to present their own identity to others and particularly to their reference or aspiration group. Finally, middle-aged adults begin to accept their self-limitations by adopting a more passive perspective being less concerned with the need to present their identity to others (Lesser & Kunkel, 1991). As a support of these theories, an empirical research by (Sheldon & Kasser (2001) have confirmed the assumptions.

The above presented list wanted to review the main models on the luxury driving motivations and it highlights several commonalities among them. For example, the reasons behind luxury purchase have a strong social dimension that considers both self and others and can even be studied adopting an evolutionary perspective, interpreting such behaviours as tacit communication strategy for mating purposes.

## Classifying luxury costumers

The models and theories explaining the drivers and motivations of luxury consumption are the foundation for luxury consumers classifications. These are used by companies to design and develop their strategies: from vision, values and positioning to the alignment of operations with customers' expectations. However, similarly to what happens with the definition of luxury and the theories on consumption behaviours, there is not a reference model on which all experts agree and thus, a list of the major frameworks is presented.

Berthon et al. (2009) propose a segmentation of luxury brands and a relative classification of luxury customers. The model leverages on the two dimensions aesthetics and ontology. Aesthetic judgments rely on individual's ability to discriminate value or quality and hence it is related to luxury through the development of taste and appreciation of beauty and refinement. On the other hand, ontology is the branch of metaphysics dealing with the nature of reality. The relationship among ontology and luxury is that luxury goods have traditionally been associated with endurance. From the aesthetics dimension are recognized the novice and the expert while ontology identifies enduring and transient.

The dimensions of aesthetics and ontology delineate four brand-customer modes: Modern, Classic, Postmodern, and Wabi Sabi. The Modern does not require expertise to appreciate a luxury product in a context where luxury is democratized and is consumed for its symbolic value. It is a conspicuous possession. On the contrary, the Classic interprets luxury as something that embodies the ideals of beauty and perfection, oppositely to consumerism. This is the realm of "purist luxury" that could be truly appreciated only with experience and the development of an aesthetic taste. Consequently, luxury is an aesthetic possession. The category Postmodern is characterised by the latest trends and it is all about glamour. There is no need of expertise to understand the offering and it rejects any hierarchies of taste and cultural distinctions. Here luxury is conspicuous consumption. Finally, Wabi Sabi (from Japanese aesthetic for transience) is the category in which the ontological dimension stresses the transient and is mixed with an appreciation for aesthetics. Here luxury is ephemeral aesthetic consumption, it is the pleasure of a moment centred on the experience provided.

Conversely, Han et al. (2013) proposed a segmentation of luxury consumers based on the dimensions of wealth and need for social status, namely patricians, parvenues, poseurs and lastly proletarians.

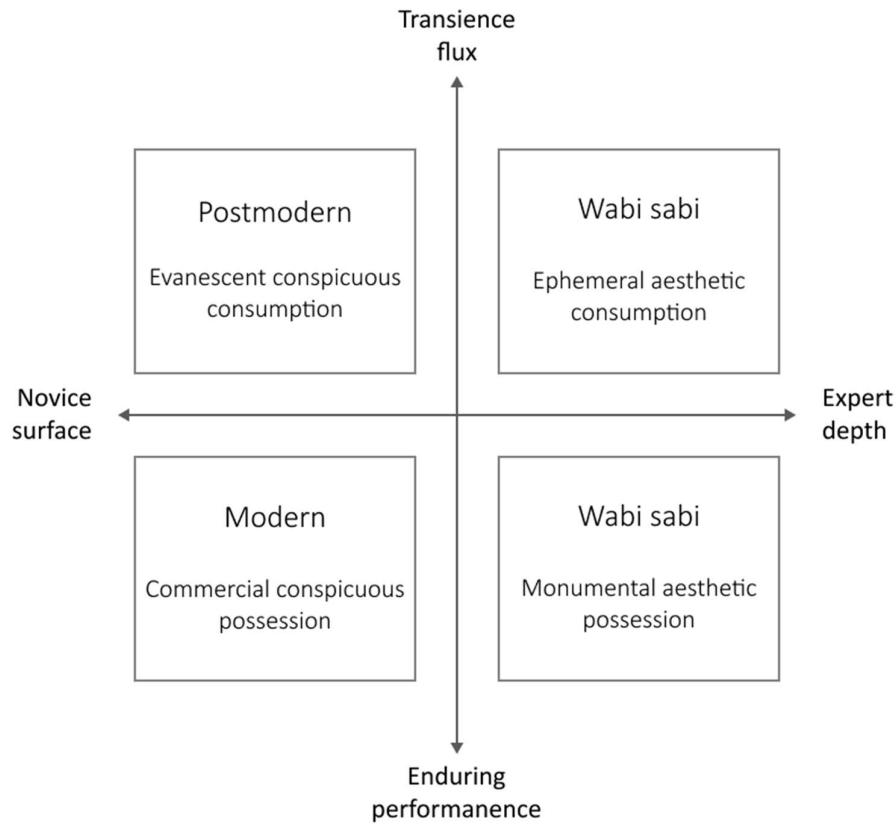


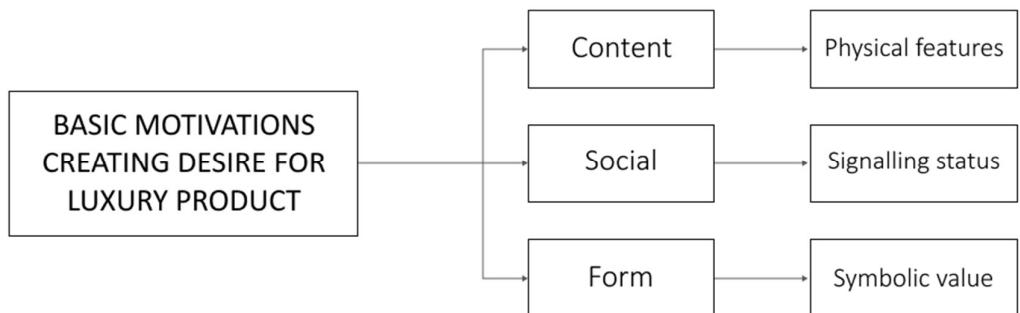
Figure 9 - Berthon's classification model

Patricians have high net income and pay a premium for non-loud branded products that serve as a horizontal signal to other patricians. They use hidden signals as they tend to avoid being misunderstood as individuals who use luxury brands to differentiate themselves from the masses. In summary, they are high in wealth, low in their need to consume for prestige's sake, and interested mainly to associate with other patricians. On the contrary, Parvenue are individuals who still have a significant wealth but do not possess the connoisseurship and knowledge necessary to interpret subtle signals. They are mainly concerned with dissociating themselves from the masses while simultaneously associating themselves with the same or higher tier of individuals. Poseurs are people mainly driven to consume for status but do not possess the financial means to afford authentic luxury goods. However, as they want to associate themselves with those that actually own financial means they are prone to buy counterfeit luxury goods. Finally, Proletarian category is not driven to consume for status' reason and is not interested in signalling by using status goods.

Another possible classification made by researchers is based on the consideration that luxury had a growing exposure to a wider range of the population. Historically it has been

available only to an exclusive few, but with the democratization phenomena many luxury goods are now available to many people (Seo & Buchanan-Oliver, 2015). This democratization has created three distinct social segments of luxury consumer: luxury gourmands, luxury regulars, and luxury nibblers. Gourmands are those who consume luxury goods on a regular basis and are high-net-worth individuals. Regulars are those affluent individuals with periodic purchase habit. Nibblers are those individuals who engage in luxury consumption when their income allows them.

The last and most promising model for classifying luxury customers is the one by Brun & Castelli (2013) that displays similarities with the models presented above. It is created from an experiment where luxury costumers had to rank a list of critical success factors based on their relative and personal weight in consumption. The results suggest that the number of possible product profiles and motivations are almost limitless, reflecting the complexity of the definition of luxury. However, clients can be defined leveraging on three basic dimensions that drive consumption behaviour: content, social, and form.

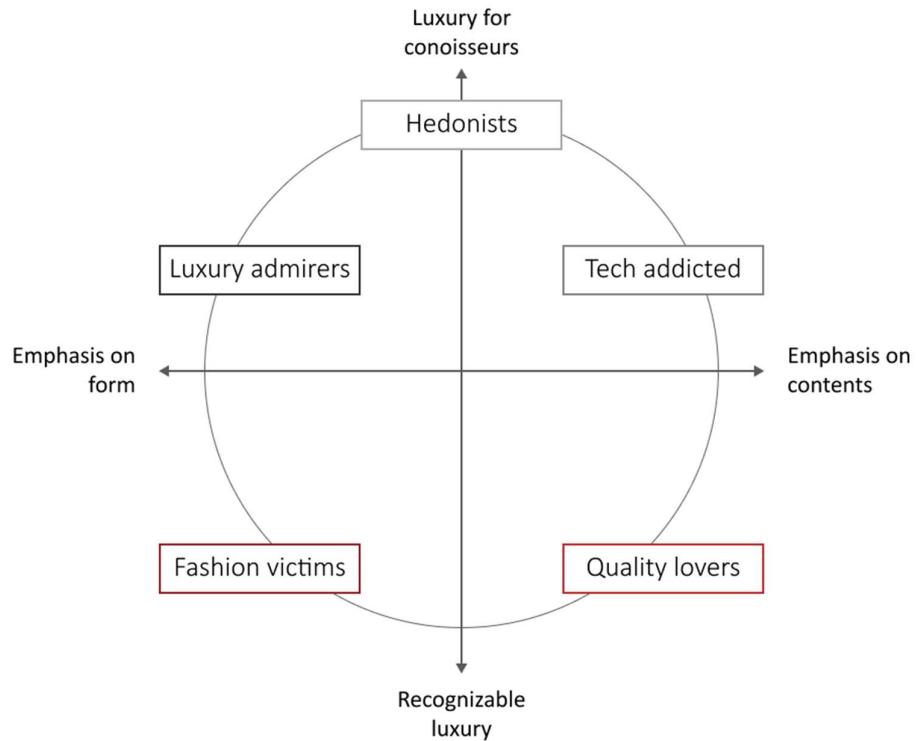


*Figure 10 - Motivations underlying desire for luxury by Brun & Castelli (2013)*

Based on such dimensions, the authors were able to create the “circle of luxury profiles” with five main customer’s profiles: quality lover, fashion victim, tech addicted, luxury admirer and hedonist. This last one presents many similarities with the profile of the Wabi Sabi presented by Berthon et al (2009). The fashion victim has a more glamourous tendency, characterised by a main interest for the emotional appeal and the recognizable style that a luxury product can provide. On the opposite side of the social dimension, it is possible to identify the Luxury admirer that has a more personal focus, driven by desire for exclusivity and the creation of a lifestyle. Also, the tech addicted profile shares the knowledge and the expertise of the luxury admirer, but it is mainly driven by passion for tangible aspects of luxury such as quality and craftsmanship. Finally, the quality lovers

share emphasis on content with tech addicted category but have a more social focus, driven by the desire to signal their status to others.

The results of the discussion on the main model for classifying luxury consumers presented



*Figure 11 - Luxury consumer profiles adapted from Brun & Castelli (2013)*

above reveal different customer profiles and highlight the necessity for companies to understand as much as possible the motivations that drive their clients. Indeed, that is a key aspect to be able to align the offer and the strategic decisions to the critical success factors with the purpose of providing even better experiences to clients to be able to sustain the competitive advantage in the long run.

Up to this moment, the research concerned the customer's perspective of the luxury industry. The following section has the goal of presenting the opposite side of the matter: the company's perspective, specifically the main problems and strategies concerning the management of the marketing and supply chain aspects of the business.

<b>Authors</b>	<b>Dimensions</b>	<b>Classification</b>
Berthon et al	Aesthetics, Endurance	Wabi Sabi, Postmodern, Modern, Classic
Han et al	Wealth, Need for social status	Patricians, Parvenue, Poseurs, Proletarian
Seo et Buchanan	Wealth, Frequency of consumption	Gourmands, Regulars, Nibblers
Brun et Castelli	Technical, Social, Symbolic Aspects	Hedonist, Tech Addicted, Quality Lovers, Luxury Admirers, Fashion Victim

*Figure 12 - Summary of the main models for classifying luxury consumers*

## Marketing management in luxury

The luxury industry is known to not comply with traditional marketing laws and models that had been defined across decades to guide the sales of mass products. Indeed, luxury is a social dynamic, charged with symbolic meanings. According to Kapferer & Bastien (2009a) “Not only are traditional marketing techniques not suited to luxury, but they can also be harmful to it. The truth is that traditional marketing is only concerned with the bottom of the luxury pyramid, where they are no longer selling luxury products, but products derived from luxury brands”. In their book called “The luxury strategy”, the authors highlighted such discrepancy and proposed a series of guidelines specific for this industry named Anti-laws of marketing, being at the very opposite of the doctrine. Here follows brief recap of Kapferer’s anti-laws underlining the difference among luxury and mass market products.

### The anti-laws of marketing

#### 1. Forget about ‘positioning’, luxury is not comparative.

Every mass market brand should communicate a clear positioning to differentiate itself from competitors and ultimately win the constant war for customers’ loyalty. However, what really matters in luxury is exclusivity: it is no more a comparation with competitors, luxury has to be superlative. “Luxury is the expression of taste, creative identity and intrinsic passion of the creator” (Kapferer & Bastien, 2009, p. 319), thus brands should tell their own story about their identity. In this scenario every brand is unique, each one being the best of its kind and makes no sense to compare them.

#### 2. Does your product have enough flaws

Contrarily to common sense, luxury products do not need to be perfect in every small detail, the relentless search of perfection is the aim of upper premium brands. In luxury, small flaw adds personality to the product, helping it to create intimacy with the owner: “The flaw is not only known but it is assumed as sign of charm and guarantee of authenticity”. Luxury is an endless quest of art for art’s sake where products have a personal touch, like small imperfections, which often derive from a production process that relies on craftsmanship. This goes beyond perfection, makes a product truly unique and people are

willing to collect them. Nevertheless, it has to be noted that adding flaws to regular products does not turn them in luxury.

### 3. Don't pander to your customers' wishes

Luxury brands have to remain true to themselves, which does not mean that they should not care about their clients nor listen to them. Indeed, they should resist to clients' demands when these may threaten or harm company identity that comes from the long-term vision of the founder or the creative director. This approach is in contrast with the traditional modern marketing strategy which places the customer at the very centre and tries to satisfy all his requests in order to increase the sales.

### 4. Keep non-enthusiasts out

The traditional approach consists in coming up with new products to extend the penetration in the market and reach unexplored customers segments. However, luxury companies, seeking to make a brand more relevant in the competitive scenario, have to be careful in extending the reach of customer segments since it entails the concrete risk of diluting brand's value. Indeed, when it becomes too popular the brand loses its desirability in the eyes of the elite, who seek uniqueness and want to differentiate from the mass. A successful growth could be achieved by penetrating new countries rather than new customers segments, but still a particular attention should be paid.

### 5. Don't respond to rising demand

In the mass market a growth strategy in terms of volumes manufactured has multiple advantages like reaching a minimum threshold for scale economies that grants an increase of the small margins, gaining higher bargaining power with distributors and ensuring wide distribution visibility. Luxury companies might be tempted to increase the production of the most praised products which could result in a short-term increase of the turnover. Nevertheless, they often resist to follow rising demand and keep deliberately production levels under their full potential to create artificial scarcity that is transformed into a higher sentiment of exclusivity in the customers.

### 6. Dominate the client

Luxury, as discussed before, is both a reward and a status symbol of elevation. To preserve such aura, Kapferer suggested that brands should always dominate their clients by

maintaining a certain distance and the surrounding mystery. Companies and clients should not be equal: the company should play the role of advisor and educator, thus always be in an elevated position compared to them.

#### 7. Make it difficult for clients to buy

Luxury is something that has to be earned, in fact it has also the role of demonstrating the status symbol. Therefore, contrarily to the traditional marketing principles, brands should create obstacles within the buying process even though it might sound illogical because a greater inaccessibility allows to increase the sense of desire. Customer could face different type of hurdles: financial ones are given by the ultimately high price, cultural when clients need to own a certain knowledge to truly appreciate the product, logistical and time, when immediate consumption is hindered.

#### 8. Protect clients from non-clients, the big from the small

Luxury brands have to protect clients from non-clients, by adopting subtle measures of social segregation, given their social status value. That is the reason why fashion luxury brands reserve parts of their boutique just to some selected, long dated loyal customers. “A truly superior private club depends on how successful staff are in preventing other clients imposing on their clients” (Kapferer & Bastien, 2009a).

#### 9. The role of advertising is not to sell

Usually, one of the main roles of marketing is to come up with a sales proposal and develop a unique selling proposition. Differently, luxury industry marketing activities have the exclusive function of recreating a dream without searching for an immediate response on the growth of purchases. Salesmen will always try to create an imaginary around the product, leveraging the emotional connection with the prospect customer. In this process, special attention is paid to not destroy the hedonic and escapist sentiment and thus the price is not mentioned, or at least it is done at the very end as it would bring the client back to rationality.

#### 10. Communicate to those whom you are not targeting

As previously explained, luxury cannot be considered such without the seek for social recognition. To assume such symbolic value, it is required that the number of people familiar with the name of the brand is bigger than the amount of people who can actually

purchase it. Luxury communication campaigns appear on medias where a very low percentage of people is a real customer, nonetheless it is important to create a sentiment of desire in the eyes of people that are not going to purchase it. This principle goes against what is commonly done in traditional marketing where the goal is to optimize efficiency: once the target customers are defined, all the communication effort is exclusively focused on such target to not waste investment money.

#### 11. The presumed price should always seem higher than the actual price

In the luxury world price is something not to be mentioned since it is not the primary driver of purchase. Moreover, when a price is commonly believed to be higher than the actual one, it is created an aura of exclusivity which enhance product's value. In traditional marketing, the price is the starting point for the sale proposal, as every seller tries to attract clients with a low price and then tries to persuade them to go up range.

#### 12. Luxury sets the price, price does not set luxury

In such industry, firstly the product is produced and then its price is set. The more the product is perceived as luxurious by the clients, the higher the price should be. Clearly, that is in contrast to the common process adopted by managers of other industries where firstly the price range to be competitive is defined and then the production should be adapted to satisfy such economical constrain.

#### 13. Raise your prices as time goes on to increase demand

According to the standard economical perspective, when prices fall, demand raises. In luxury, such relationship is reversed due to the so-called snob effect and when prices rise also demand increases. Moreover, price is just a technical detail and should not be a decisive decision factor for the purchase, thus as soon as the price become an issue, it not luxury anymore. To be considered luxury, brands have to be above others in all the possible manners, without being "reasonable". A reasonable price is something that appeals to reason and consequently evokes comparison, losing the superlative nature.

#### 14. Keep raising the average price of the product range

In the classic product life cycle view, a product is launched at an initial price and then, as time goes on and competition rise, production is refined to cut costs. In luxury it is observed a different behaviour: price should be increased as maturity phase approaches. Indeed,

brands cannot grow in volume and profitability other than launching accessible products even though this would make them no longer part of the luxury market.

#### 15. Do not sell

Luxury selling strategy is the opposite of a volume strategy. Scarcity, even if artificial, should be pursued and an increase of prices should be adopted along the years. Clearly, brands should be ready to lose some customers and potential sales in the name of its authenticity. As Kapferer mentioned: “In luxury a key principle is try not to sell too hard”. (Kapferer & Bastien, 2009).

#### 16. Keep stars out of your advertising

Traditional advertising often leverages on famous people, stars from stage and screens which are used to trigger the desire; it plays with the conformist tendency of people to feel and act as their idols. Nonetheless, applying the same strategy in luxury industry could be harmful for the brand. High-end companies should be independent from external figures to communicate their identity, keeping an elevated position compared to them. Stars are the ones that have to court brands due to their desire for luxury products.

#### 17. Cultivate closeness to the arts for initiates

In traditional marketing the brand tries to create an affective relationship with the clients, also by using popular music. Such brands follow people’s tastes. On the other hand, luxury should be the promoter of taste. Luxury is not a follower: it is creative and thus it defines the new trends. For this reason, luxury should remain close to unpopular or emerging arts.

#### 18. Don’t relocate your factories

In mass markets one of the main activities that firms pursue to stay competitive is the reduction of manufacturing costs. Commonly, it involves the relocation of factories in “low-cost countries” where labour cost is significantly cheaper. However, acquiring luxury goods also involves the purchase of products rooted in the culture of a country. Having local roots increases the perceived value by customer and explains why the “made in” label is so important in luxury market. Maintaining a domestic production strategy serves also to protect creativity since a far manufacturing workshop is less controlled and lacks direct contact with supply for experimentation and design of new products.

It is evident how luxury industry has many peculiarities that cause it not to obey to traditional marketing and economic laws. However, Kapferer's guidelines were defined to describe the general luxury industry, without considering the specificity of each sector. Moreover, new trends and innovation are arisen in the following years. Thus, one of the goals of this Master Thesis will be to identify if and which of the presented anti laws have been applied in the context of luxury automotive industry.

## Supply chain management in luxury

After the investigation of how Critical Success Factor are originated from luxury customers' behaviour, the focus now is on the companies' side and their necessity to consider the CSFs to be competitive on the market and be able to attract the desired customer base. Therefore, the aim of this section is to briefly explain how a luxury brand could implement in practice the theory of CSFs by presenting the most relevant literature based on empirical data analysis.

### The concept of Supply Chain Management

Most of the currently available academic studies on luxury strategies focus on marketing disciplines such branding, communication, targeting and positioning. These activities are extremely important for company's success since involve a direct contact with the final clients. Although, as mentioned by Nueno & Quelch (1998), marketing activities have to be complemented with product line management, customer service management and channel management.

In the recent decades Supply Chain Management (SCM) has acquired continuously higher importance within companies' organizational strategy and nowadays competition takes place between SCs rather than between individual companies (Christopher & R.Towill, 2002).

These theories have sparked the creation of a research stream that investigates how operations and supply chain management are conducted in luxury industry and if there are similarities with the models developed for the mass market.

First of all, in order to frame the concept of Supply Chain Management it is here reported the definition provided by one of the most trustworthy authorities of the topic, the Council of Supply Chain Management Professionals (CSCPM). It describes it as "an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance, and information technology" (CSCMP, 2013).

SCM has a great importance since it is at the basis of the decision-making process for formulating a supply chain strategy, that comprehends two main fields of action: configuration and management. SC configuration choices reflect long-term strategic decisions, including aspects such as number of levels, number and kind of actors in each level, localization of manufacturing plants and network facilities. SC management are the specific choices related to different given configurations.

Specifically, luxury companies' supply chains are characterized by a high degree of complexity with multiple tiers of suppliers upstream in the chain, a meticulous manufacturing and a distribution that aims at delivering the best service level to its customers.

To fulfil the demanding expectations and not disperse their efforts, businesses often decide to focus just on a limited set of core competencies while using an outsourcing strategy for the non-core activities (Caniato et al., 2011).

This tendency was surely influenced by substantial social and economic trends affecting the world of supply chain in the latest years, to which luxury companies were not immune: globalization of markets, development of potential competitors worldwide, evolution of consumers with demand for higher variety, customized products, high quality, and high service level (Castelli & Sianesi, 2015).

Above all, there has been a growing concern for globalization effects, which are causing several social and environmental issues. This awareness was translated into the concept of sustainable development, defined as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs" by the European Commission (2007).

Clients have been questioning companies' actions outside the retail store and thus the principle of sustainability has inevitably touched the world of supply chain management.

Luxury industry players are extremely careful in managing their brand identity and public reputation because, as explained before, they are Critical Success Factors. When a customer decides to buy and consume a certain product, he seeks for a brand that embodies his personal values. The choice of a brand entails an implicit alignment of company's and individual values.

Consequently, companies have raised their attention on the supply chain activities performed by their partners, since unethical actions taken by the suppliers entail reputational and economical risks for the brands (Svensson, 2009). It is no longer enough to be “internally” sustainable, but it is required to be also “externally” sustainable through a careful selection of suppliers and distributors that comply with the emerging public requests.

### Supply chain strategies in luxury industry

SCM clearly appears essential for luxury brands to remain competitive in nowadays scenario, characterized by interactions with multiple actors all along the value chain, where the ability of coordinating activities and guaranteeing the best delivery of products to the customer is critical. Hence, a crucial decision for companies is the creation of a successful supply chain strategy.

Many authors agree that the right SC strategy should be consistent with firm’s competitive advantage, which corresponds to the alignment towards the CSFs of the specific product or of the target market (Castelli & Sianesi, 2015). Although, conforming the supply chain towards luxury specific CSFs is challenging as it involves the transformation of a list of attributes that often regard intangible aspects into operating and measurable performances.

Luxury companies in today’s highly competitive scenario have to coordinate the whole Supply Chain activities matching brand values, product characteristics and customer requirements to achieve preferences, loyalty, and ultimately sustain revenues (Caniato et al., 2009; Castelli & Brun, 2010).

The differences within customer demand across market segments and industry determine distinct CSFs priorities for single companies. This means that the same SC approach could not be applied in all the circumstances (Fisher, 1997) but a contingent approach should be adopted to lay the right SC configuration and management choices. Hence, as mentioned by Caniato et al. (Caniato et al., 2009) the method to elaborate a correct SC strategy relies on identifying the contingencies of the context and examining if the SC strategies suggested by different models fit the situation.

Researchers have extensively studied the topic of Supply Chain, elaborating several models to support company managers in the decision-making process regarding SC configuration and management. These models could be divided into two main archetypes. The first ones

simply provide general guidelines valid for all companies that should be followed to be more competitive. The other type follows a contingent approach, contributing with suggestions for a specific strategy according to peculiar market and firm characteristics.

Considering what has just been presented, the second category of models is the one that appears to be most helpful to outline a SC strategy in luxury industry. Although, most of the techniques and tools that are suggested have been elaborated from studies on mass market, that it is known to behave according to significantly different rules. Therefore, the main contributions which propose SC models considering different contingent variables are presented in the following section.

It is commonly believed that the first milestone for what regards SC strategy was set by Fisher (1997) who distinguishes products in two separate classes: functional and innovative. They are classified according to a set of variables describing demand characteristics like product life cycle, product variety, average margin of error in the forecast. Depending on the type of product, the author suggests the most suitable strategies for SC management. Functional products match with a physically efficient configuration while innovative ones are characterized by responsive SC practices.

The model brought by Lamming et al. (2000) expands the features previously researched by Fisher, taking into account the two variables complexity and innovative-uniqueness. The major novelty relies in the consideration of the characteristic uniqueness, that could be defined using the Valuable, Rare, Inimitable, Non-substitutable (VRIN) framework. In fact, despite “product innovativeness and uniqueness are not the same thing, it may be difficult in practice to differentiate between the two”. The combination of the two results in 4 positionings where are suggested peculiar competitive priorities for the supply network and how to perform sharing of resource and information.

Also, Lee (Lee, 2002b) starting from the model created by Fisher identifies an “uncertainty framework” which relies on the uncertainties faced by supply and demand. The latter is related to predictability of the demand for the product that could be defined according to the functional-innovative Fisher’s classification. Instead, supply profile is analysed with a special focus on the production process which could be stable, in case of mature technology and proven supply base, or evolving, when manufacturing process is in early development or rapidly changing with a consequent unstable supply base. The levels of uncertainty lead

to one of the four different SCM strategies for providing competitive edge to companies: efficient, risk hedging, responsive and agile.

Likewise, Christopher and Towill (2002) propose SC strategies depending on a set of CSF requested by the customers, namely cost, quality, service level and lead time. These could be identified either as market qualifiers or market winners (Mason-Jones et al., 2000) and correspond to an agile, lean or leagile SC strategy selection. In a volatile marketplace where availability is crucial, agility aims to leverage market knowledge to capitalize on profitable possibilities. Leanness entails creating a value stream by reducing costs and eliminating all sources of waste. Leagile is a hybrid form of lean and agile strategies that position the decoupling point “to best suit the need for responding to a volatile demand downstream yet providing level scheduling upstream from the marketplace.” (Naylor et al., 1999)

Childerhouse et al. (2002) suggest a model based on other five dimensions: duration of life cycle, time window for delivery, volume, variety and variability. From their case study research four cluster of products emerge, having different order winners and order qualifiers. These correspond to four demand chain strategies (MRP, kanban, packing center, design and build) having distinct SC configurations according to the positioning of the decoupling point.

Vitasek et al. (2003) developed an approach to match supply with demand while keeping customers satisfied. They identified four product categories where each SKU is classified by its volume produced and its variability of the demand. In order to align SC strategy with these features have been identified four volume-variability profiles (i.e. A, B, C, D) where possible manufacturing strategies are suggested as well as distribution replenishment strategies.

Cigolini et al. (Roberto Cigolini et al., 2004) develop a new contingency model, the demand-supply matrix, where products are divided in classes according to their dominant life cycle phase, their degree of complexity and the SC type. For the first mix of variables there are four main combination of life cycle phase (introduction, growth, maturity, decline) and complexity which identify the demand characteristics. Whereas the last factor synthesises supply characteristics which could be of three types (efficient, lean and quick), described according to the variable vs fixed costs ratio, manufacturing flexibility, elasticity of demand to price and the main competitive weapon.

De Treville et al. (2004) focus more on the processes internal to the company and propose a framework where two variables are taken into consideration. Demand information transfer, that is the information (no, partial or full) transferred from the customer to the manufacturer, and relative supply lead time, relative to the time window during which the client has information (no, partial or full) concerning actual demand. Depending on the value assumed by the variables the model proposes three demand chain profiles of market mediation, which consists in adjusting production to fit actual customer demand as it materializes.

Luzzini & Ronchi (2010) investigate Purchasing and Supply Management (PSM) approaches specifically for luxury sector using a case study methodology. Leveraging on seven contingent variables regarding product and firm characteristics (turnover, number of employees, sale volume, product complexity, product range, product customization, product lifecycle), the results lead to detect four clusters of companies with common PSM strategies. These have been named recalling the main characteristic that distinguishes themselves from the others: large fashion, small fashion, medium complexity, high complexity. Each group presents the best practices for a wide variety of activities regarding the supply phase, such as level of outsourcing, suppliers' relation and contract, supplier portfolio, involvement in new product development and performance evaluation.

Caniato et al. (2011) create a model with the best SC strategies specifically for luxury companies. In fact, some luxury specific CSFs have not been tackled by SC literature for mass market, since are less customer-oriented and there is a lack of a contingent variable about market requirements. The issue is solved by considering brand reputation, a crucial CSF for luxury firms that could decide whether to rely on technical, symbolic or a hybrid form of these aspects (Brun & Castelli, 2008). It emerges that the contingent variables pertinent to luxury industry are nine: uniqueness, quality, variety, supply profile, volume variability, market requirements, selling volumes, product complexity, company size. These are then reduced to 5 when searching for differentiated strategies among luxury firms across industries since the first 4 listed characteristics are common to all luxury companies.

As a result, the model identifies three clusters of products (fashion Goliaths, quality Davids, Techstige) that are characterized by a strong correlation between selling volume and product complexity. For each of these groups are highlighted the luxury CSFs on which

companies should compete and the best practices for the SC stages of sourcing, manufacturing, and distribution.

<b>Author</b>	<b>Contingent variables</b>	<b>Strategic profiles</b>
Fisher (1997)	Product: Lifecycle, CM, variety, av. stockout rate, av. margin of error forecast, av. forced markdowns, lead time MTO	Functional products match efficient SC, Innovative products match Responsive SC
Lamming et al. (2000)	Product complexity, product uniqueness	Four profiles of competitive priorities and sharing of resource and information
Lee (2002)	Demand uncertainty, supply uncertainty	Efficient, risk hedging, responsive and agile Supply Chain
Christopher & Towill (2002)	Market winner, market qualifiers: cost, quality, service level, lead time	Agile SC and Lean SC startegies
Childerhouse et al. (2002)	Duration of lifecycle, time window for delivey, volume, variety, variability	Demand chain strategies: MRP, kanban, packing center, design and build
Vitasek et al. (2003)	Volume, variability of demand	Four profiles of manufacturing and distribution replenishment strategies
Cigolini et al. (2004)	Dominant life cylce phase, product complexity	Efficient, Lean, Quick SC
De Treville et al. (2004)	Demand information transfer, relative supply lead time	Lead time improvements over demand information stranfer
Luzzini & Ronchi (2010)	Turnover, number employees, sale volume, product complexity, product range, product customization, product lifecycle	Four profiles of Purchasing and Supply Management approaches
Caniato et al. (2011)	Turnover, selling volume, product complexity, fashionableness, brand reputation	Three cluster of companies with relative competitive CSFs and best practices of sourcing, manufacturing, distribution.

*Figure 13 - Summary of the most relevant SC models*

## Luxury automotive industry

The following section is going to portray an overview of the knowledge available in literature about luxury automotive industry, the field of studies of the present thesis.

Firstly, is going to be presented the automotive industry as a whole, from an economic viewpoint. Subsequently are shown the existing classifications of car vehicles, with a particular focus on how luxury cars are defined. Lastly, the academic models, applied in the industry for what regards Operations and Supply Chain management, are reported.

### Automotive industry overview

Automotive industry is one of the largest manufacturing sectors in the global community with sales equivalent to more than 90 million units every year (OICA, 2019). Not only it produces substantial economic benefits to world's economy, but it is also highly connected to a wide variety of international concerns such energy consumption, emissions, trade and security (Nieuwenhuis & Wells, 2015). Moreover, auto vehicles create pervasive impacts on people's life and are a symbol of cultural status.

The industry has followed a steady growth until 2017, except for 2008 crisis years, whereas afterwards has seen a phase of slight decline.

Therefore, the impact of COVID-19 on today's globally integrated automotive sector has been significant. Initial concerns over a disruption in Chinese exports quickly escalated firstly to large scale manufacturing interruptions across Europe and later also to closure of assembly plants in the US. This added intense pressure on the already distressed global supply base where companies were at risk of defaulting requiring banks and governments to step in.

Overall, it is considered that automotive industry has been resilient to the pandemic and likewise other sectors sales were partially recovered by the ease of restrictions in the last quarters of the year. In China there has been a rebound effect of sales after the month of April that limited the negative figures to -10% compared to 2019, while Europe and USA markets have been still recovering in 2020 closing respectively with -27% and -17% yearly change (BCG, 2020).

The automotive sector is facing unprecedented change effects it will have on manufacturers and its users. Trends shaping the industry were already strong even before Covid-19 crisis and rising, though this unexpected scenario enhanced some while slowing down others. The main characteristics of the car of the future still remain the same: electrified, autonomous, shared, connected and yearly updated (PwC, 2018).

## Car classifications

The automotive industry considered in its integrity includes a wide variety of vehicles that could be classified in categories according to determined variables (e.g., number of passengers, weight and floor area, body type, engine size, ect). Although, there is not a harmonized standard commonly adopted by all the Countries of the world and, despite the limited differences between the national classifications, sometimes it is difficult frame vehicles in a similar category.

The most adopted is the one proposed by the International Organization of Motor Vehicle Manufacturers (OICA) which identifies cars and commercial vehicles that are furtherly categorized in the four groups: passenger cars, light commercial vehicles, heavy trucks and busses. Considering that the area of interest of this paper is about passenger cars there are no difficulties in understanding these macro categories.

The real problem arises when trying to analyse the classification more in depth within the different segments of passenger car category, that is important for reasons such road taxation, determine car rental prices and calculating insurance premiums.

Car market segmentation is defined in Europe through the use of classifications by The European New Car Assessment Programme (EuroNCAP, 2013) and the Association of Car Rental Industry System Standards (ACRISS, 2013). The USA's Environmental Protection Agency (EPA, 2013) uses vehicle classes that are close to the classification of the European NCAP.

In practice, vehicle segments do not have formal characterization or regulations and the boundaries between these divisions are blurred by factors other than the size or length of cars. This implies that the classification of models within segments tend to be based on comparison to well-known brand models that are provided as example.

Hereafter it is presented a table summary of the three main car classification methods.

US EPA Size Class (EPA, 2013)	Euro Market Segment (EC, 1999)	Car equivalent in the ACRISS vehicle guide
N/A Minicompact	A-segment mini cars	Peugeot 1007, Mercedes Smart Fortwo
Subcompact	B-segment small cars	Opel Corsa, Fiat Punto
Compact	C-segment medium cars	Citroen C4, Ford Focus 2.0
Mid-size N/A	D-segment large cars	Ford Mondeo, Alfa Romeo 159
Large N/A	E-segment executive cars	Audi A4 2.0, Audi A5 2.0
N/A	F-segment luxury cars	Chrysler 300, BMW 6 Series
Two-seater	S-segment sports coupés	Porsche 911 Carrera S*
Minivan		
Cargo van	M-segment multi-purpose cars	Opel Zafira*, Ford Galaxy*
Passenger van		
Small Sport Utility Vehicle		Volkswagen Touareg
Standard Sport Utility Vehicle	J-segment sport utility cars (including off-road vehicles)	Auto*, Land Rover Discovery*
Small Pickup Truck		--
Standard Pickup Truck		--
Special purpose vehicle		--

Figure 14 - Car classification comparison of the three main standards adopted

## Luxury car industry

Luxury car sales dominate the global luxury market with €550 billion in 2019, solidly growing in the latest years around +5 / 7% (Bain & Company, 2019).

When thinking about this specific industry, world renowned names such Ferrari and Rolls Royce come up to mind. These types of companies coexist together with other niche brands, such Pagani and Koenigsegg, that represent the top of the pyramid of the sector and undoubtedly are considered as luxury. Thus, we can say that within luxury cars there is no upper limit of luxuriousness, certain vehicles like Bugatti La Voiture Noire have a price tag higher than 11 million euros, while it is more difficult to assess the lower limit. When does a car can be defined as luxury?

The segmentations proposed by the European NCAP, and American EPA are not clear in defining the concept. Is the E-segment corresponding to executive cars luxurious or could

just the F-segment be included in the classification? Probably this approach doesn't suit because it is not possible to evaluate cars just on their dimension and body; other factors such as design, engineering, price, accessories should be considered (Berger, 2001).

In the last decade the phenomena of democratization of luxury goods influenced the creation of models that are accessible to a wider audience being in the so-called "affordable" luxury segment. This has created more difficulty in assigning modern cars to the luxury segment usually based on history, brand and technology (Nunes et al., 2016). Indeed, ACRIS position in the E-segment the BMW 5 Series and the Mercedes Benz E Class; cars that are not so prohibitive and sell on average more than 100 thousand units each.

Unfortunately, the literature studies on luxury automotive do not help in clarifying the issue since are almost non-existent. Only just one academic work by Nunes et al. (2016) tried to investigate the concept of luxury applied to the automotive market and defined luxury cars as "the segment in the automotive industry which seeks to win customer orders through superior design, engineering, and image by offering differentiation beyond customers' standard mobility needs, and exclusivity in their products".

The research by Nunes uses as reference the "Theory of Luxury" by Kapferer & Bastien (2009b) according to which companies generally compete across three strategies: "luxury", "premium", and "fashion".

- Luxury companies focus on customer desire, timeless products, design, exclusivity, and an almost religious cult. Luxury companies set prices in response to the average affluence in society and pay attention to increasing production capacity and output volume since their aim is to realise customers' value for exclusivity. In the automotive industry brands such as Aston Martin, Ferrari, and Rolls Royce are examples.
- Instead, a premium strategy follows a path in which automotive companies compete to offer the best products where price is justified by performance and features of their cars. Brands like Audi, Lexus, and Volvo are positioned within a premium strategy.
- The fashion segment is affected by short-term trends in order to sell products in high volumes. Timing is important to reinvent the brand according to the evolution of society and there is little or no recourse to company heritage or

exclusivity. Thus, price is a determinant for attracting new customers and expanding sales volumes. The main brands here include Toyota, Opel, Volkswagen, and Hyundai.

Being the just presented classification the only relevant literature contribution available on scientific journals, it has been adopted as a reference for the thesis. Although it appears clear that the topic is still underdeveloped and multiple studies are expected to examine it providing a more extensive description of the categories.

Despite sounding trivial, when talking about luxury cars from now onward it is considered just the segment “luxury” while the “premium” one is not. There are some scholars that when investigating other product categories (i.e. wine) found that consumers often are not able to discriminate between luxury and premium categories, both associated with high price, and thus should not be considered two distinct areas of investigation (Sjostrom et al., 2014). Though, later investigations on customer perception evidence that high quality is implied for luxury goods, unlike the premium ones where high quality and performance must be constantly affirmed (Kapferer & Michaut, 2016). The same article leverages on a few interviews about cars where emerges that “German automotive brands (BMW, Mercedes, Audi) generally refer to themselves not as luxury brands but rather as premium car manufacturers”. This last evidence by Kapferer and Michaut is adopted as master guide being more inherent to the industry and justifies the previously explained choice.

Moreover, it is unknown if the CSFs elaborated by scholars for general luxury goods, that often consider just the personal luxury goods segment, stand in place also when addressing automotive industry. Therefore, it is lacking in the literature panorama a univocal shared definition of luxury automotive that comprehends the CSFs since the only one created by Nunes et al. has not been yet cited by any other publications.

## Supply Chain Management of Luxury automotive

The only topic regarding luxury automotive industry that seems to be partially investigated by academics involves Operations and Supply Chain Management.

As already mentioned, most of the models supporting the identification of the suitable SC strategy derive from mass market and thus their applicability to the field of interest of this thesis has not still been validated yet. Therefore, one of the purposes of the present work is to analyse their effectiveness, leveraging on the data published by academics and interviews with best-in-class companies of the industry.

Nonetheless, some initial information could be collected deducing SC strategy proposals from the ones elaborated for luxury durable goods by Luzzini & Ronchi (2010) and Caniato et al. (2011). These are goods with generally high level of complexity, that can be used for a long time and that people do not buy very often. Their SC management activities are challenging, especially in the upstream part regarding supply and stock management (Ponticelli et al., 2013). As presented in the previous chapter, a good number of SC frameworks contemplate the contingent variable complexity, which is measured as dependent on the number of components and technological intensity of the product (Lamming et al., 2000). It appears clear that luxury cars score high in both dimensions (Caniato et al., 2009) and with no doubt they could be considered complex durable goods.

Here follows their suggestion of main practices for luxury complex goods divided throughout the activities of supply, manufacture and distribution.

Purchasing and supply activities have been analysed by Luzzini and Ronchi (2010) through a case study approach that includes within the sample two automotive luxury firms. It emerged that firms producing complex products tend to outsource only the non-core activities using long-term agreements and develop a close relationship with few players for co-designing the products requested. Some of the suppliers could be from the mass market, especially for standard components and materials that are selected on price after reaching a minimum level on other parameters. A different criterion is adopted for customized and branded components (e.g. Hi-Fi system, seats, braking system) which are chosen according to quality, design, innovativeness, flexibility.

Caniato et al. (2011) draws suggestions with best practices for “Techstige” companies, defined as those with high product complexity and small volumes, regarding manufacturing

and distribution. The lifecycle of cars is generally extended, and the frequency of new products introduction is a firm's choice, thus the demand level is predictable and delivery times are extended to create a sense of exclusivity. This allows to have a long-term levelled production plan that is optimized also following lean practices. Luxury cars often request a certain degree of personalization which increases the level of production complexity that has to maintain flexibility for last-minute order change and adopt assembly-to-order strategy for setting the final configuration at the latest.

For what regards distribution Caniato et al. (2011) identifies the best channels in mono-brand directly operated stores and multi-brand independent dealers. It is crucial to effectively convey and communicate company's CSFs by establishing an intense dialogue with customer and dealers, that must be under a strict monitoring of the service level delivered.

The presented guidelines give an overview of how could be structured the strategy of luxury car players. Still, understanding if they most praised SC models for mass market are applicable to this field will undoubtedly support the selection of SC practices, especially in the dynamic context of nowadays world.

In order to study the validity of SC models, hereafter all their contingent variables are collected, which are going to be analysed and quantified with research and interviews in the following steps.

# RESEARCH METHODOLOGY

The following section aims to highlight the gaps of knowledge encountered in literature review and develop accordingly a structured research plan for the thesis. Specifically, firstly are going to be presented the research questions with the objectives of the research, later it is exhibited the strategy implemented to address them and lastly are explained the techniques implemented for data collection and analysis.

## Gaps in literature

Considering what presented in the literature review, it appears clear that luxury is still relatively new to the academic world and not all the concepts related to it have been deeply investigated. The definition using a list of attributes seems promising and widely adopted, although it is ambiguous how it should be adapted to the different industries. Indeed, the majority of contributions dealing with the topic of luxury have been developed principally focusing on fashion and personal luxury goods.

A detailed list of attributes that univocally defines the luxury automotive sector is currently missing in the literature scenario and therefore this is the first issue that will be addressed with such research. In order to reach this objective, the specific purchasing motivations of luxury car clients have to be furtherly investigated. One of the goals of this research is to fill the current gap by proposing a tailored model on the motivations for luxury automotive consumption by adopting a costumer's perspective. This means that are going to be identified the main Critical Successful Factor during the purchasing process.

Secondly, the differences in consumer behaviour underlined by Brun & Castelli (2013) are referred to a general concept of luxury and are not verified for each of the nine luxury market segments. Thus, there is an evident gap in literature that is going to be addressed always focusing on the automotive industry by providing a classification method for customers depending on what they value more. It appears also interesting to consider if there are similar attitudes in owners of a determined type of cars and if there is an influence depending on the geographical origins of clients and manufacturers.

After having adopted a customer's perspective for the definition of the main purchasing CSFs, it is required to also study the other side of the medal, namely the company's point of view in terms of strategy adopted to align with what was defined before. The main models in the fields of marketing and supply chain management, presented in the section before, had been defined for the mass market, general luxury industry or the fashion industry. Thus, there are gaps in literature as no specific models were created considering the specificities of the luxury automotive industry. The goal of the research will be to study whether the general models are being applied by the leaders of the analysed sector, providing a more structured comprehension of the managerial choices adopted.

## Research questions

In light of the gaps encountered in present literature hereafter the research questions that are going to be addressed are presented.

*RQ1. What are the specific Critical Success Factors for luxury car manufacturers? How are they different from the list crafted by the literature studies for the general luxury market?*

*RQ2. Is it possible to identify distinct clusters of consumers which show a common pattern in valuing the single attributes?*

*RQ3. What are the most successful strategies in the field of marketing and supply chain that luxury car companies should implement?*

It has to be highlighted the innovative value of the presented research questions: they set the foundation for a new stream of research. Indeed, luxury automotive industry, despite being the most valuable sector in the luxury industry, has been neglected by scholars. Thus, this Master Thesis has the aim of finally bringing a more structured and formal overview of the sector, by creating a definition that will allow to differentiate what is and what is not luxury in the automotive industry.

## Research framework

The structure of this thesis on luxury automotive industry is composed of five parts that aim to form a ground base of knowledge and set a strategy to answer the above presented questions.

The initial two sections regard the already discussed literature review chapter. Synthesizing their structure, the first one consists in an assessment of the existing body of work on luxury industry as a whole, exploring the academic definitions, the psychological reasons behind consumption and the activities performed by high-end to be aligned with customers. The second one entails a description of automotive industry context, shedding light on the complicated and so far unexplored definition of luxury automotive and presenting the only available strategies suggested by literature for a successful management of activities.

The third section regards a competitive scenario research of luxury car manufacturers aimed at understanding the salient characteristics that these brands deliver to their

customers. Such analysis is fundamental to answer the research question RQ1 about what are the critical success factors peculiar of this industry.

The fourth part deals with gathering first-hand quantitative data using a survey submitted to luxury cars owners. The responses allow to understand customer thoughts during their purchasing process and address specifically research question RQ2.

The last segment assumes a company perspective focusing on the activities that luxury car brands should implement to be successful. Specifically, leveraging on interviews and documentary analysis, it is adopted a case study approach to understand which are the most effective practices in the field of Supply Chain and Marketing.

Going into the details of the literature review, it has been conducted systematically, a method originated in medical science and now widely applied in management studies following explicit, rigorous, and accountable process. Indeed, the aim of a systematic review is to conduct a comprehensive and unbiased research. This means that databases, grey literature sources and bibliographies are searched across to ensure having a representative sample of the published material (Gough et al., 2012). Moreover, the output work has to be clear and reproducible, thus documenting the terms used, their combination and where are searched so that others could update or evaluate it.

The first step to follow such method is to design a research protocol (The PLoS Medicine Editors, 2011) that includes the rationale, the eligibility criteria and the sources where the documents are researched. The main source of the contributions is Scopus, the most complete database for academic papers, complemented with conference reports and consulting firms reports. The logic has been already presented in the chapter Literature Review Structure, while the criteria for inclusion regard:

- Language of the work: English or Italian.
- Publication date: after 1998 for those regarding luxury.
- Trustworthiness of the source: scholar with more than 1 citation.
- Topic: Business, Management, Marketing, Retail, Operations, Psychology.  
Excluding those regarding pure manufacturing and production techniques.

Secondly it is elaborated a research strategy, that is the approach followed to create a consistent collection of papers and then narrow down the number to only those that are coherent with the objectives. The research has begun from the reference paper “The nature of luxury: a consumer perspective” (Brun & Castelli, 2013) analysing the bibliography and

the other 79 documents that have cited it. The same process has been followed for the citing papers, obtaining a second level of depth. This set of scholar writings is completed with the search on Scopus of the key words which must be included alone, as a combination, or in their derivative forms. Afterwards, the total number of documents has been screened according to the eligibility criteria examining titles and abstracts; the remaining ones has gone through a full document reading.

The systematic literature review concludes with the synthesis and writing of the evidence from the selected papers. During this phase has been helpful the search across grey literature, such as consulting firms reports, to contextualize the topics, especially when talking about luxury and automotive industries. Indeed, these entities are committed to a continuous research effort and publish periodically reports to demonstrate being up to date with latest trends and exhibit their expertise on a wide variety of subjects. Moreover, during the proper research phase of this thesis some new subjects needed to be furtherly explored and thus the literature review has been updated with new content.

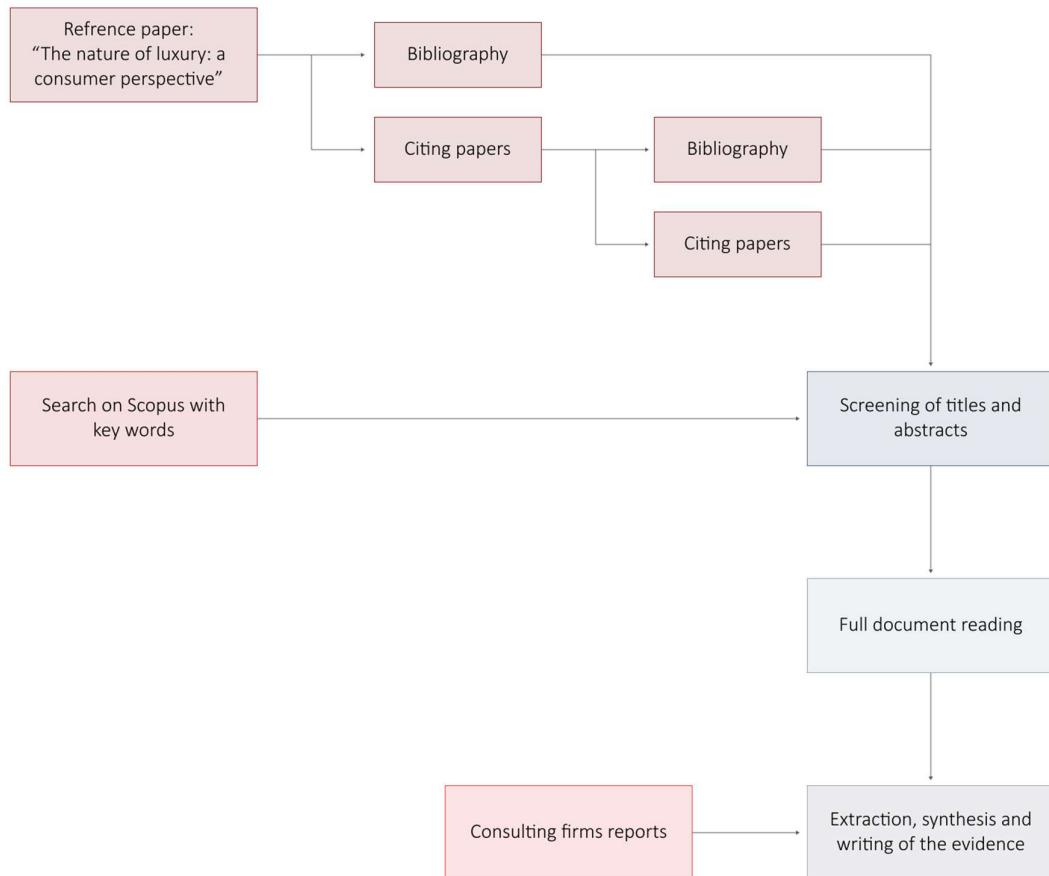


Figure 15 - Scheme of the systematic literature review process

## Specialization of CSF for luxury automotive industry

The goal of this research part is to fill the current gap in the literature by proposing a model which specializes the CSF to luxury automotive industry. The model aims to explain the motivations that drive the consumption of luxury cars at different levels of details. The very first level presents a general classification of the CSFs which is useful for macro segmentation of customers. Then, the variables have to be gradually deepened going into the details to obtain more accurate descriptions useful for managerial and strategic decisions on SC alignment and brand positioning.

The starting point of the research is consulting luxury car manufacturers' official websites. Exploring the sections where are presented company's vision, mission, and values together with the characteristics of the models helps to craft an overview of the industry. Indeed, it is possible to distinguish which are the most relevant factors that confer the status of "luxury" in automotive industry and what are the dimensions that supercar brands pursuit for differentiation.

Company	Mission	Values
Aston Martin 	If beautiful is our benchmark, our craft is what leads us there.	Beauty, craft, performance, memorable experiences
Bentley 	Inspire customers with a magical fusion of craftsmanship, innovation and sustainability	Innovation, sustainability, collaboration, authenticity, integrity
Ferrari 	Build cars, symbols of Italian excellence, to win on both road and track. Unique creations generating a World of Dreams and Emotions.	People and team, Tradition and Innovations, Passion and Excellence
Lamborghini 	Develop a revolutionary car that redefines the rules of the game in supercar industry becoming a reference.	Dream & Inspiration, Innovation & Technology
Maserati 	Designing excellence	Quality, style, italian, elegance, iconic
McLaren 	Create breath-taking performance road cars and deliver the most thrilling driving experiences	Sensation before innovation, perfection, design
Porsche 	Build the dream car	Passion, innovation, team, technology, sustainability
Rolls Royce 	Inspiring greatness, push the boundaries of luxury creating new realities both within and beyond automotive design	Perfection, art & design, craftsmanship, luxury

Figure 16 - Luxury car brands' values and mission

After complementing the information derived from manufacturers' communication channels with the literature studies on luxury market presented in the previous chapter it is possible to create the model. This is going to be articulated in three layers with an increasing emphasis on the specificities.

The first layer relies on the studies proposed by Brun & Castelli (Brun & Castelli, 2013) that identify three basic motivations creating the desire for a luxury product, namely content, symbolic and social values. Indeed, rather than creating a new structure it is more solid to leverage on a validated model already available in the academic panorama which has been cited by several research papers. Therefore, on the basis of those characteristics validated for general luxury goods, the three characteristics selected for luxury automotive industry are the following:

- technical aspects,
- emotional appeal,
- exclusivity.

Indeed, the characteristic content that is used by the authors to refer to the tangible aspects has been converted into the technical aspects of the car, symbolic is described as the creation of an emotional appeal, and lastly the exclusivity aspect was considered as one of the main reasons for purchase.

The second layer expands the three basic reasons for luxury car consumption with concepts that describe more in details what characteristics influence the purchasing process. Providing such explanation helps to highlight the differences between the first level attributes and enforce the creation of a definition.

Thus, technical aspects are broadened in performance, premium quality, craftsmanship and advanced technology. Specifically, performance mainly depends on car components and could be intended in different ways according to what is measured. For example, top speed, lap time and breaking distance rely on the engine, chassis and braking system. Premium quality is referred to the one of the materials and their perfect fitting and deployment in the car. Craftsmanship describes the expertise and human touch in the manufacturing process of the car. Advanced technology encompasses all the hardware and software elements such as comfort solutions, media-infotainment systems, engine specifications but also driver assistance and safety systems.

The concept of exclusivity has been expanded by identifying the factors limited production, price, rarity of materials and personalization. All these characteristics contribute to the creation of a unique luxury car which could be limited in the number of units produced or inaccessible due an extremely high price. Also, the scarcity of the raw materials utilized (e.g., magnesium for doors, certain types of leather for interiors) appear to play a key role together with the possibility of personalization. This is intended as the unique experience where modifications are implemented to satisfy customer's desires, an example are the tailor programmes that nowadays many brands offer to the most demanding customers.

Regarding emotional appeal, the dimensions influencing consumption are several: service level, collaboration with other luxury brands of other sectors, community belonging, global reputation, creation of a lifestyle, style & design, heritage & pedigree, and nostalgia. Precisely, service level refers to the creation of an enjoyable experience during all the phases of the customer journey, hence involving a support during the purchasing process, availability of spare parts and assistance received for events or maintenance. Collaboration is something that has acquired higher importance in the last decade: clients are willing to be surrounded by luxury at 360° and thus luxury car manufacturers are complying with these requests by co-designing and co-branding components together with other luxury firms. Also, the sense of belonging to a community of owners and living a luxurious lifestyle are characteristics that push people to purchase a supercar. Similarly, the sense of nostalgia that could stem from happy or childhood memories is another variable to take into consideration because it is influenced by personal emotions. Style & design is associated to iconic traits and shapes of the body, signature colours and all those characteristics creating in clients a sense of desire and excitement. Global reputation is another key attribute that clients could consider in their purchase, monitoring that what they buy is something universally appreciated and owns a certain degree of fame. Lastly, heritage & pedigree is connected to the emotions generated in customers that value traditions, history and all the aspects mainly related to the brand.

However, some of the second layer characteristics are still not completely described by the terms and could assume different nuances. Hence, an additional layer is presented to clarify all the possible nuances.

The concept of craftsmanship, presented within the group of technical aspects, is mainly related to manufacturing. From the competitive scenario analysis emerged that firms

advocate their production process when it is innovative, so relies on cutting-edge technologies or methodologies of working materials, and when is “pure” craftsmanship, meaning that human labour is considered an artisanal effort where small imperfections could be accepted and even enrich the value of the car.

Instead, talking about heritage & pedigree there are multiple attributes that could describe it more in detail. Firstly, country of origin, related to the “made in” label according to the place where cars are produced. Secondly it is adopted the feature heritage, envisaged as being a reference brand with a long history on the market of luxury car. Lastly there are the interest for the founder, linked to the storytelling and the legends behind the creation, and the results achieved in competitions, which demonstrate the power and dominance of the brand.

Hereafter it is presented a scheme that summarizes all the attributes taken into consideration and highlights the division in three layers.

This model on luxury car consumption is the first ever of its kind and thus needs still to be confirmed or disproved. Its applications could be various because, as presented in the literature review chapter, there are two main approaches: a marketing perspective interested in the methods to define and attract customers and an operational perspective, which considers them as Critical Success Factors pursued by firms to succeed in the luxury car market. Nevertheless, a primary validation of the proposed model is necessary and thus the subsequent research is going to involve luxury car customers to understand which characteristics are the most valued, which are the ones to be removed and which are those that have not been taken into consideration.

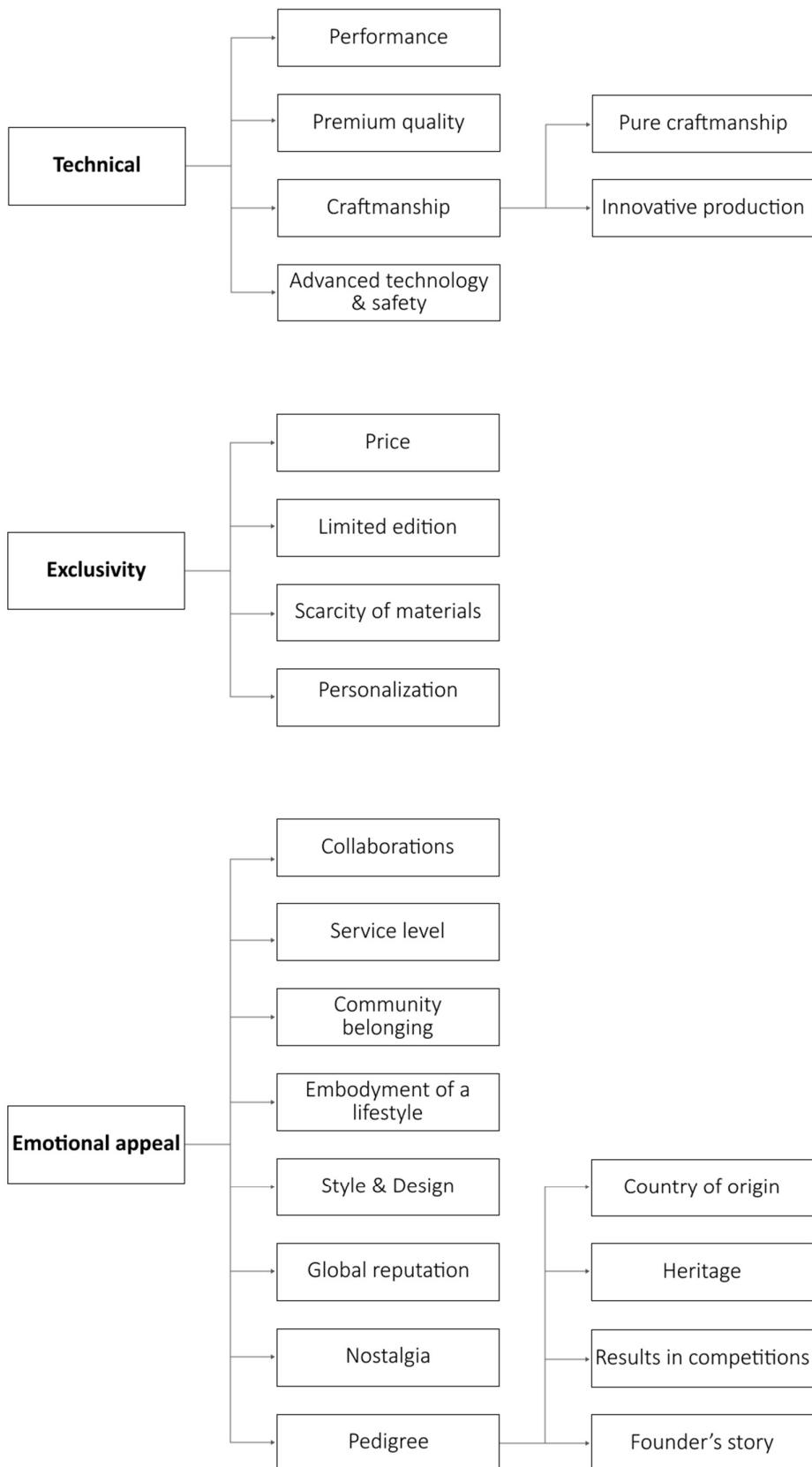


Figure 17 - Proposed model of specific CSFs for the luxury automotive industry

## Model application and validation

In the field of scientific research exist different methodologies that have the aim of gathering first-hand quantitative data about customers. The most widely adopted are experiments, survey and systematic observation. The choice of the appropriate strategy has to consider that the research questions RQ1 and RQ2 are requiring a significant number of data to be accurately representative of the entire population. Therefore, it appears clear that the most suitable method is the creation of a survey. Indeed, it is able to provide a description of opinions, trends or attitudes of a population by studying a sample and from the results, generalize or derive assumptions to the entire population (Creswell, 2014).

### Survey structure and distribution

As explained, the role of the survey is to validate the luxury car CSF model previously elaborated, gather information about customer perception and study if there are similarities between groups of clients. Therefore, the survey structure has been defined in three main sections:

1. Demographic and car information.

The aim of this part is to gather basic knowledge about respondents without being intrusive and respecting privacy requirements. Thus, respondents are asked about their age, country of residence, which luxury car brands they own and the relative models.

2. Determinants of purchase.

The purpose of the section is to understand the relevance given by interviewees to the newly crafted set of CSF when purchasing a luxury car. It is adopted a valuation scale, which is a widely diffused method to understand opinions and attitudes with a more significant measurement than a yes or no question. In the present research it has been implemented a Likert scale, which is a five- or seven-point scale used to allow the individual to express how much they agree or disagree with a particular statement. The advantage of this technique is the possibility to transform a statement indicating how much a determined factor is relevant in a quantitative data.

The scale adopted is presented below:

1	2	3	4	5	6	7
Not relevant	Little relevance	Slight relevance	Average relevance	Moderate relevance	Very relevant	Extremely relevant

### 3. Personal suggestion.

The list of attributes presented in the survey has been obtained from a competitive analysis and a specification of luxury goods, thus it is thought for a general audience of luxury car customers. There might be some personal characteristics, driving the purchase of a luxury car, which have not been taken into account but are still worth being analysed. Thus, in the last part respondents could express if there are other factors not being mentioned that are relevant in their decision-making process.

The complete version of the survey is available in “Annex - Luxury car owners survey”.

It appears clear from the scope of the survey that the appropriate target to respond the survey are luxury cars owners. In fact, broadening the audience also to car enthusiasts or general luxury consumers would surely allow to gather a significant higher number of responses, which although might not represent accurately the values researched. Using an example, people just staring at windows of luxury shops probably consider different characteristics than those who actually buy from them.

Therefore, it has been planned to reach the desired respondents using three channels: official owners club, private Facebook groups, internet forums dedicated to each specific brand. Such networks, most of the time, required an approval by an admin or president of the board that supervise the members guaranteeing that they really own a luxury.

It has to be said that considering these channels, owners of very exclusive brands which manufacture limited series with just dozens of cars (e.g., Dallara, Bugatti, Pagani) are not considered from the survey because it is remarkably difficult to get in contact with them.

The survey has collected 447 responses coming from people between 18 and 74 years old. The regions with higher responses are Europe and North America. Other areas such as Asia and the Middle East are characterized by different culture and means of communication and therefore has been more difficult to get in contact with a significant number of owners from these regions which eventually account for a smaller part of the answers.

## Survey answer analysis

Once having collected all the responses from the survey, the data have to be cleaned from random answers and responses given by people who don't own a proper luxury car.

As first step it was computed the Cronbach's alpha to verify the reliability of the survey. The result shows an alpha greater than the threshold of 0.7 ranged from 0.8001 to 0.8199. that can be considered acceptable, for most empirical studies (Nunnally, 1978). However, it has to be noted that it's possible to get the highest value of alpha by removing the variable "price" (0.8199).

Such result can be interpreted as a sign of presence of ambiguity within the variable: indeed, while presenting the survey the variable was not fully specified: respondents could interpret it either as high price or on the contrary as low price. In the first case it would have meant that people value high price as a way to distinguish themselves, according to the conspicuous consumption theory while in the latter it would have meant that customers value price as an important factor during their purchase process but with the meaning of depreciation.

Such difference is relevant especially considering that the survey was sent also to Facebook groups in which there was a variety of respondents, also involving people that don't have the actual financial mean of buying a new luxury car and thus have to rely on the second-hand market to satisfy their willingness of owning one.

Hence, further research should be performed to assess better the role of the variable price within the buying process of luxury car.

## Factor Analysis

After data collection and data cleaning it is possible to perform a proper analysis on the responses to test the validity of luxury automotive CSFs model and understand patterns of behaviours among consumers.

The study begins with a factor analysis, a multivariate statistical method that attempts to identify the smallest number of factors that can effectively explain the covariation observed among a set of measured variables (Watkins, 2018). In other words, it allows to reduce the total number of variables by grouping them into factors. Each of these is able to successfully describe the behaviour of the attributes that it summarizes reducing the complexity for successive analysis. Such process would be surely useful for this thesis due to the high number (20) of variables identified to describe the drivers of purchase.

In scientific panorama there are two main types of factor analysis: exploratory and confirmatory. The present instance does not allow to make any *a priori* assumptions on the relationships among factors and therefore the most appropriate analysis to perform is Exploratory Factor Analysis (EFA). EFA is fundamental in the development and validation of psychological measurements to discover the number of factors influencing variables and to investigate which ones go together (Watkins, 2018).

The first step in such process is factor extraction, where it was decided to follow a Principal Component method since it is the most widely used method in literature studies. Such factor extraction method is used to form uncorrelated linear combinations of the observed variables. The first component has maximum variance. Successive components explain progressively smaller portions of the variance and are all uncorrelated with each other. In other words, factor weights have been computed to extract the maximum possible variance, with consequent factoring iterations until there no further meaningful variance is left.

Initially, PCA was run without specifying the number of factors to extract. Indeed, there were no constrain on the number of factors to obtain but it was searched the most appropriate number that successfully explain the covariation. Both over-extraction and under-extraction can have deleterious effects on the results, making the interpretation difficult. Not imposing any number of factors allows to create a scree plot, a line plot where are indicated the eigenvalues associated to the principal components, that is useful for the decision of the number of factors.

Following common practices, all factors with eigenvalue greater than 1.0 could be retained and in this case the total number of factors would be five. However, there are some literature studies that criticize this approach for being among the least accurate methods for selecting the number of factors (Costello & Osborne, 2005) and thus, it was searched the confirmation with another one.

Costello & Osborne (Costello & Osborne, 2005) and other experts suggest as an alternative the scree test, that still leverages on the scree plot. Specifically, it involves examining the graph of the eigenvalues and looking for the natural bend or break point in the data where the curve flattens out. The number of data points above the “break” (not including the point at which the break occurs) is usually the number of factors to retain, although it can be unclear if there are data points clustered together near the bend.

Looking at the scree plot it is visible how the curve flattens out in proximity of the fifth factor.

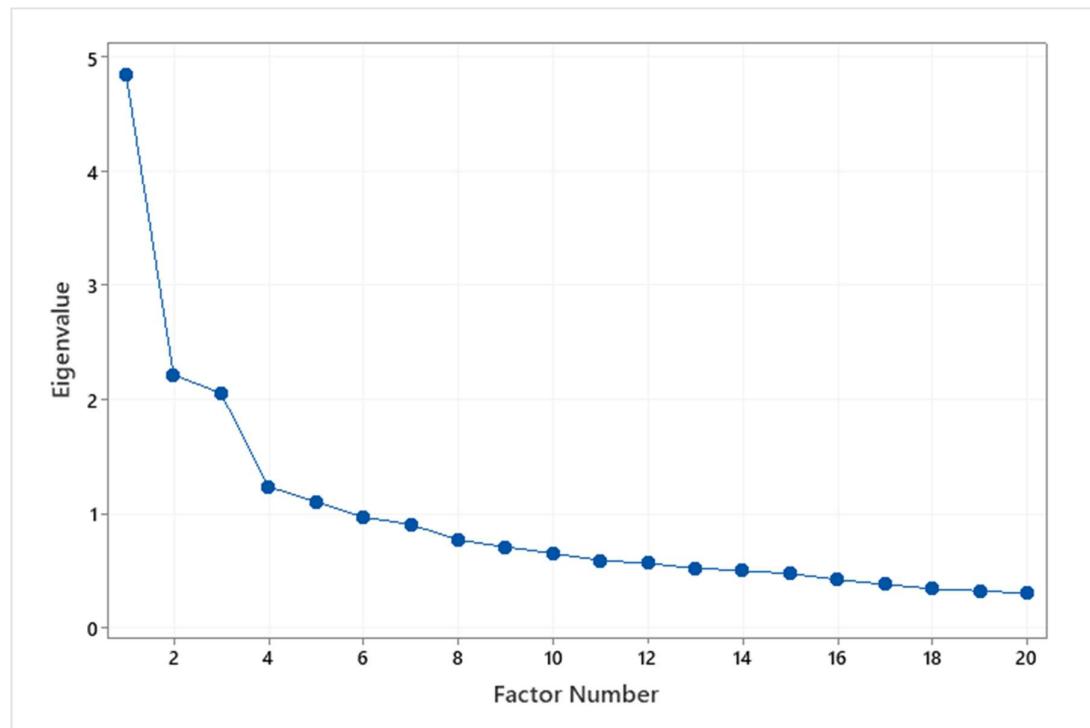


Figure 18 - Scree plot from a factor analysis

Further iterations needed to be run to better understand if also the fifth factor had to be maintained or not. From the analysis, four factors will generate a solution in which three of the twenty initial variables (namely “price”, “advanced technology and safety” and “results

in competition") aren't affected by any of the factors. On the other hand, by retaining six factors it would generate a solution in which an entire factor is representative of just the variable "price" resulting in a not explanatory solution. Therefore, it was decided to proceed with five factors.

The second and last step is the choice of the typology of rotation applied to the factor loadings. A rotation simplifies and clarifies the data structure but cannot improve the basic aspects of the analysis, such as the amount of variance extracted from the items. The software adopted for statistical analysis (i.e., Minitab) allows only to choose among orthogonal rotation methods, which produce factors that are uncorrelated. Among these Varimax rotation is by far the most chosen and thus it was decided to adopt it.

The resulting rotated factor loadings matrix is presented below.

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Performance	0.134	0.023	<b>0.622</b>	0.091	0.025
Premium quality	0.070	-0.016	<b>0.832</b>	-0.026	0.072
Craftsmanship	0.058	-0.207	<b>0.753</b>	-0.081	-0.03
Advanced technology & safety	0.099	0.234	0.337	-0.099	<b>0.714</b>
Innovative production	0.154	-0.108	0.041	-0.279	<b>0.727</b>
Price	0.231	0.309	0.162	-0.388	-0.342
Rarity of materials	-0.063	-0.196	0.021	<b>-0.766</b>	0.088
Personalization	0.135	-0.102	0.175	<b>-0.695</b>	0.233
Collaboration	0.117	-0.112	-0.233	<b>-0.559</b>	0.386
Limited edition	0.123	-0.104	-0.01	<b>-0.739</b>	0.007
Service level	0.135	-0.03	<b>0.548</b>	-0.136	0.376
Community belonging	<b>0.758</b>	-0.268	0.083	-0.067	0.096
Global reputation	<b>0.761</b>	-0.127	0.268	-0.022	0.091
Lifestyle	<b>0.755</b>	-0.181	-0.066	-0.136	0.101
Style and design	<b>0.748</b>	-0.14	0.154	-0.095	0.054
Country of origin	<b>0.251</b>	<b>-0.599</b>	0.025	-0.100	-0.145
Heritage	<b>0.56</b>	<b>-0.489</b>	0.118	-0.046	-0.04
Results in competitions	0.254	<b>-0.52</b>	0.028	-0.162	0.261
Nostalgia	0.092	<b>-0.701</b>	0.116	-0.124	-0.045
Founder history	0.259	<b>-0.746</b>	0.008	-0.100	0.081
Variance	2.982	2.3347	2.3102	2.2947	1.6445
Tot % Var = 0,578	0.149	0.117	0.116	0.115	0.082

Table 1 - Rotated factor loadings matrix  
Extracted from Minitab software output. In green are highlighted the variables that score higher than 0.5

Looking at the data structure, the overall cumulative percentage of variance (0,578) can be considered acceptable. Indeed, “there is no agreement in cumulative percentage of variance (CPV), particularly in different research areas. For instance, in the natural sciences, factors should be stopped at least 95% although in the humanities, the explained variance is generally as low as 50-60%” (Pett et al., 2003).

Regarding the general validity of the results, evidence suggest that Exploratory Factor Analysis are more accurate when each common factor is represented by multiple variables (Williams et al., 2010), which is true in this case. Moreover, the quality of the results could be also tested by examining the presence of complex variables, which make the data more difficult to interpret. Specifically, there are no variables that score higher than 0.5 on two or more factors (Costello & Osborne, 2005), hence it is possible to say that there are no cross loadings.

The final step before analysing the results of the rotated factor loading table is the interpretation and the selection of the criteria for attributing the variables to the relative factors. In this case an item is explained by a factor if the absolute value of its factor loading is equal or higher than 0.5. The threshold is deduced from other scientific papers where “item communalities are considered high if they are all .8 or greater but this is unlikely to occur in real data. More common magnitudes in the social sciences are low to moderate communalities of .40 to .70” (Costello & Osborne, 2005). The variable “price” is not explained by any of the factors, nonetheless such result is not unexpected and could be interpreted as a consequence of its ambiguous definition as explained before. Therefore, such attribute is not going to be considered in the following analysis.

Finally, four of the five factors are considered solid according to literature studies as they have high influence on at least 4 or 5 variables. Only the fifth factor is weak and has to be treated carefully since it encompasses only two variables.

## Cluster Analysis

Another relevant analysis to deepen the knowledge on luxury car owners would be the one that identifies groups of answers, and thus people, scoring similarly the CSFs. Such assessment could be obtained by performing a cluster analysis, that is a “technique to group similar observations into a number of clusters based on the observed values of several variables for each individual” (Sinhary, 2010). Clustering is a useful instrument when there is no initial information about how to form the groups. In cluster analysis, many methods are available for classifying observations based on their similarities. The major types are hierarchical, partitioning, and the ones that allow overlapping clusters (Bergman & Magnusson, 2001). The selected method is the hierarchical cluster analysis, because it does not require to pre-specify the number of clusters to be produced (Kassambara, 2017). Specifically, it was decided to adopt an agglomerative clustering as it is the most common type of hierarchical clustering. This method works in a “bottom-up” manner: each object is initially considered as a single-element cluster. At each step of the algorithm, the two clusters that are the most similar are combined into a new bigger cluster. This procedure is iterated until all points are member of just one single big cluster resulting in a hierarchical classification tree (Bergman & Magnusson, 2001).

Leveraging on the results from the previous factor analysis it seemed appropriate compute the cluster analysis on a dataset that depends on just five factors rather than 20 variables. This would simplify the calculations and provide clearer results. Thus, the input data are obtained from the multiplication of the answers of the survey matrix (439 x 20) for the matrix of the factor loadings (20 x 5). The result is a numerical matrix (439 x 5) which has on the rows every answer of the survey and on the columns the related value for each factor.

Still, there are three main choices to make when performing a clustering: similarity method, linkage method and final partition method. The first one is necessary for the algorithm measure the similarity distance between pairs of objects and exist a wide variety of methods such Euclidean, Manhattan and Pearson. For sake of simplicity, the Euclidian distance was adopted being the most used and more neutral. According to it the distance between two objects is computed as:

$$d(p_i q) = \sqrt{\sum_{i=1}^n (p_i - q_i)^2}$$

The second decision regards the linkage method, that specifies how the distance between two clusters is defined. Precisely, the linkage function takes the distance information and groups pairs of objects into clusters based on their similarity. As for all the other parameters of the analysis, there are many cluster linkage methods: average, centroid, complete, median, single, Ward, McQuitty. According to Kassambara (2017) “complete” and “Ward” linkage methods are generally preferred; thus the complete one has been selected. Such criterion defines the distance between two clusters as the maximum distance between an observation in one cluster and an observation in the other cluster. This method, also called the furthest neighbourhood method, ensures that all observations in a cluster are within a maximum distance and tends to produce clusters that have similar diameters.

Lastly, needs to be selected the final partition method, that is the criteria used to determine the final groupings, between the number of final clusters obtained or the level of similarity desired among the elements of each cluster. Considering the goal of the present cluster analysis is to identify different groups of luxury car customers having similar behaviour towards the products and the brands, it was not possible to know in advance how many categories exist. Hence, it has been decided to rely on similarity level with a threshold of 50%, commonly assumed as acceptable.

Setting all the parameters just presented it was computed a trial cluster analysis whose output is displayed through the radar graph below.

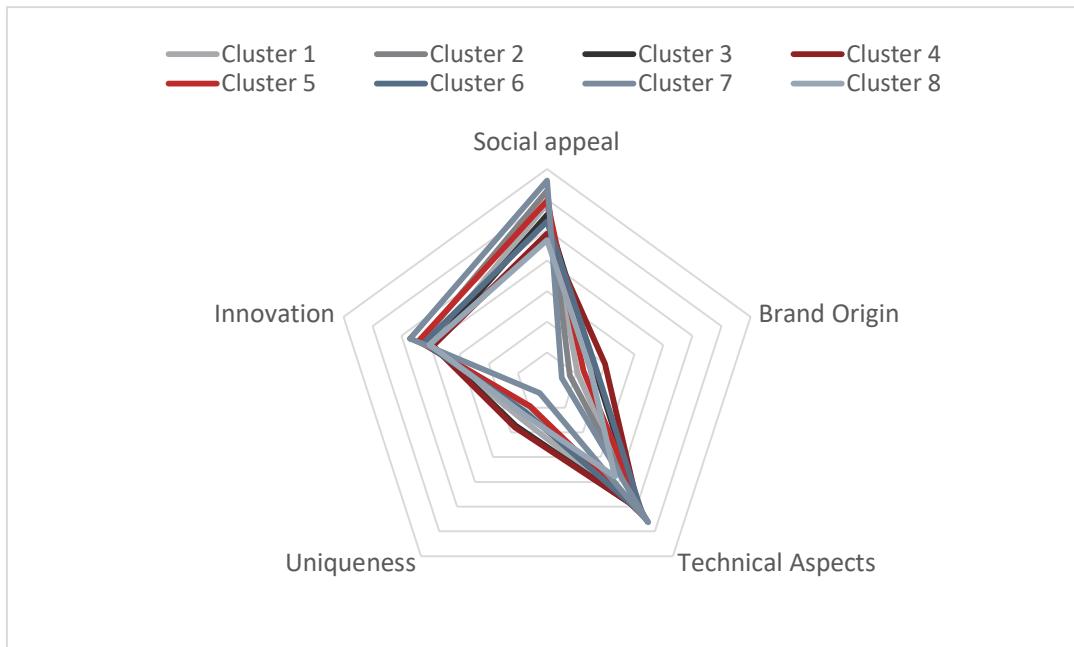


Figure 19 - Visualization of the result from the first iteration of cluster analysis

Observing the chart, most of the clusters have the same trend without major differences and thus it is difficult to distinguish different customer behaviours. Such phenomenon is influenced by two main aspects: the matrixes multiplication and respondents' different attitudes towards assigning the scores. This means that the issue regards the data ingested from the clustering algorithm and therefore some adjustments have to be done on the factor loading matrix as well as on the points assigned by luxury car owners.

The first matter is due to the fact that factors value, originated from the matrixes multiplication (answers matrix and factor loadings matrix), are the sum of the multiplication among each element of the row of the first matrix for each element of the column of the second matrix. In a more formal way, given two matrixes A ( $m \times n$ ) and B ( $n \times p$ ) the product matrix C = AB is defined to be with dimensions  $m \times p$ , such that:

$$c_{ij} = \sum_{k=1}^n a_{ik} b_{kj}$$

Thereby, also the contribution of lower factor loadings is considered, and this cause the unwanted homogeneity in clusters' trends.

For this reason, it is needed an adjustment that makes the data more comparable. It has been decided to retain just the principal factor loadings, namely the factor loadings with absolute value higher than 0.5, while removing the contribution of all the other factor loadings to the final result by considering them null. Moreover, to not transform the range of the scoring, the sum of the principal loadings for each factor should be equal to 1. In this way no matter how many variables are included in the computation of a factor, its final result would still be on a comparable scale from 1 to 7. This is achieved by multiplying the old principal loading for a weighting coefficient ( $wc_i$ ) that has as numerator the new sum of the principal loadings (1) and as denominator the actual sum of the principal loadings ( $PL_i$ ). This allows the single variable to maintain their actual weight in the calculation of the factor.

$$wc_i = 1 / \sum_{i=1}^5 PL_i$$

Hereafter is reported an explicative example of the calculations for Factor 1 and the new updated factor loading matrix that is going to be used for the revised cluster analysis.

*The principal factor loading with value higher than 0.5 are: Community belonging (0.758), Global reputation (0.761), Lifestyle (0.755), Style and design (0.748), Heritage (0.560). The weighted coefficient equals to:  $wc_1 = 1 / (0.758 + 0.761 + 0.755 + 0.748 + 0.560) = 0.279$ .*

*The new principal loadings are: Community belonging ( $0.758 * 0.279 = 0.212$ ), Global reputation ( $0.761 * 0.279 = 0.212$ ), Lifestyle ( $0.755 * 0.279 = 0.211$ ), Style and design ( $0.748 * 0.279 = 0.209$ ), Heritage ( $0.560 * 0.279 = 0.156$ ).*

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Performance	0	0	0.225771	0	0
Premium quality	0	0	0.301996	0	0
Craftmanship	0	0	0.273321	0	0
Advanced technology & safety	0	0	0	0	0.495489
Innovative production	0	0	0	0	0.504511
Price	0	0	0	0	0
Rarity of materials	0	0	0	0.277637	0
Personalization	0	0	0	0.251903	0
Collaboration	0	0	0	0.202610	0
Limited edition	0	0	0	0.267851	0
Service level	0	0	0.198911	0	0
Community belonging	0.211614	0	0	0	0
Global reputation	0.212451	0	0	0	0
Lifestyle	0.210776	0	0	0	0
Style and design	0.208822	0	0	0	0
Country of origin	0	0.233437	0	0	0
Heritage	0.156337	0	0	0	0
Results in competitions	0	0.202650	0	0	0
Nostalgia	0	0.273188	0	0	0
Founder history	0	0.290725	0	0	0
Sum of the adjusted loadings	1.0	1.0	1.0	1.0	1.0

Table 2 - Factor loadings matrix adjusted

The variables with loading higher than 0.5 have been kept and weighted on 1.0 with the others principal loadings, while the other variables score zero since they should not have any influence.

For example, there might be interviewees that are generous with the ratings and assign high values to most of the answers, resulting in high sum of the points allocated and average

answer score. The same reasoning could be applied in an inversed scenario where others might be tighter with votes.

Such discrepancies of attitudes could have an impact on data interpretation when the variables are grouped in factors since the potential distortion is enhanced by their sum.

Therefore, it has been decided to rescale all the votes with a normalization coefficient ( $nc_i$ ) so that each respondent has the same average answer and therefore also the same sum of points assigned to the factors. The aim of this process is to simulate a scenario where the interviewees have a constrained number of points to distribute to the factors. The result allows to have a collection of answers that are undoubtedly comparable among each other and where the differences in preferences are more marked. Being the scoring from the questionnaire on a Likert scale in from 1 to 7, it has been decided that all the answers have to be rescaled according to the expected value of 4, which is the arithmetic mean. Thus, the overall sum of the points assigned to the five factors is 20.

$$nc_i = 4.00 / \left( \frac{\sum_{i=1}^5 PL_i}{5} \right)$$

Below is reported a practical example of the process for rescaling the answers conducted for a couple of respondents.

ID	Social	Brand origin	Technical	Uniqueness	Innovation	Coeff
1	6.01	2.78	3.63	4.32	2.00	1.07
2	5.57	4.33	6.35	1.81	4.50	0.89
3	7.00	3.67	5.50	3.93	3.99	0.83
4	6.37	6.30	4.51	4.68	3.01	0.80
5	4.94	2.87	5.97	2.88	2.00	1.07

*Table 3 - Example of data standardization pt.1  
Example of the computations to standardize the values for five responses with the relative coefficient.*

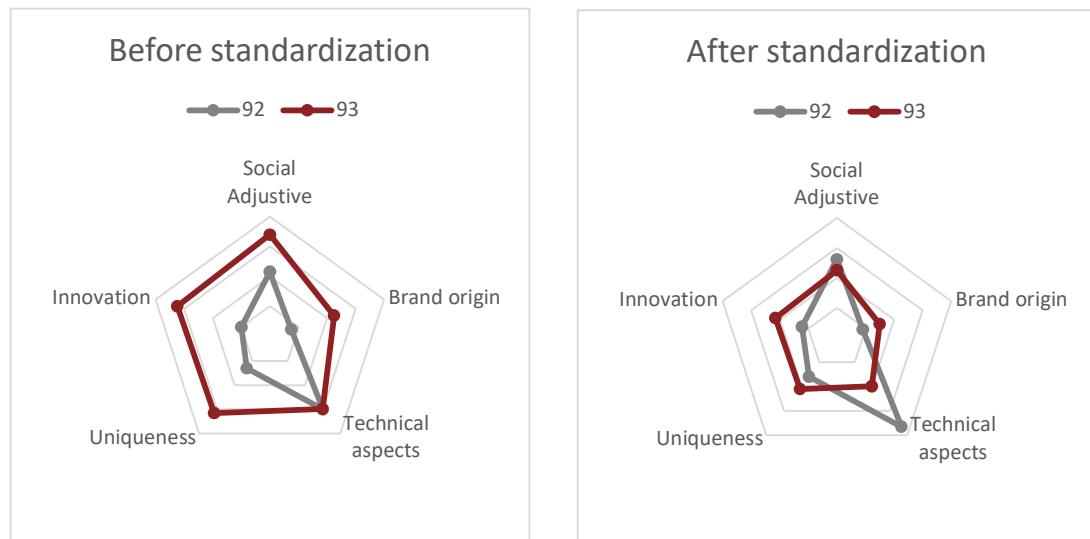
ID	Social	Brand origin	Technical	Uniqueness	Innovation
1	6.41	2.97	3.87	4.61	2.13
2	4.94	3.84	5.63	1.60	3.99
3	5.81	3.05	4.57	3.26	3.31
4	5.12	5.07	3.62	3.77	2.42
5	5.30	3.08	6.40	3.08	2.14

*Table 4 - Example of data standardization pt.2  
Values scoring of the 5 responses after the standardization process*

*The values of the normalization coefficients are calculated by dividing the new imposed mean (4.00) by the present mean of the factor scores given by each respondent. The final data standardized, presented in the second table, having mean equal to 4 are obtained by multiplying the value of each factor for the relative normalization coefficient.*

The results from this operation indeed facilitate the analysis both of single and group of answers, especially for what regards comparison and discovery of patterns.

The example hereafter reported, aims to explain the benefits from a standardized dataset which allow a real understanding of scores' meaning.



*Figure 20 - Comparison of the data after standardization*

*Looking at the figure on the left one may say that for the owner #92 technical aspects are quite important while the social adjustive characteristics are definitely more relevant for the interviewee #93. Although, the figure on the right radically changes the perception by downsizing answer #93 and demonstrating that for #92 social adjustive factor is even slightly more relevant.*

In conclusion, the new version of the data, now standardized, was given to the statistical software setting the same parameters presented at the beginning of the chapter. The output exhibits 10 clusters with more marked differences among each other.

## Luxury car brands strategic decisions

The goal of this second part of the research is to study what are the most successful strategies that luxury car companies should implement. The reason of such investigation originates from the concept of CSF which is at the core of the entire thesis. Indeed, Critical Successful Factors have been firstly determined from a customer point of view, discovering how different clusters value differently the characteristics, and now they have to be put in practice adopting company's perspective.

As underlined in the literature review, the main fields of action when talking about luxury industry management are Marketing and Supply Chain management. Therefore, this research part has been structured in two macro parts. Both of them following the same "hybrid" methodology to collect the necessary information. Indeed, it is a combination of structured interviews with company managers of luxury car brands and documentary analysis of official data collected from companies' websites, financial statements and confidential reports. Regarding the interviews with Marketing and Operation/SC managers, all the companies analysed in this thesis have been contacted for scheduling a meeting, although only 3 have accepted to attend. Despite the participation might seem limited, however being the industry characterized by a small number of players, the ones interviewed represent around 30% of the overall number of brands.

Moreover, it has to be highlighted that there is a general lack of information due to the fact that this industry is extremely competitive and thus is characterised by a high level of discretion and confidentiality. For such reason, the adoption of a mixed methodology was necessary as it allowed to gather numerical data for quantitative comparison among the brands.

## Marketing Antilaws application

The goal of the following chapter of the research is to study the real application of the antilaws of marketing defined by Kapferer & Bastien (2009c) by analysing, mostly in an indirect way, if such guidelines have been adopted by the leading manufacturers in luxury automotive industry.

The analysis on the validity of marketing antilaws considers all the major luxury car manufacturing companies, providing a general overview of the sector. A table below presents the list of all the companies considered along with the key distinctive features that help to provide an overview of each firm and allow a first comparison among them.

Company	Origin	Employees <sup>b</sup>	Dealers	Turnover (M€) <sup>b</sup>
Aston Martin	UK	3000	>160	712
Bentley	UK	~3200	238	2100
Ferrari	IT	4500	188	3460
Lamborghini	IT	1779	170	1160
Maserati	IT	3000	>450	1603
McLaren	UK	3789	86	1729
Porsche	DE	36359	>650	28695
Rolls Royce	UK	1300 <sup>a</sup>	138	621

Table 5 - Luxury automotive manufacturers overview  
<sup>a</sup> referred to 2014, <sup>b</sup> referred to 2020

Due to the lack of information and time, it was decided to focus the investigation on the most interesting anti-laws proposed by Kapferer which could be related to luxury car industry. Specifically, it was decided to study the eventual application of:

- the absence of comparative positioning in the luxury industry (anti-law 1).
- the resistance to increasing demand and the continuous raise of average price for the product range (anti-law 5).
- the refusal to delocalize production to cut costs. (anti-law 18).

## Antilaw 1 - Forget about ‘positioning’, luxury is not comparative

The first step for antilaws 1 validation in luxury automotive industry consists in the analysis of firms’ positioning and search for the existence of common patterns among different companies. It has been decided to conduct the analysis relying on the variables “price” and “horsepower” because they are the two main levers on which companies could act for positioning. One could argue that speed and acceleration are additional variables that could be used to compare manufacturers, however such dimensions could be considered derivative of power. On the other hand, price is a solid dimension that entails also the concepts of industrial efficiency and brand’s positioning aspirations.

The chosen variables were analysed for all the main segments that luxury automotive brands usually manufacture. Despite a univocal classification does not exist, several elements in common arise within individuals' firms' segmentation and thus it was possible to outline five general groups of cars that are presented hereafter:

- Top: represents the top end of the product range, the most exclusive and powerful car ever made by the brand. Often such models are for racetrack use only but they have been considered anyway as represent the pinnacle of the exclusivity for passionate owners, encapsulating the most advanced technology and knowledge of the manufacturer. Their price is usually above 1.000.000€.
- Supersport: refers to the most powerful cars of each brand under the 500.000€ price threshold.
- Sport: encompass the entry level models designed for a sportive use. Usually, the power is between 500 and 720 horsepower while the price is up to 250.000€
- GT: models dedicated primary to travel and comfort
- Suv: vehicles combining elements of road-going passenger cars with features typical of off-road vehicles, such as raised ground clearance.

It has to be noted that, price and even horsepower can vary along the years due to differences in global economic conditions and the improvement of technology. Thus, it was decided to examine just the current state of the art of each brand maintaining as reference only 2021 list of vehicles. The unique exception is done for the “Top” segment where the

time frame is larger (around 5 years) because such models are not presented (nor produced) on a yearly basis due to the enormous R&D effort and exclusivity.

Regarding the possible results of the analysis, an interval with 10% of similarity on both price and performance would entail two brands similar in positioning. Nonetheless such threshold does not derive from literature, due to the lack of studies in this field, but it is a result of qualitative considerations. Whenever scientific studies will present validated theories on positioning similarity, this research analysis could be updated.

#### Antilaw 5 - Don't respond to rising demand and raise average product range price

According to Kapferer, luxury firms should protect the aura of exclusivity around their products by utilizing rare materials or even create artificial scarcity with an upper limit on production units. Moreover, without the possibility for significant increase in volumes sold, companies belonging to high-end industry should achieve their objectives of growth by gradually raising their average price.

Therefore, the investigation on the strategy suggested by antilaws 5 among supercar manufacturers takes into consideration the variables time, price and number of units sold. Regarding time, it is chosen as starting point the year 2010 with the other variables are measured at intervals of 5 years to allow the exhibit of relevant difference in values. However, after a first trial it was preferred to leverage on 2019 data, rather than contemplating the year 2020, because it has not been influenced by the extraordinary event of Covid-19 outbreak. Price calculation weights the entire product range available to then compute an average price for each constructor. When different versions of the same model are available, it is considered only the basic edition (coupé) to create a common comparative ground within all the manufacturers. Lastly, concerning the volume of cars it is considered the number of vehicles delivered in a year since it is easier to find such sensitive information from interviews and press releases.

#### Antilaw 18 - Don't relocate your factories

The geographical distribution of productions plants and other facilities is studied leveraging on financial statements, official websites, media releases and web articles. For the sake of the analysis, are considered the locations of headquarters, production sites and R&D centers.

## Supply chain models application to luxury automotive

As seen in the literature review chapter, the main Supply Chain strategy models have been analysed. Among these, eight have been ideated by the relative authors by examining companies belonging to the mass market. Having understood what luxury sector is and the rules that govern it, it is not granted that such models maintain their validity when applied to luxury car industry.

Hence, it is needed to study such condition as they provide useful suggestions on a wide variety of aspects regarding SC according to the context. Indeed, each firm lives in a unique condition and it is not possible to adopt a one-size-fits-all approach but have to be prescribed specific strategies that fit company's characteristics in a specific moment of time.

The methodology used to verify the models is formulated in four steps.

Firstly, a list with all the contingent variables required was created, with their definition, how they are measured, and which models they belong to. Most of the characteristics are contemplated by multiple frameworks and thus it has to be controlled that despite the name-overlapping they refer to the same aspects and are evaluated similarly.

Secondly, all the fields of information necessary were gathered and then classified in five groups:

- General company information (turnover, units produced, employees, main CSFs addressed)
- Product information (life cycle, complexity, range, variety, lead times)
- Supply and manufacturing (core competences, outsourcing, supplier relationships, main practices implemented)
- Distribution (channels, relationship management)
- Information (system, visibility, sharing, customer data collection)

Such structure has been the basis for both the interviews conducted with SC managers and also for searching among the documents available from companies' website and those obtained under confidential restricted distribution.

The fourth step began after having collected as much as information possible from the mentioned sources. Thereby, the contingent variables have been measured and classified with ranges of potential values based on the knowledge available.

Lastly, leveraging on such classification it has been conducted a comparison between what the models suggest, in terms of SC strategy, and the actual strategy that has been applied by the companies, always considering the contingent context.

Variable	Source in literature	Notes
Product life cycle	Fisher (1997), Childerhouse et al. (2002), Luzzini & Ronchi (2010)	-
Dominant life cycle phase	Cigolini et al. (2004)	Introduction, growth or maturity
Contribution margin, av. stockout rate, av. margin of error forecast, av. forced markdowns, lead time MTO	Fisher (1997)	Variables used by Fisher to determine the typology of product
Product complexity	Lamming et al. (2000), Cigolini et al. (2004), Luzzini & Ronchi (2010), Caniato et al. (2011)	Depends on the number of components and technological intensity
Product Uniqueness	Lamming et al. (2000)	Defined by VRIN framework
Demand uncertainty and supply uncertainty	Lee (2002)	-
Market winner and market qualifiers	Christopher & Towill (2002)	Choices: cost, quality, service level and lead time
Lead time	Childerhouse et al. (2002), De Treville et al. (2004)	-
Product range/ variety	Childerhouse et al. (2002), Luzzini & Ronchi (2010)	-
Selling volume	Childerhouse et al. (2002), Vitasek et al. (2003) Luzzini & Ronchi (2010), Caniato et al. (2011)	-
Volume variability/ fashionableness	Childerhouse et al. (2002), Vitasek et al. (2003) Caniato et al. (2011)	Fashionable products are difficult to forecast and face seasonal variability
Demand information transfer	De Treville et al. (2004)	-
Product customization	Luzzini & Ronchi (2010)	Substantial changes
Brand reputation	Caniato et al. (2011)	Depending on market requirements (symbolic or technical)

Figure 21 - Contingent variables considered by SCM models for mass market

## Managerial strategies and financial results relationship

After the overview provided in the previous sections, it is now clear that Marketing and Supply Chain are the main fields of action for effective luxury industry management. Indeed, they are the primary sources of competitive advantage allowing companies to differentiate from other manufacturers and ultimately achieve the ultimate goal of every company: maximize profitability. Thus, this brief section aims at analysing the financial performance of luxury car manufacturers for two main reasons.

Firstly, enduring remarkable results are a signal of an organized and successful company management and thus by identifying the best-in-class players in the industry it is possible to delineate more precise guidelines. Indeed, in the event that after the analysis a player does not match the guidelines suggested by literature but still achieve positive results, those practices actually implemented could become proposals for company management.

Secondly, taking inspiration by the work done by (Kapferer & Tabatoni, 2011), luxury companies seem quite attractive to the financial community and business analysts because their goods are sold at a superior price. At the same time, firms fight for resolving a trade-off between maintaining their aura of exclusivity, with limited production and not optimized processes, and satisfying the desires of the shareholders, willing to maximize profitability and growth. Therefore, analysing the key financial performances of luxury car manufacturers would allow to discover if these companies are really “a financial dream” (Kapferer & Tabatoni, 2011).

As just presented, luxury should be kept inaccessible to the most, however there is a common tendency of creating entry level products that serve as introduction to the brand for new customers. Furthermore, the number of prospects from the emerging countries is increasing year by year and brands have not been passive to such trend. Thus, it is reasonable to think that the increased accessibility lately performed by luxury brands belongs to a wider and longer-term strategy to appeal the financial markets and investors.

The research of information for the examination faced an initial problem: the industry tends to be very discrete about its performance, with very few financial data available. As a rule, luxury companies are not willing to talk much about the corporate side of their activity to maintain a mystique status.

To explore the profitability of the industry, the research sample could not always include all the previous companies for every step. Despite almost all those firms reveal key financial figures, only three (Aston Martin, Ferrari and McLaren) of them are publicly traded and disclose the entire financial statements. This is due to the fact that many of the luxury car manufacturers belong to bigger international groups and thus their performances are grouped together with non-luxury companies in the consolidated financial statements.

Moreover, in order to have a broader perspective on luxury companies' financial results, it was decided to consider also the performances of a selected number of premium (BMW and Daimler) and mass market brands (Renault and PSA group) to allow benchmarking with other markets producing the same type of good. It is worth mentioning that Renault, BMW and Daimler have business units for the production of trucks, motorcycles and provide financial services which are accounted in the consolidated financial statement. However, they are still considered acceptable companies for comparing since such non-core services have a very limited weight compared to car production and sale. Lastly, even if Toyota, Ford and General Motors are bigger car manufacturers, it was not possible to consider them in the analysis since they adopt the American GAAP accounting standards which differ to the IFRS standards adopted by luxury car manufacturers.

Regarding specifically the analysis, the financial performances of automotive companies have been assessed on a set of indicators derived from literature (Kapferer & Tabatoni, 2011) over the five past years from 2016 to 2020. Namely sales growth, gross margin, operating profit, financial risk, cash flows and price to earnings multiple (P/E).

Gross margin is the deduction of cost of goods sold (COGS) from the company's net sales revenue. Basically, it is the sales revenue a company retains after incurring the direct costs associated with producing and selling the goods.

However, gross margin considers only the profitability after having deducted the cost of production to the yearly revenues. Building prestige for luxury brands is a matter of time, costly, volatile and can be easily lost. As noted by Kapferer: "Luxury sells access to a dream of exclusivity, identification with exceptional people and their rich lifestyle [...]. This dream building needs important communication and operating expenses such as the costs of staging exceptional flagship stores in the main shopping streets of the world capital cities" (Kapferer & Tabatoni, 2011). Hence, it is important to analyse also the Earnings Before Interest and Taxes (EBIT), that consider additional expenses to the cost of goods

sold such as general administrative expenses and amortization, with the aim of measuring efficiency. Specifically, it is computed Return on Sale (ROS), a ratio indicator obtained from the division of EBIT over sales.

Regarding the financial risk, a study by Xerfi and Roland Berger (2006) showed that luxury sector is characterized by a relatively low market risk. Although, the research was obtained examining different typology of luxury firms and thus it could not fully grasp the specificity of automotive sector. The scenario of interest it is analysed considering company's stock sensitivity to market changes and the financial leverage. The degree of correlation between stock and market, known as the Beta coefficient, is a good indicator of the market risk (Brealey et al., 2005). Beta is a measure of a stock's volatility in relation to the overall market: when it is lower than one, volatility is low, and the firm is considered low risk; conversely, a beta higher than one amplifies the market swings and is thus usually associated with a higher risk. Yahoo finance website provided the measures of beta coefficients for the last five years calculated using monthly data. To complete the risk analysis is considered also the financial leverage, obtained from Total Debt / Equity, that states how much company funds comes from external funding rather than shareholders. Borrowed money has to be returned with an interest rate and thus the higher the debt, the higher the interest rate expenses. This represent a financial risk because in crisis period the company might not be able to generate enough liquidity for paying its interest charges.

The analysis of firm's cash flow use as reference the absolute indicator Cash Flow from Operations (CFFO), that indicates firm's ability to convert earnings into cash. It is obtained by subtracting Net Working Capital, the cash tied up to operate the business, from the total Cash Earnings. In the analysis it was decided to adopt as indicator the cash flow rate which is the cash as a percentage of sales (CFFO/Sales).

The last object of financial analysis is the P/E ratio. This is a multiple, that are indicators about the price investors are ready to pay to benefit in the future from a euro of earnings. It is obtained from the ratio of firm's share price over the earnings per share (EPS). To compute it, the value of EPS was obtained from the financial statement of each brand at the voice "diluted earnings per common share". On the other hand, the price at which brands' shares were sold was computed as the trailing twelve months (TTM), which is the term for the data from the past 12 consecutive months used for reporting financial figures.

# FINDINGS

The following chapter presents and discusses the information emerged from both the research on customers motivations for luxury car purchase and the research on luxury car manufacturer strategies. The first part regards the interpretation of the data collected from the survey and elaborated using a statistical software. Such analysis will lead to the validation or disproval of the CSFs model and the identification of specific cluster of clients. Instead, the second part takes a company perspective and leverages on the material collected through interviews and documentary analysis. It illustrates what is the current scenario in luxury automotive industry regarding marketing and supply chain strategies and confronts the actual managerial practices with the procedures suggested by literature models.

## Factor Analysis

Starting from the final results of the factor analysis (available at Table 2 - Factor loadings matrix adjusted) it is presented hereafter an explanation of the meaning behind the numbers of the factors. The aim is to give a definition to the five main attributes to allow successive clearer and simpler examinations.

### Factor 1 – Social Appeal

Factor number one influences mostly the variables that represent the social dimension. Due to its high relative weight on the variable “community belonging” and “global reputation”, the factor was interpreted as explanatory of a social adjustive attitude. Such attitude was presented before and is defined as “the tendency of buying and consuming brands to gain social approval”. (Waterman, 1982)

### Factor 2 – Brand Origin

On the other hand, the second factor is influenced by the variables “country of origin”, “founder's history”, “nostalgia” and “results in competitions”. These are all characteristics that do not refer specifically to the car itself but concern more the intrinsic features of a brand and its origin.

### Factor 3 – Technical Aspects

As expected, the analysis confirmed that within luxury car owners, there is a specific interest for pure performance and technological aspects. Indeed, the third factor loads highly on the dimensions of “performance”, “craftsmanship” and “premium quality”. Moreover, it has a considerable influence also on the dimension “service level”. Such result can be explained by the fact that many aftersales services offered by the brand to their loyal customers still leverage the characteristics of the product. For example, often brands offer driving courses to their clients to let them learn how to properly drive and manage the full potential of their cars. Another example is service perceived in the dealership during the purchase or after when it is necessary assistance for spare parts. Thus, the service level can be seen as a dependent variable of company’s operations.

### Factor 4 – Uniqueness

The fourth factor loads on variables “rarity of materials”, “limited edition”, “personalization” and “collaborations”. It is a representation of customers’ seek for uniqueness, wealthy individuals who are not satisfied to own the last model of the supercar but want the product to be a representation of their personality, values and beliefs.

### Factor 5 – Innovation

Lastly, the fifth factor, loads only on the variables of “advanced technology and safety” and “innovative production”. These characteristics are strictly related among each and are an indicator of clients’ interest for the innovation effort of brands that dare to experiment new solutions. However, it has to be remarked that, since the factor has only two major factor loadings, it is weak and unstable and further analysis could potentially aggregate the factor to the others.

## Model assessment

The data collected from the survey allow to provide an initial assessment of the CSFs model proposed for defining luxury cars. Indeed, going back to the literature, luxury automotive industry was lacking a proper definition, a set of characteristics that could be used to delineate it and discriminate if a car could be defined luxury or not. That is why the Critical Successful Factor theory has been adopted, they correspond to key elements that customer search when buying a supercar and thus companies need to implement.

The 20 characteristics presented to the respondents received an approval since all of them have scored the entire scale of values, from one to seven, according to the relevance assumed during the purchasing process for that client. Nevertheless, some general observations about the rating could be done.

The three CSFs “performance”, “premium quality” and “style and design” emerged to have a significant importance for almost the entirety of the customers, achieving an average score of six or above. Conversely, “collaboration” has been the only one with an average score below three, showing a low interest from many of the interviewed. Such results indicated that there are some attributes that have extremely high importance for everyone while others depend on single owner’s interest and taste.

In addition, leveraging on the results of the factor analysis the model previously proposed could be rearranged to reflect the relationships emerged. Hence, instead of having three main characteristics which are then specialized in two additional layers, the new version of the model would rely on the five factors summarizing five categories of CSFs.

Lastly, further analysis could be performed with the data collected in the last section of the survey, the suggestions. As mentioned, here was presented an open question to the owners asking if there were additional criteria to consider during a luxury car purchase. Despite the majority confirmed that all the relevant aspects were taken into account, around 180 people provided additional thoughts. These have been cleaned from the redundancies of the twenty variables that were simply expressed in a different way. The additional attributes more frequently mentioned could be summarized in: pleasure to drive (19), car parts and services (18), generate emotions (16), car value throughout time (13) and reliability (11). Among these, the availability and cost of spare parts, diffusion of authorized mechanic shops and possibility of an increase or decrease in car value seem interesting characteristics to consider for future research, especially for those new type of customers emerged with the “democratization” of luxury that do not have extraordinary financial capacity. On the other hand, some other attributes could be included in an extended way into the existing factors. For example, reliability is related to brand reputation, car parts and after sale activities to service level.

The only aspects that raise some concerns are pleasure to drive and generation of emotions. Indeed, despite a non-negligible attention from owners, these aspects are difficult to understand or measure for first-time clients that apart from a quick taste in the dealership

or in special events are not able to grasp. It is thus necessary to extend the study of the topic with future research with a focus on the emotional aspects.

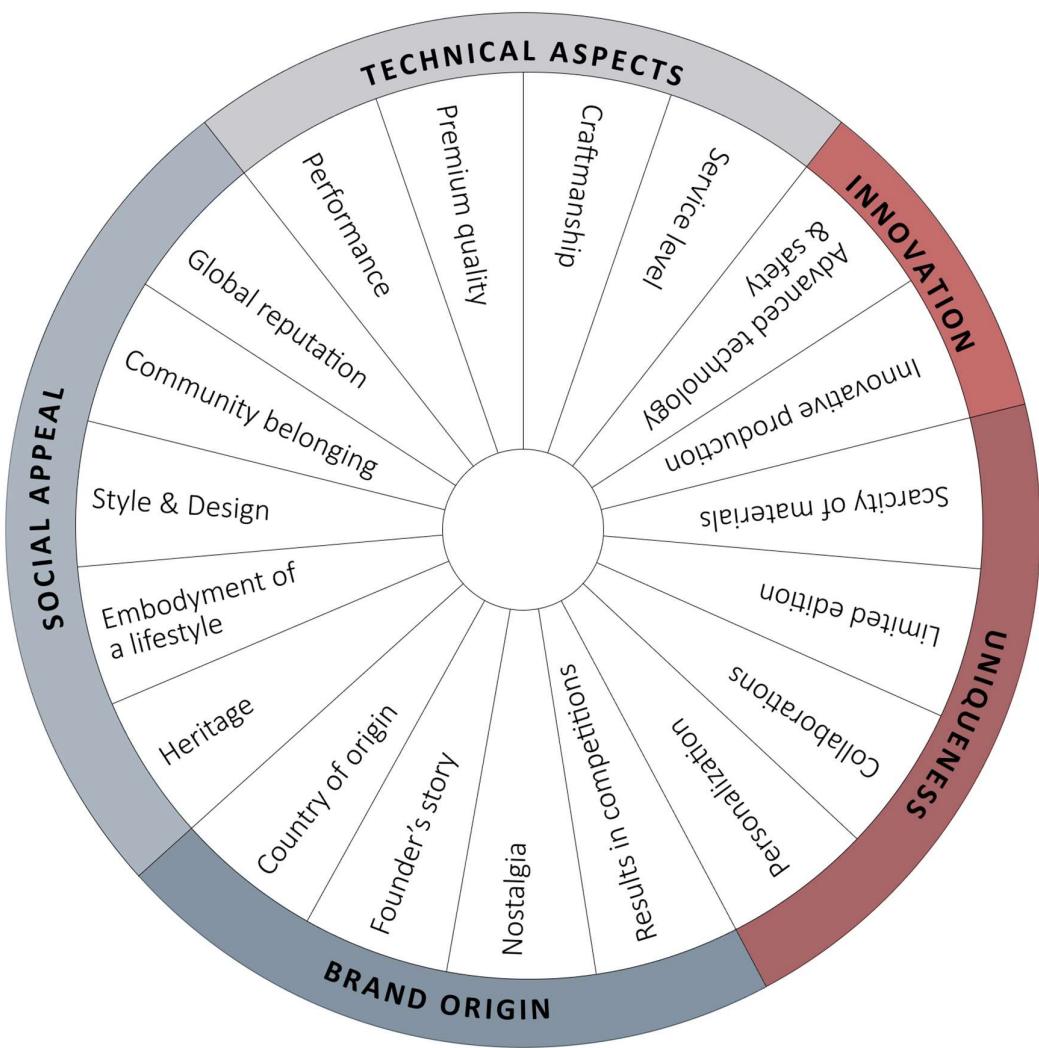


Figure 22 - New layout of the Critical Successful Factors model for luxury cars

## Geographical Analysis

The present section aims to provide a further analysis of the answers from the questionnaire, leveraging on the factorization of the variables and responses standardization. The first part of the survey gathered owners' demographic and car information which could be investigated to discover if exist patterns in answers depending on the geographical provenience of brands or customers.

To begin with, the geographical origin of respondents does not seem to have a high influence since all the regions have similar trends with the exception of Asia. However, it must be said that the Asian respondents are very limited (less than 5% of the total) and thus data are not considered reliable. It is likely that the number of answers obtained is not enough for such typology of geographical analysis. Indeed, a similar study by Kapferer and Michaut (2016) interviewed 3,217 luxury goods consumers from all over the world. Getting in contact with such a high number of luxury car owners is extremely difficult due to the limited number of supercars manufactured compared to fashion goods. Hence it is not possible to draw any conclusion on clients' perceptions according to their geographical origin.

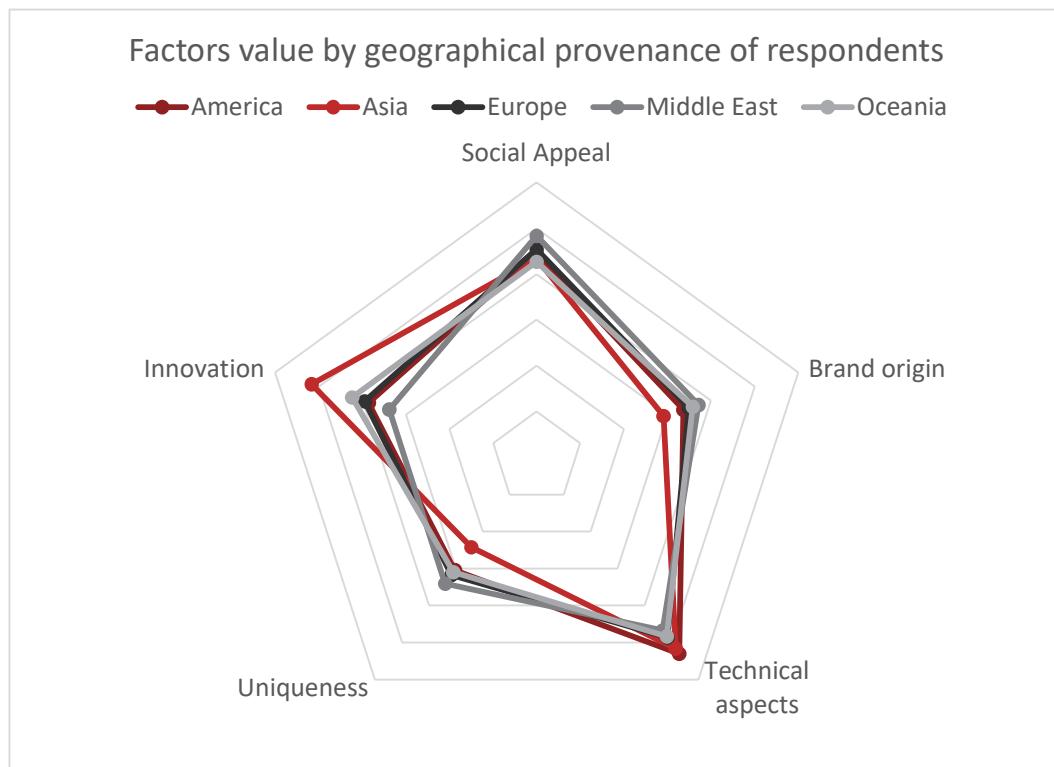
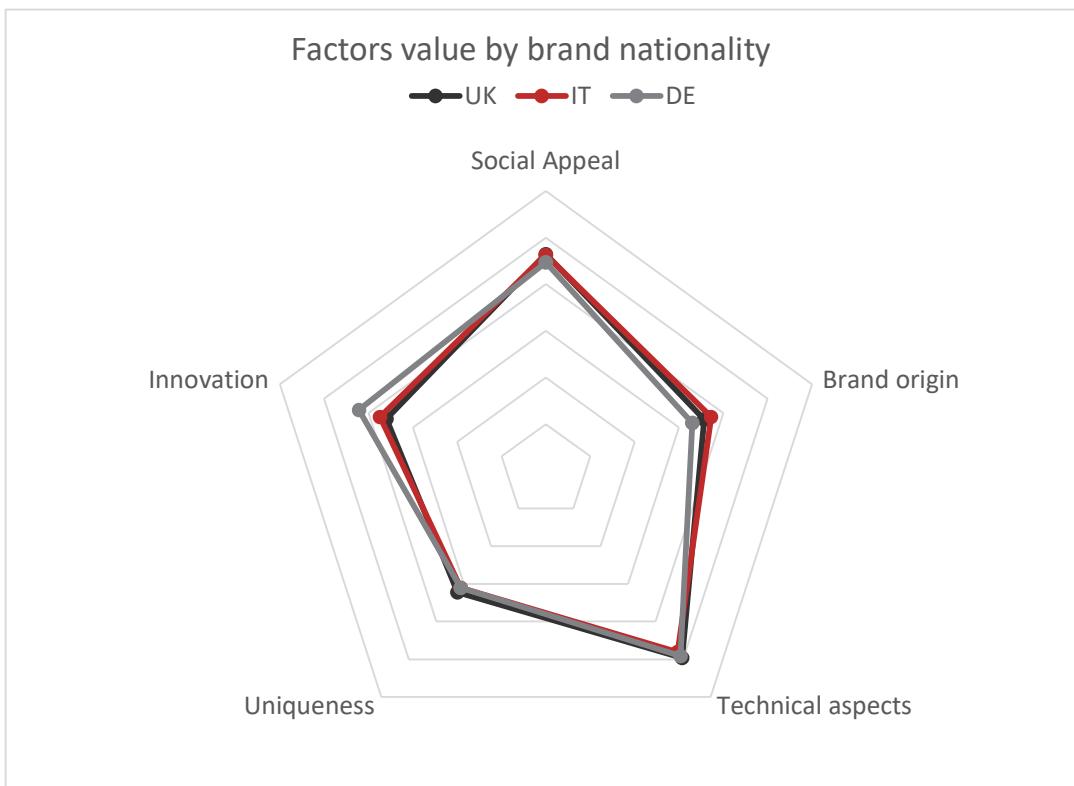


Figure 23 – Radar chart on customers' geographical origin  
It is possible to see how all the results are almost perfectly overlapping with each other

The second element considered is manufacturers' nationality, that in this analysis are Italian, British and German. All the answers from different brands with common origin have been aggregated together as representative for their country. Specifically, have been considered Aston Martin, Bentley, McLaren and Rolls Royce's owners for the British (UK); Ferrari, Lamborghini and Maserati owners for the Italian (IT); Porsche's ones for German (DE).

However, several of the respondents own more than one luxury car, often from brands of different nationalities. Therefore, it has been decided to consider only those customers that own cars produced in the same country so that they really express an uncontaminated judgment. Thought, this implies that the usable number of answers is lower (328) than the overall number and could be an issue from a statistical point of view.



*Figure 24 – Radar chart on brand's geographical origins  
Even in this case there is almost no difference between the different typologies of luxury automotive*

The comparison between brand nationalities does not show significant differences in customers attitudes. Italian and the British luxury manufacturers nearly overlap in all the factors, meaning that owners of these brands do not value differently car characteristics. The only difference could be found in German brand owners that give more importance to

car innovative aspects and technologies than the other two groups of respondents. Such result seems reasonable matches the German manufacturer's strategy and positioning. Indeed, the firm has within the brand's mission the statement "driving technologies" and encompasses hybrid and full electric luxury cars among the product range of high-performance vehicles.

It is possible to conclude that the analysis has found no considerable big difference, meaning that clients are the ones who drives the distinction among brands.

## Cluster analysis

The results obtained from the cluster analysis with the parameters previously presented allowed to discover 10 separate groups having common behaviours towards luxury car purchase.

Before analysing the results, it is important to understand if the number of clusters identified is adequate, considering that an excessive number would imply a fragmentation of the observations. According to literature studies there is a method that calculates the optimal range of groups to be found given the number of data points (Kazsoki & Hartmann, 2020). Hereafter are presented the formulas where  $M_{min}$  and  $M_{max}$  are respectively the minimum and maximum number of clusters and N the number of observations (439).

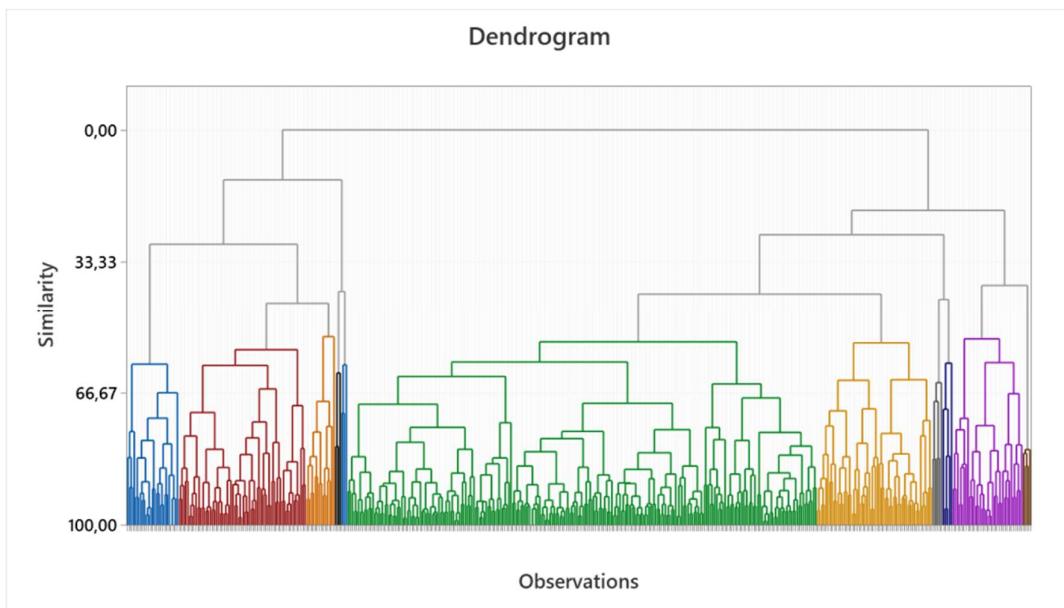
$$M_{min} = 2$$

$$M_{max} = \left\lfloor \sqrt{\frac{N}{2}} \right\rfloor$$

$$M_{opt} = [M_{min}; M_{max}]$$

The computation indicates for the present dataset an optimal range between 2 and 15. Being 10 the number obtained, the result seems solid and fulfils the internal validity requirements.

The key element to consider from the output presented by the statistical software are the dendrogram and the centroids of the clusters. The first one is a graph that explains how the clustering process is performed starting from the single observations till the formation of the groups until a threshold with the level of similarity desired. Whereas the cluster centroids are a table where are collected all the average values scored for each factor in each cluster.



*Figure 25 - Dendrogram from the clustering  
Obtained with complete linkage and Euclidean distance*

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Social Appeal	5.21933	4.44916	4.40242	5.72762	2.4918
Brand origin	4.55764	3.63829	3.66239	2.52181	4.56925
Technical aspects	4.68087	5.10807	4.61302	6.05662	6.56644
Uniqueness	3.34768	2.14137	3.46365	2.2791	2.76518
Innovation	2.19449	4.66311	3.85851	3.41484	3.60733

Variable	Cluster 6	Cluster 7	Cluster 8	Cluster 9	Cluster 10
Social Appeal	4.29092	2.75101	2.8620	5.65686	3.20385
Brand origin	2.09785	2.34882	2.58053	4.84283	6.4032
Technical aspects	5.39038	6.16165	7.9551	4.96836	1.76499
Uniqueness	3.43463	5.69701	1.72653	1.65241	4.73338
Innovation	4.78622	3.04151	4.87584	2.87955	3.89457

*Table 6 - Cluster centroids from cluster analysis  
Obtained with complete linkage and Euclidean*

It is worth noticing from the dendrogram that there is an overall good distribution of the observations among the different clusters; most of these include a significant number of values while only a few have a small number of observations. Moreover, there is a clear separation between the bigger groups and just a couple of isolated clusters that are an exception. Moreover, looking at the values reported in the Cluster Centroids table, there are differences between the average score of the factors for each cluster. The meaning of such results is now taken into consideration in the following paragraph where examined the salient attributes.

Cluster 1 presents a high value to the Social appeal factor indicating an interest in reputation, lifestyle and community belonging. It is also worth noticing the discrete importance of the technical aspects, while the other factors have marginal or almost no influence on the decision making.

Cluster 1	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	5.22	4.56	4.68	3.35	2.19

Cluster 2 describes those customers that when buying a luxury car are attracted by the most tangible elements such performance, quality of the components and also the effort of companies to deliver innovative hardware and software solutions. They show a low interest for the distinctive characteristics such personalization and limited editions while a moderate interest for the manufacturer's characteristics such reputation.

Cluster 2	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	4.45	3.64	5.11	2.14	4.66

Cluster 3 includes those type of people that are attentive to multiple characteristics, focusing on both the experiential and product related dimensions. They have a slightly higher attention for what regards Social and Technical factors, although there is no strong dominance over the other characteristics.

Cluster 3	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	4.40	3.66	4.61	3.46	3.86

Cluster 4 owners are those that give the highest importance to Social appeal among all the clusters. Nevertheless, their interest in the Technical aspects achieve an even greater score. Simplifying, these customer desire a car that is fast, appealing, and recognizable, while are minimally affected by the other characteristics.

Cluster 4	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	5.73	2.52	6.06	2.28	3.41

Cluster 5 comprehends clients that are fond about the technical characteristics of supercars and have a considerable appreciation for the origins of the manufacturer. Thus, they tend to be loyal to their favourite brand and the purchase is influenced by a desire for elevated performance, attention to details and close relationship with the brand rather than considering what the society might think.

Cluster 5	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	2.49	4.57	6.57	2.77	3.61

Cluster 6 members give primary importance to the degree of innovativeness and the Technical aspects. It is interesting to consider the modest relevance of Brand origin, meaning that these customers are ready to switch car when a new more up to date supercar is released by a competitor.

Cluster 6	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	4.29	2.10	5.39	3.43	4.79

Cluster 7 includes owners of special luxury cars. Indeed, the most influential factors are Uniqueness and Technical aspects, while all the others show a significant lower importance. This underlines the willingness to drive an exclusive car built according to personal taste and which represents their values, among which the desire to distinguish from others.

Cluster 7	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	2.75	2.35	6.16	5.70	3.04

Cluster 8 customers consider as extremely relevant the quality of the materials, the detail finishes of the car together with outstanding driving performance delivered by the powertrain. Moreover, there are also other characteristics supporting these interests: complementary services such as track activities during the after sale, the adoption of new materials or implementation of cutting-edge technologies; aspects that explain the moderately high value of the factor Innovation.

Cluster 8	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	2.86	2.58	7.96	1.73	4.88

Cluster 9 is formed by people that give primary importance to the social dimension of owning a luxury car, such as the lifestyle and reputation associated, while value as secondary the Technical aspects. During the purchase process they also give a moderate consideration to the brand origin, as a demonstration of the authenticity of their interest, while the wish to own something unique is not contemplated.

Cluster 9	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	5.66	4.84	4.97	1.65	2.88

Cluster 10 exemplify very particular customers that appoint a strong value to the brand, having emotional attachment for the past or its country of origin. Moreover, the factor Uniqueness demonstrate a noticeable importance, whilst Technical aspects are the least considered characteristics.

Cluster 10	Social appeal	Brand origin	Technical	Uniqueness	Innovation
Centroid	3.20	6.40	1.76	4.73	3.89

## Grouping

The previous brief explanation of the ten clusters provides an overall picture of the clustering output explaining the meaning behind all those numbers. The scenario might initially seem fragmentated due to the not so small number of clusters, although have emerged different communalities between the single clusters. Therefore, it has been decided to simplify the results of the analysis with the aim of achieving a smaller number

of clusters. The methodology adopted for this further step is still a grouping process based on the similarities, but without relying on a software analysis, by leveraging on the simple observation and analysis of the values scored by the factors. Indeed, the new groups are formed by the union of the cluster having the same two dominant factors, where the word dominant is used to describe the factors with highest value.

The rationale of this method relies on the contribution by Kapferer and Michaut (2016) presented in the literature review chapter. The authors concluded that luxury goods have a set of core characteristics which drive the consumption, whereas there are other secondary attributes which vary depending on the single customer. The same philosophy is adopted for this approach, the cluster are associated based on the core characteristics while the other factors are left apart from the general perspective since indicate the different nuances typical among luxury consumers.

The result of the additional clustering led to the creation of five macro-clusters, as they are going to be appointed from now onward. In particular, clusters number 1, 3, 4 and 9 are combined to form the macro-cluster 1, while clusters number 2, 6 and 8 are merged to form macro-cluster 2. Clusters 5, 7 and 10 represent respectively the new macro-cluster 3, 4 and 5. Hereafter is provided a final assessment with a detailed description of the macro-clusters.

### Macro-cluster 1 – Proud achievers

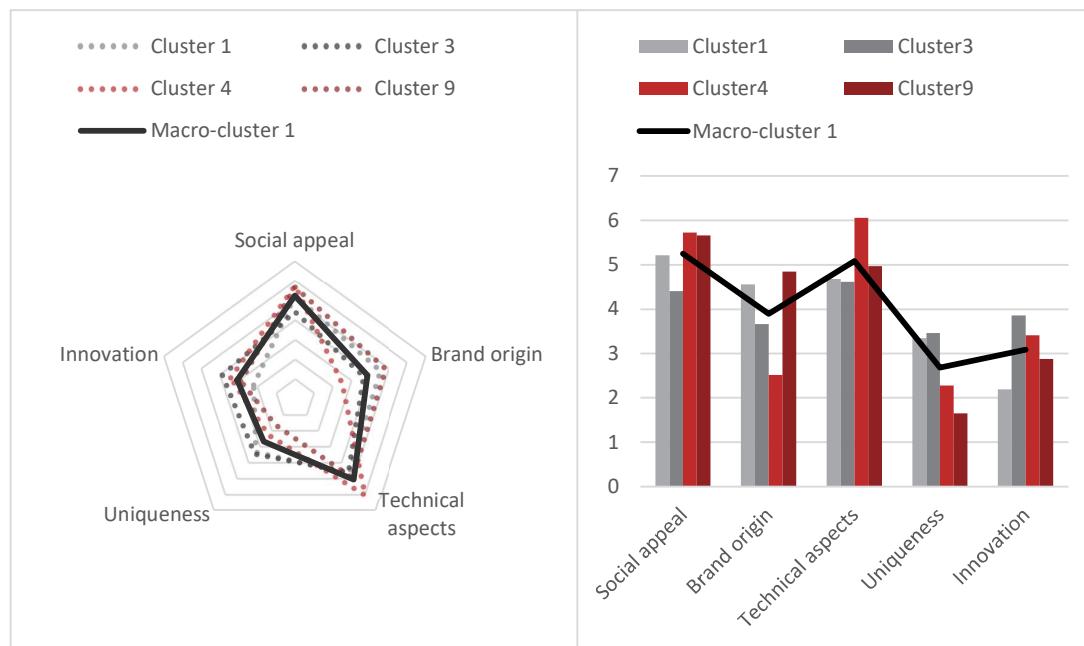


Figure 26 – Proud achievers radar and column charts  
Dotted lines represent the single clusters (1, 3, 4, 9) that originate the macro-cluster displayed with a filled line

The group represents those customers that are substantially attracted by technical characteristics but at the same time are heavily influenced by social aspects. This behaviour could be explained by the tendency to search for approval and conform with the opinions of their group of reference. Recalling literature studies, it is possible to affirm that these clients are subjected to the bandwagon effect cited in the literature review chapter. It is worth noticing that within the macro-cluster there are clients with different interests for what regards the secondary factors, that are those attributes with lower scoring. Some are more focused on innovation rather than brand origins, indicating low brand loyalty and an attraction for what is new. An example could be hybrid or electric cars that are an innovative product but also socially appraised since are now becoming fashionable. At the same time, others show an opposite attitude for their secondary factors and are more connected to the brand, possibly due to a sense of nostalgia derived from a past memory or the realization of the dream of owning a supercar from a renowned brand.

Hence, being the social dimension highly valuable for this macro-cluster, it is likely that the decision of purchasing a luxury supercar is a status symbol, a signal which aims to communicate the achievement of a success or in general a high-end style of life.

## Macro-cluster 2 - Visionaries

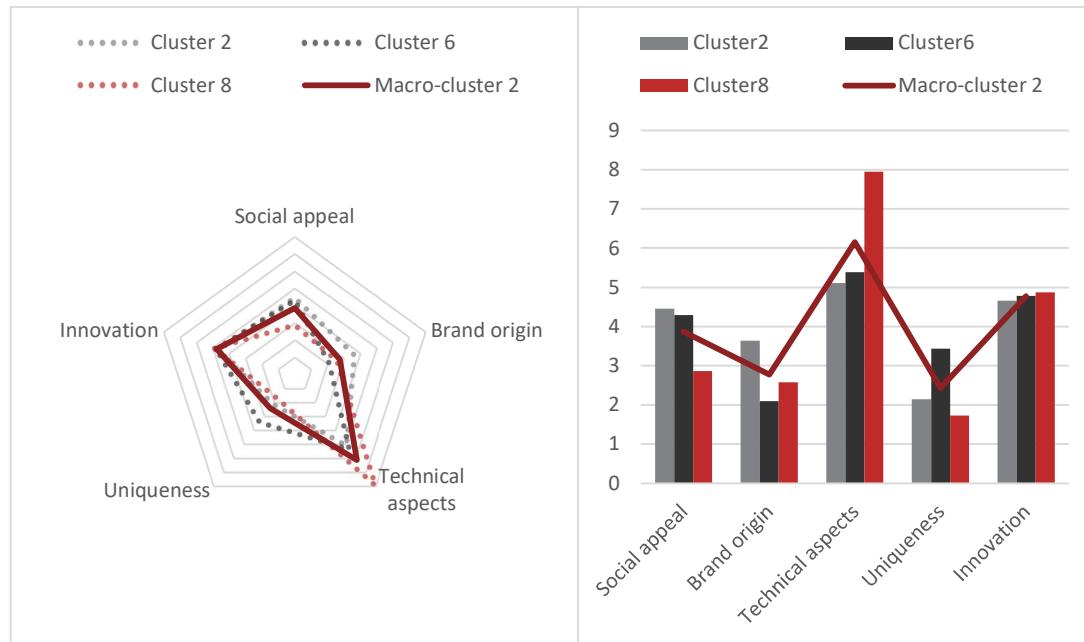


Figure 27 - Visionaries radar and column charts  
*Dotted lines represent the single clusters (2, 6, 8) that originate the macro-cluster display with a filled line*

The clients included in macro-cluster 2 are people strongly concerned about the proper physical characteristics of the car and thus show a common interest for innovative and technical aspects. More specifically, all those elements such the engine, driving experience, materials of interiors, infotainment, and Advanced Driver Assistance Systems (ADAS) are demanded at an exceedingly high level of performance and quality. These customers are not influenced by the story behind the manufacturer nor its origins, instead they are more future-oriented and seek for a car that embodies their charm for innovation. Indeed, taking into consideration the most recent trends in the luxury automotive market, macro-cluster 2 members have shown an interest in hybrid cars that combining two propulsion system reach an impressive amount of horsepower. The final considerations on visionaries' cluster regard the moderately low importance given to social appeal and uniqueness factors. The explanation relies on the reason of their purchase, that is not something done to feel part of an elite group nor to differentiate from the others. Instead, it merely addresses a personal desire of owning a luxury car that allows to live a futuristic-like experience. Recalling the luxury consumption motivations, it is a sort of hedonistic behaviour.

### Macro-cluster 3 - Enthusiasts

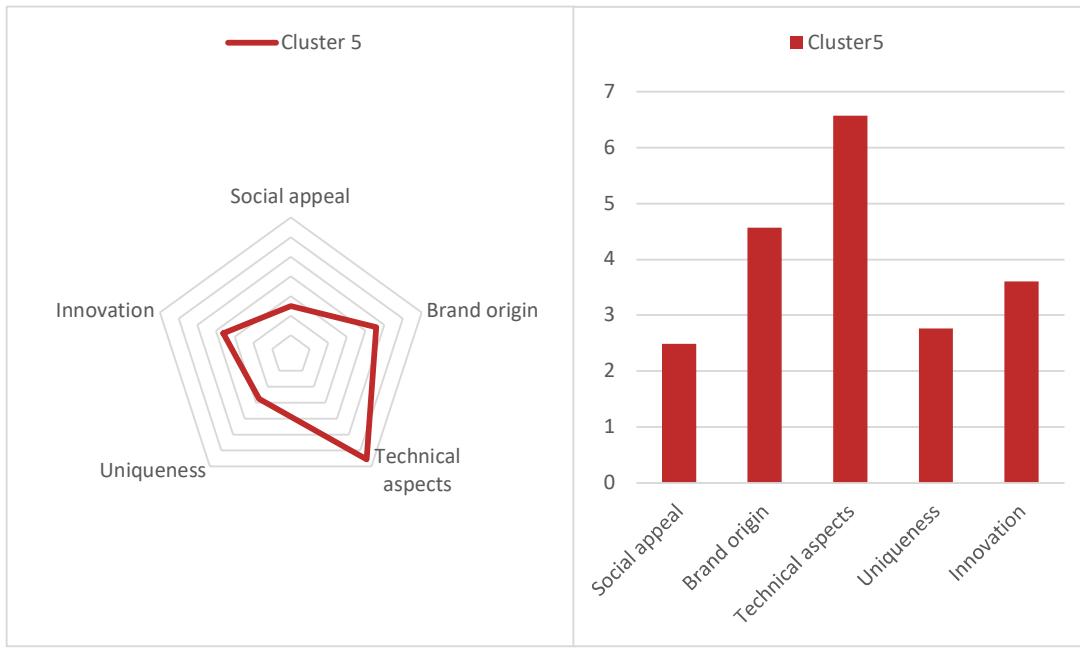


Figure 28 - Enthusiasts radar and column charts

The owners belonging to this group have been named Enthusiasts, precisely due to their strong passion for supercar word and the legends behind the manufacturer. They certainly are strongly attached to the tangible aspects such quality and performance, but also the

additional car-related activities and services are considered relevant. Brand origin scores high since they are likely to have a favourite brand to which they are loyal and possibly part of an owners' club where are organized such as track days and gran tourism tours.

#### Macro-cluster 4 – Exclusivity hunters

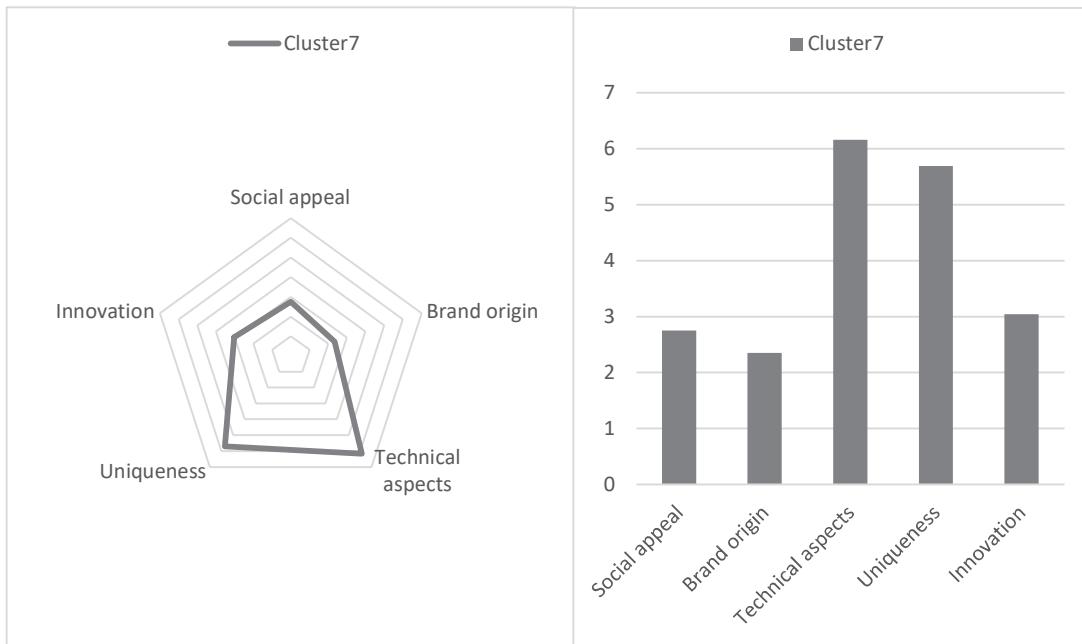


Figure 29 – Exclusivity hunters radar and column charts

Macro-cluster 4 owners are extremely focused on the main characteristics of interest while show almost no attraction for the other factors. They are thrilled about the technical aspects such as the acceleration and top speed of the car, but also ad hoc exclusive services designed for the most important clients. Indeed, these owners give incredible importance to the uniqueness factor, which means that during the purchasing process it is valued the limited number of units produced and the possibility to perform some personalization. Hence, they are called tailor made, because the choice of the car is driven by the desire to own something that is unique, exclusive and fits exactly their taste in every aspect. Such type of customer usually is interested by the few-off models which are often the most powerful and customizable vehicles of the product range. Recalling the behavioural theories, exclusivity hunters show a strong snob effect through their willingness to distinguish from the common luxury car owner and, in a certain way, demonstrate superiority.

## Macro-cluster 5 – Collectors

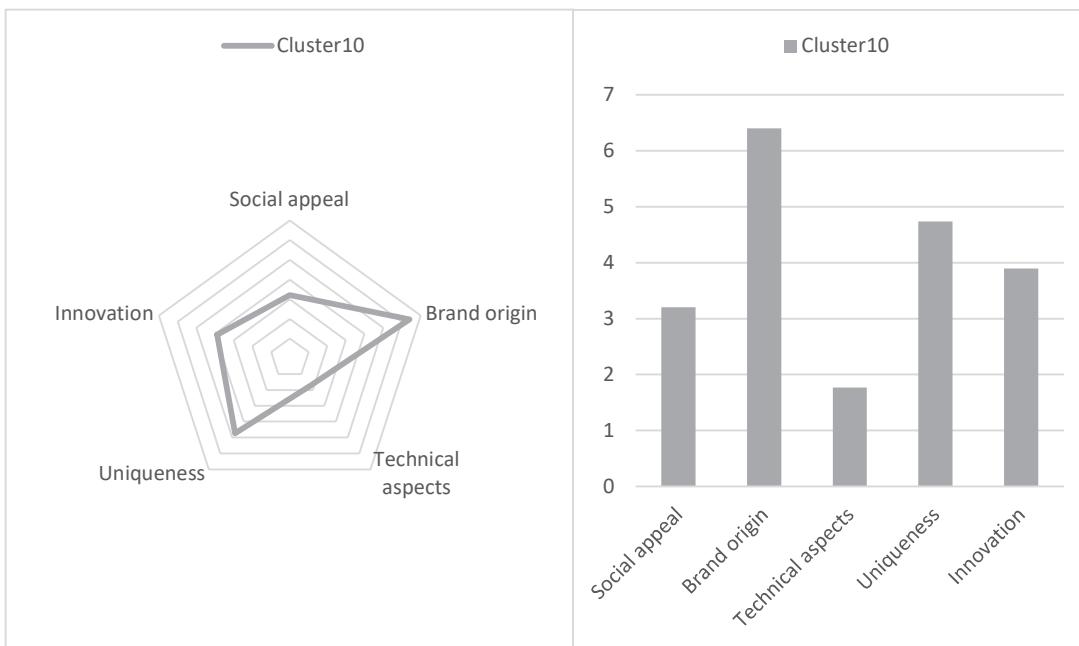
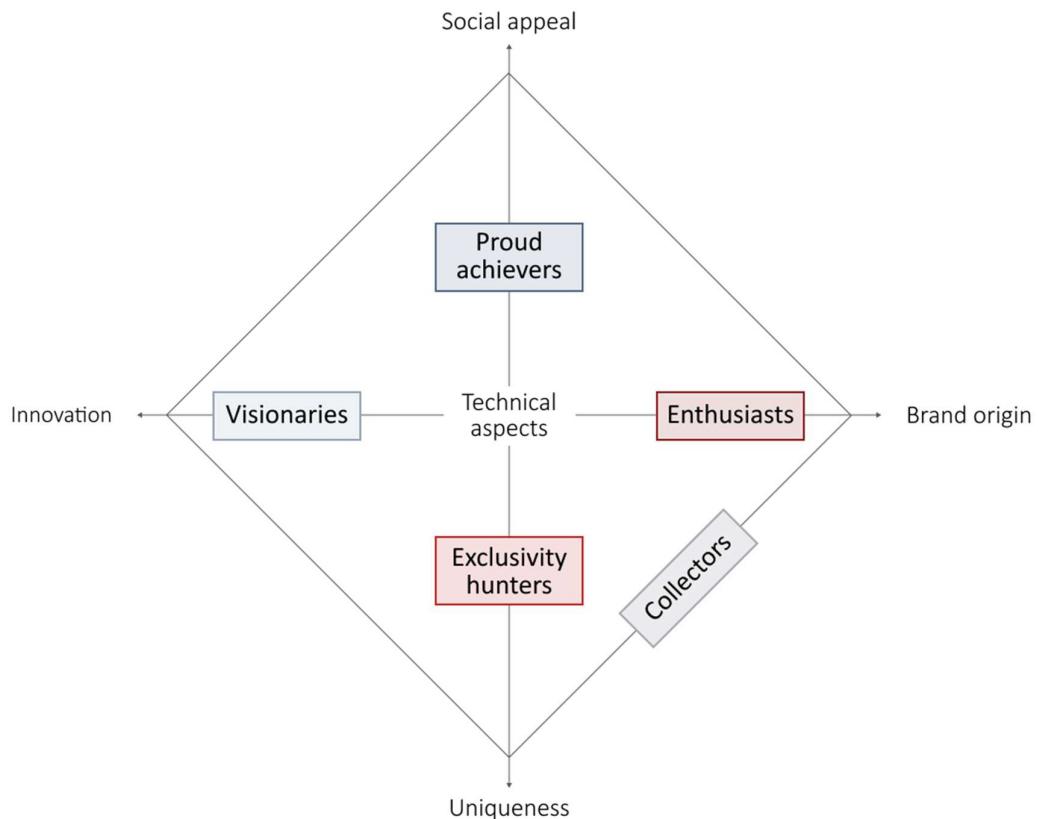


Figure 30 – Collectors' radar and column charts

Within luxury car world there is one last group of customers that has a completely different attitude from the others. Indeed, while for the previous macro-clusters there is always a concern for the technical aspects of the car, these show a quite poor interest for that. Brand origin is what attracts them the most, they are fascinated by the manufacturer's history, successes and country of origin. There is also a considerable relevance for car Uniqueness, probably in terms of rarity. These customers have been identified as the owners of iconic luxury cars, like the classics or the one-off, where it is not important that the vehicle is the fastest or equipped with the best technology, but these Collectors want to embrace the true DNA of the brand to which they are loyal.

Before concluding this chapter, it is necessary to make a final consideration on the iterative process that brought the clusters from 10 to 5. The initial high number of groups obtained from the cluster analysis is not the result of a rough process that required additional steps because not performed properly. On the contrary, it shows and confirms the theories of many research that identify in luxury consumers a wide variety of customers that are attracted to different aspects. Using the same expression proposed by Caniato (2009), the analysis clearly underlined that also in luxury automotive sector “One does not fit all”.

Although, companies cannot work with such detailed level of segmentation because it would imply an incredible consumption of resources for delivering the best value proposition to each type of client. It is necessary to elaborate a more general approach which groups clusters of clients that are similar searching for the optimal trade-off between personalization of the offering and efforts necessary to deliver it.



*Figure 31 - Summary of the macro-clusters identified*

## Marketing anti-laws

The management of luxury industry appears to not respond to any of the main models defined in the marketing literature. For this reason, Kapferer decided to draft a sample of guidelines which better suit the peculiarity of the sector.

The following analysis wanted to verify the application of some of the main guidelines by the luxury automotive manufacturers and, if that the case, highlighting the main differences which could constitute the basis for future research.

### Antilaw 1- Forget about ‘positioning’, luxury is not comparative

The analysis has been carried out considering the variables price and power for different segments in order to catch even the smaller trends in the positioning strategy.

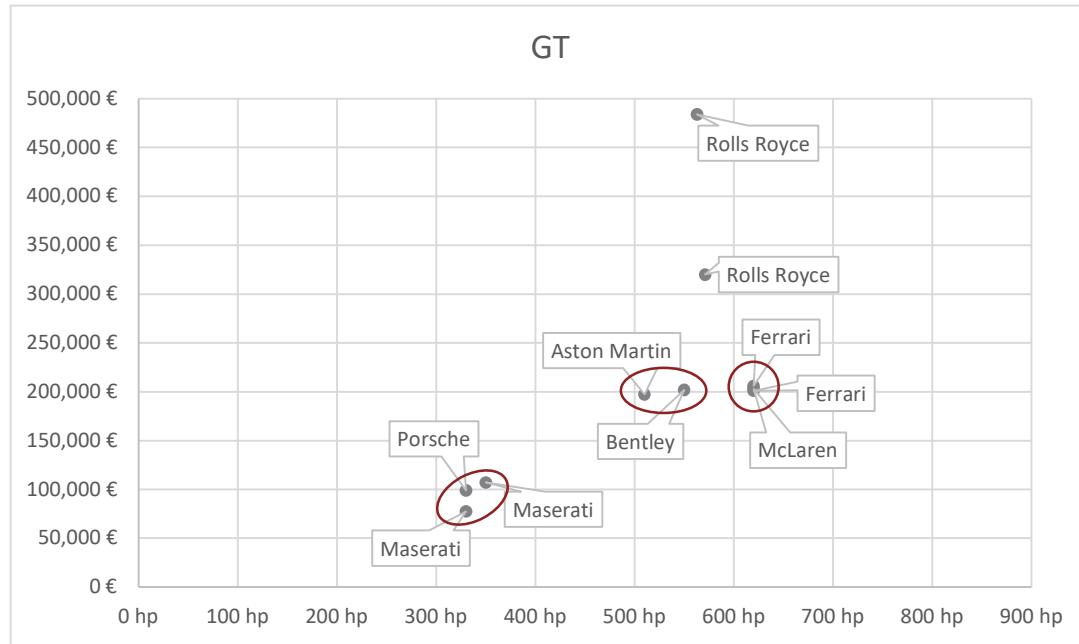


Figure 32 - GT segment positioning (2021)

The GT segment contains all the models of each brand designed and produced in order to create the most comfortable experience during the travel.

The graph highlights a different scenario to the theoretical expectations: it appears that there are many influences in the positioning of the brands in the GT segment. Only Rolls Royce seems not to care about the other manufacturers, according to the variables analysed.

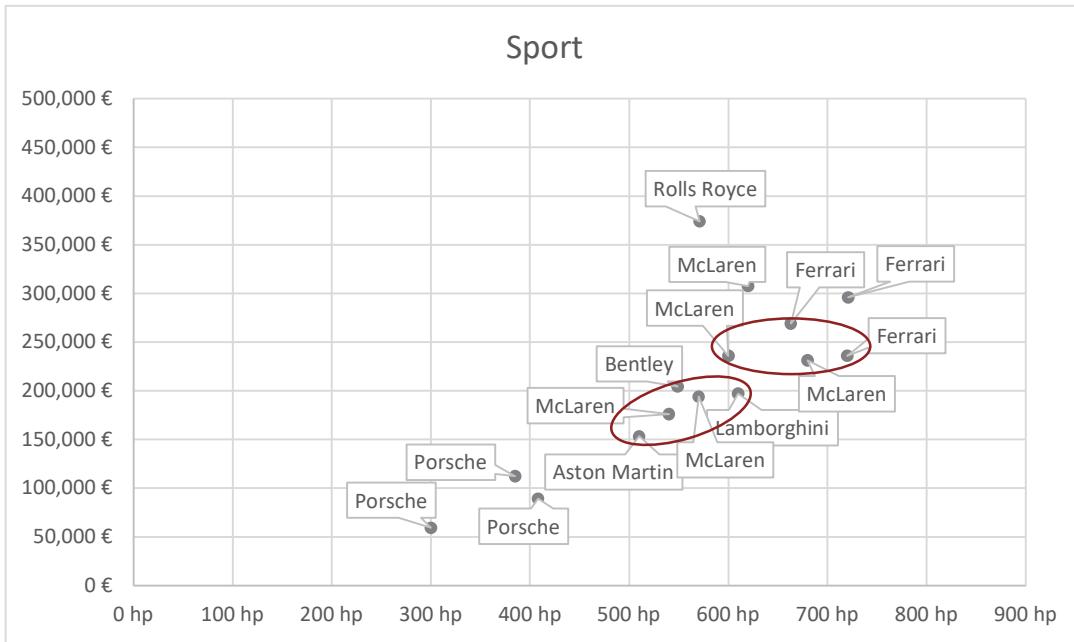


Figure 33 – Sport segment positioning (2021)

The sport segment contains all the models that introduce clients into the supercar world. Indeed, such vehicles have highly powerful but still do not represent the most extreme product available within brands' range.

Thus, also in the “entry level” segment of supercars it seems that the anti-law is not valid: brands produce models similar to each other in terms of price and power.

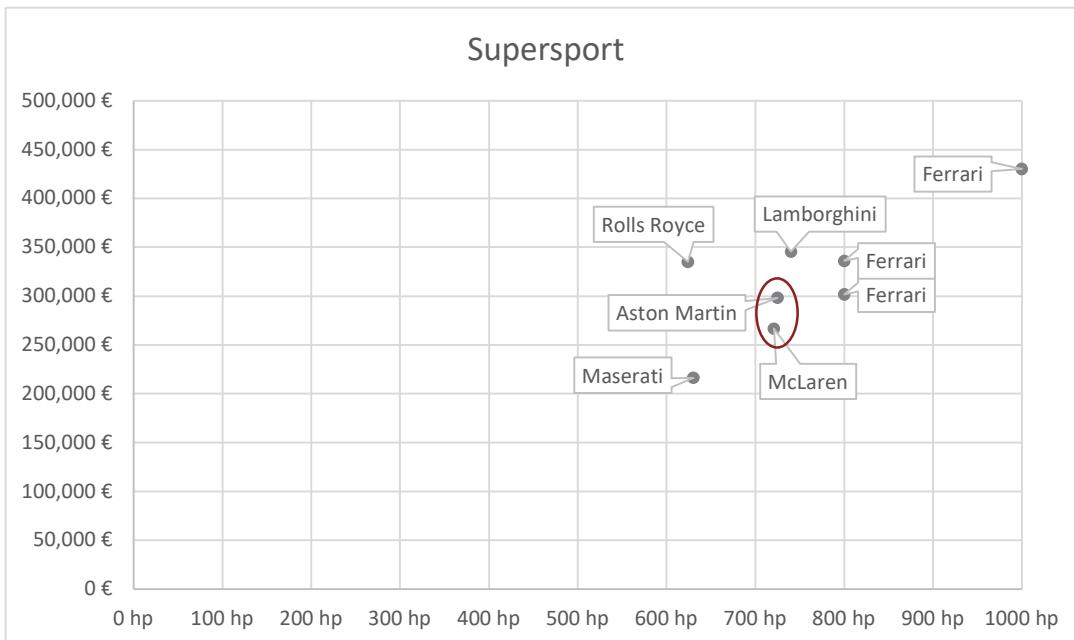


Figure 34 - Supersport segment positioning (2021)

Supersport segment comprehends the most powerful vehicles manufactured that are not subjected to specific limitations like one-off cars or limited-edition models.

When considering the top of the range of each brand, more differences can be observed. Indeed, just a couple of brands can be considered similar in their positioning, namely Aston Martin and McLaren, while all the others appear not to be much correlated among each other.

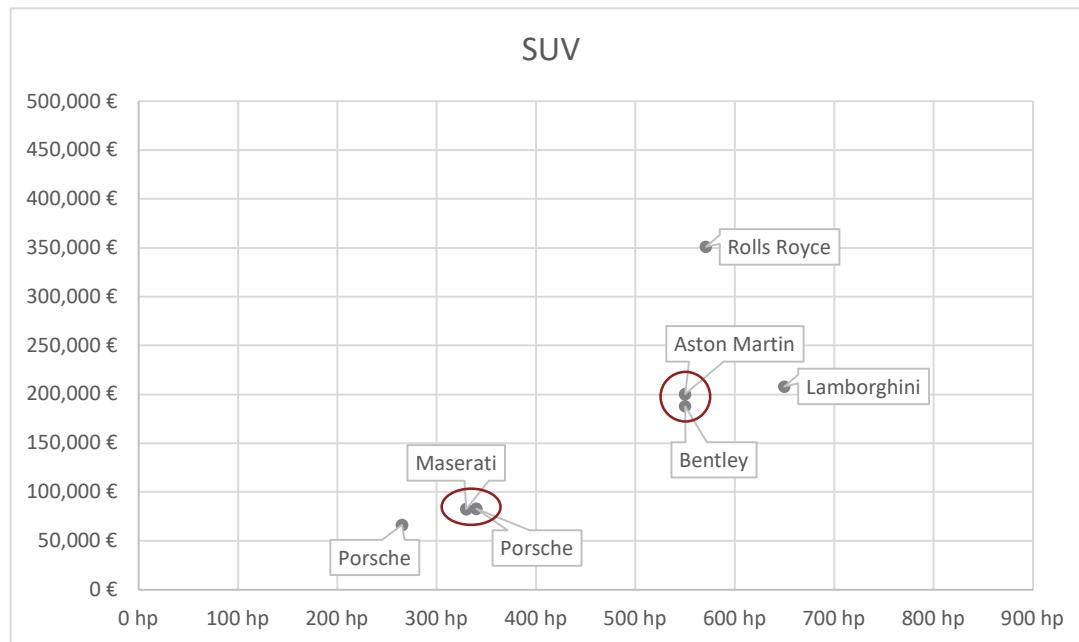


Figure 35 - SUV segment positioning (2021)

Almost every luxury brand has implemented a SUV vehicle in its product range as it appears to be a profitable segment with huge growth potential. For example, Lamborghini was able to increase its production volumes from 3815 in 2017 to 8205 in 2019 thanks to the introduction of its SUV that attracted new customers.

SUV segment presents similar trends as the segments already analysed: some influences and similarities can be found in the positioning of different brands.

Regarding the Top segment, here are included vehicles representing the peak of the knowledge of the manufacturers, often deriving their technology from the experience in the motorsport. Moreover, they represent a styling exercise, in which designers are free to experiment new shapes that will then inspire future models.

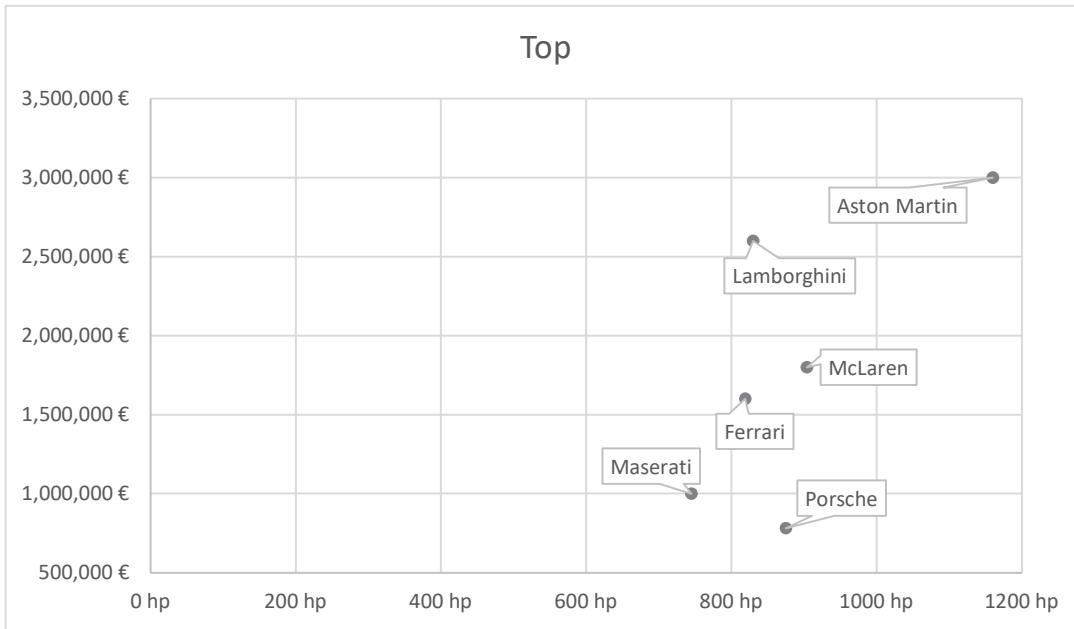


Figure 36 - Top segment positioning (2021)

In some cases, due to their extreme design and performance, such vehicles are not street legal but designed for the use in a track. Moreover, they are sold including technician support that follow the owner around the tracks. Thus, it can be stated that such segment represents the most unique experience that can be bought by passionate clients and for this reason it was decided to compare the different brands' offers.

The Top segment presents an even stronger patterns than the Supersport segment analysed above: there is no evidence of influence among brands in the positioning.

Brand	Influence GT?	Influence Sport?	Influence SuperSport?	Influence SUV?	Influence TOP?
Aston Martin	Yes	No	No	Yes	No
Bentley	Yes	Yes	Yes	Yes	-
Ferrari	Yes	No	No	-	No
Lamborghini	-	Yes	No	No	No
Maserati	Yes	Yes	-	Yes	No
McLaren	Yes	Yes	No	-	No
Porsche	Yes	Yes	Yes	Yes	No
Rolls Royce	No	-	-	No	-

Table 7 - Summary of the analysis on brand positioning  
For each product segment it is asked if the company performs a competitive positioning by confronting with competitors

The analysis carried out in this section seems in contrast with the theoretical guideline stated by (Kapferer & Bastien, 2009c). Indeed, it appears that luxury car manufacturers adopt a comparative approach when deciding their using competitors as a reference point in terms of power and price. The only brand that seems to be unique, without direct competitors is Rolls Royce which, however, is characterised by a limited product range as it was possible to analyse it in just two products segments.

The results from the positioning analysis find a confirmation in the interview conducted with the Head of Marketing Operations from Lamborghini. The manager stated that the pricing strategy of a new vehicle considers production costs, R&D costs, an average markup defined on the estimation of sales volume, and lastly an adjustment from the comparison with competitors' products.

$$\text{Luxury car price} = \text{production cost} + \text{R\&D cost} + \text{markup} + \text{competitor's benchmark}$$

Moreover, the study highlighted an interesting insight: competitors influence in positioning are stronger for entry level models within the range. Indeed, the most similarities were registered in the GT, Sport and SUV segments which are the segments more accessible in terms of price, power and usability. This seems reasonable because one of the goals of these segments is to attract new customers by introducing prospects to the brand experience and making them appreciate the tangible and intangible aspects related to their luxury car purchase. In this way the first experience does not force any sacrifice nor present risks but allows a gradual approach to turn first-time customers into loyal passionate clients, with the possibility of discovering the true soul of the brand. The discovery path should culminate with the purchase of the top-end cars, in which the brand splurges all its know-how and less customer friendly compromises are made in the name of the preservation of the true heritage.

In this perspective, the entry level models have to consider the clients' needs and desire and that could be the reason that force luxury car manufacturers to adopt a more common approach based on comparison and positioning.

Don't respond to rising demand & keep raising the average price of the product range

The following section presents the results from the study on luxury car manufacturers production trend, that should resist demand to preserve an aura of rarity, and their pricing strategy over time, where the average product range price should always increase.

As mentioned, the years 2010, 2015 and 2019 were considered for both the sales volume and the price of product range.

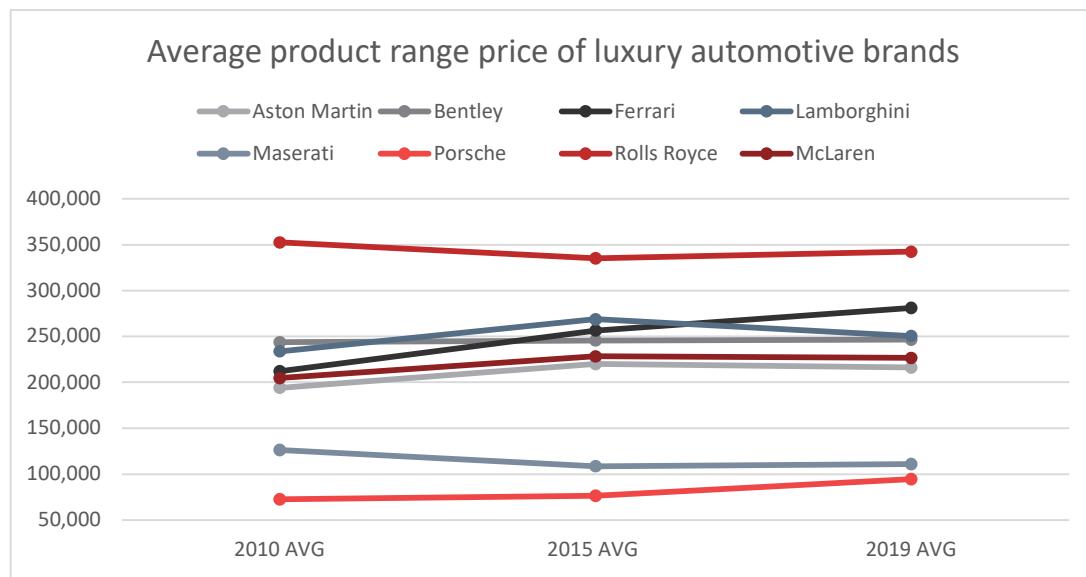


Figure 37 - Pricing trends by company (2010 - 2019)

The figure above presents an unexpected result: half of the brands seem to comply with Kapferer's anti-law while, on the other hand, the remaining companies have decreased their average product range price. These last firms, namely Aston Martin, Lamborghini, and McLaren, have been furtherly studied by examining their average car price in the present year, 2021. The goal was to study whether there is an upward or downward price trend in the latest decade and 2015 high value was just a casualty. Anyhow, it is not clear the reason behind such phenomenon, also considering the fact that the wealth of the richest individuals continues to grow (Haroon & Fuentes-Nieva, 2016), thus, it would be reasonable to expect an increase in the average pricing. Future research could investigate the variables that drive such peculiar trend.

The second part of this Antilaw research regards the sales volume throughout the years. The results are presented in the table below.

<b>Company</b>	<b>2010</b>	<b>2015</b>	<b>2019</b>	<b>Growth</b>
Aston Martin	3,155	3,615	5,862	+85,8%
Bentley	5,117	10,100	12,430	+142,9%
Ferrari	7,195	7,664	10,131	+40,8%
Lamborghini	1,302	3,245	8,205	+530,1%
Maserati	5,675	32,474	26,500	+366,9%
McLaren	1,200	1,654	4,662	+288,5%
Porsche	96,473	225,121	272,162	+182,1%
Rolls Royce	2,711	3,785	5,100	+88,1%

*Table 8 - Number and trend of vehicles produced (2010 - 2019)*

All manufacturers have increased their sales volume from 2010 to 2019, with the only exception of Maserati that registered a 20% decrease from 2015 to 2019. The explanation for this is that the firm was dealing with financial troubles in those years, posting a 119-million-euro loss caused by a cut of production to reduce dealer stocks by 3,000 vehicles (Malan, 2019). However, the manufacturer declared the willingness to reach the target of 100,000 annual vehicles sales by 2022 that would position it in direct competition with Porsche, the only manufacturer producing more than the 100,000 vehicles threshold.

It is reasonable to say that luxury automotive industry is seeing an expansion in terms of volumes manufactured. However, this specific result does not contradict Kapferer's guideline because an increase in sales should be compared with the correspondent demand. Nonetheless, the estimation of the actual demand for each brand is not publicly known, being a reserved information that single companies calculate on their own and prefer not to share. Hence, it has been decided to use as proxy the number of high-net-worth individuals (HNWIs) across the years examined. Specifically, HNWIs are defined by the World Wealth Report as those who hold at least US\$1 million in assets excluding primary residence. Their number has gone from 10.9 million in 2010, to 15.4 million on 2015 (+41%), till 19.6 million in 2019 (+27%). Even though there has been a significant increase in HNWIs (+79,81 % from 2010), brands selling volumes are expanding at a higher rate (+215,16%).

One reason explaining the substantial growth could be the introduction of several "entry level" models, a typical strategy of the latest years that has been explained before. Another motive is firms' willingness to please investors by making the brand more profitable in the financial market (Flak, 2016).

## Do not relocate your factories

The following analysis wants to highlight the managerial strategy adopted by each brand in terms delocalization of their facilities. It is expected that none of the luxury automotive manufacturers has relocated production plants due to the high pride that each of them attaches to its roots and origin. Indeed, almost every brand has on its official website, statements related to its origin.

A comprehensive summary of the different locations of headquarters, production sites and R&D centers is presented in the table below.

Firm	Headquarter	Production Site	R&D Centre
Aston Martin	Gaydon (UK)	St. Athan (UK)	Gaydon (UK)
Bentley	Crewe (UK)	Crewe (UK), Dresden & Zwickau (DE)	Crewe (UK)
Ferrari	Maranello (IT)	Maranello (IT)	Maranello (IT)
Lamborghini	Sant'Agata B. (IT)	Sant'Agata Bol. (IT)	Sant'Agata B. (IT)
Maserati	Modena (IT)	Modena (IT)	Modena (IT)
McLaren	Woking (UK)	Woking (UK)	Woking (UK)
Porsche	Zuffenhausen	Zuffenhausen, Leipzig (DE)	Weissach (DE)
Rolls Royce	Goodwood (UK)	Goodwood (UK)	Goodwood (UK)

*Table 9 - Summary of brand facilities' location*

From the table it is possible to classify the firms in two main groups: one site - multi functions and multi sites - one function. In the first case brands have all the functions concentrated in just one place, reducing the lead time needed to share information regarding workflow organization or innovation decisions. Such structure appears to be the most used by luxury car manufacturers, especially regarding the Italian ones. Multi sites – one function corresponds to the case where a location is focused on less functions to allow greater specialization and consequently reducing the learning curve to reach full potential. This appears to be less common, adopted only by Aston Martin and Porsche.

As expected, almost none of the companies have some delocalized plants in foreign countries. Bentley represents the only exception. The majority of the activities are done in Crewe, where are located also the headquarter and the innovation centre. Although some models are manufactured in external plants in Germany: in Dresden, leveraging on the parent's company production site, and in Zwickau, where the bodies are produced.

In light if the overall results, Kapferer's antilaw find confirmation. Companies are careful in their management of the activities because are aware of the importance of their origin, that are a pride to be shown. Moreover, as said before, such organization allows brands to have a stricter control on every aspect of the production, guaranteeing extremely high standards, reducing time of intervention and possibilities of spill overs.

The above analysis highlighted how, in general the Antilaws defined by Kapferer do not seem to find real evidence of application by the leaders of the luxury automotive industry.

<b>Antilaw</b>	<b>Evidence of application</b>
Avoid Positioning	No
Resist Demand	No
Increase average price of product range	No
Avoid Relocation	Yes

*Figure 38 - Summary on the actual application of the Antilaws analysed*

However, it must be said that the results obtained depend greatly on manufacturers' tendency of introducing "entry level" models. Indeed, if the analysis would have considered only the "top end" models of each brand's product range, the results will be different as the anti-laws would have found a higher correspondence. For example, the influence for the positioning would be greatly decreased and also the increase in price would have been assessed.

As a result, it is reasonable to say that, in general the anti-laws of marketing are not applied as the "entry level" vehicles, with the aim of attracting prospects, tend to respond more to the more common marketing models. On the other hand, by increasing the level of exclusivity and upgrading to the "top end" of the product range, it is possible to observe an application of strategies and model more suitable to the true luxury.

## Supply Chain models assessment

The aim of following section is to investigate the applicability of mass market SC models to luxury automotive industry. The validation is carried on by analysing two main aspects: the possibility to calculate the required contingent variables and the match between the strategic profiles suggested by the frameworks with the practices performed by best-in-class players of the industry. In fact, if the guidelines provided by literature studies turn out to be considerably different from what is actually done in the market by successful companies it is not possible to state the validity.

Starting from Fisher's model (1997) it appears difficult to classify the studied product in one of the two categories: functional or innovative. Indeed, luxury cars own few characteristics belonging to the functional class, such as a long product life cycle (around 5 / 6 years) and a long lead time for Make-To-Order (usually it goes from 8 to 18 months). At the same time, contribution margins greater than 30% and high product variety, deriving from the combination of small product range with limitless possibilities of customization, are characteristics distinctive of innovative products. Moreover, the other contingent variables used to classify products (i.e., average stockout rate, average margin of error in the forecast at the time production is committed, average forced end-of-season markdown) are not applicable for the analysed industry. Indeed, luxury car companies often emphasize product scarcity to create a sense of exclusivity, craft tailor made products only after the explicit request by clients and consequently do not own inventory of finished unsold goods. These observations are confirmed by case study research by Caniato et al. (2009) for the general luxury market. As a conclusion, Fisher's model does not find its validity with luxury cars since it fails to classify them into one of the two categories.

Considering Lamming et al. (2000) model, luxury cars are complex products due to the high number of components (Ferrari stated that there are more than 15.000 SKUs) and cutting-edge production techniques. They are also classified as unique-innovative products since they comply with the VRIN framework previously presented. Specifically, this finds evidence in the predefined constraints for the yearly number of units manufactured, high cumulative R&D investments for developing a new vehicle, customization effort according to personal taste and rarity of the materials utilized. The strategic profile for complex-

unique positioning suggests for the management of the supply network to have as a competitive priority speed and flexibility as well as emphasising on the supremacy of quality and innovation rather than costs which are viewed as given. Moreover, it is underlined the great need of having an Information Technology system in place since there are high number of actors and components involved. The flow of large amounts of non-strategic information is enabled by IT while, being the product unique, Lamming states that sensitive information and knowledge might not be exchanged with the partners.

Such suggestions actually correspond to the strategy currently implemented by luxury automotive firms. Indeed, flexibility is necessary to adapt to customers' desire while quality and innovation have been discovered to be fundamental CSFs for both clients and manufacturers. Moreover, information flow is accurately managed to be efficient and rapid; for example, Ferrari stated that when R&D department discovers a prominent innovation, the information is promptly shared with other units and valuable external partners so that it is triggered a process of development and testing that are supported with the adequate resources.

Lee (2002a) model considers the dimensions of demand and supply uncertainty. For what regards the demand side, it adopts the classification proposed by Fisher that distinguish between functional and innovative products, having respectively low and high demand uncertainty. As explained previously, it is not clear in which of the two categories luxury cars should belong to. Although, it has to be said that the interviewed companies revealed that their uncertainty regarding the final product could be considered low due to the presence of waiting lists which work as buffers and the gained exclusivity of luxury brands whose demand is always greater than the quantity provided. Hence, without strong evidence available, luxury car profile is evaluated with low demand uncertainty, relying on the qualitative information provided by company managers interviews. Future research should validate such assessment.

Similarly, supply side classification between stable and evolving does not appear unambiguous. It slightly tends towards a stable profile since it is characterized by high yield stability and reliable suppliers guaranteed by long-term partnerships. On the other hand, the number of units manufactured is influenced by a capacity constraint that is typical of an evolving profile. It has to be said that limited production is not the result of bad

manufacturing planning, but a deliberate strategic decision adopted to convey the idea of rarity.

The intersection between the values assumed by the two uncertainties suggests for automotive luxury players an Efficient SC configuration, tending toward a Risk-Hedging SC. Efficient profile aims to create the highest cost-efficiencies in the supply chain leveraging on economies of scale and capacity utilization. This doesn't encounter correspondence with the sample of companies interviewed that do not associate a primary importance to cost-reduction, contrary to quality and service level, and manufacture low volumes without any scale economies. Such profile focuses also on the efficient, accurate, and cost-effective transmission of information across the SC, where internet has a central role to enable tight and effortless information integration. This finds an equivalence also in practice where the adoption of an IT system to share information with the partners results essential to satisfy the demanding requests of the customers in the best way possible. Moreover, some traits of the Risk-Hedging SC, such as the presence of multiple supply sources, seem to be applied by luxury car companies. As an example, Ferrari states that it is continuously searching for new and alternative suppliers to reduce the risks of disruption.

On balance, it is not possible to affirm that Lee's model is valid also for luxury car industry for two main reasons. The variables considered for the uncertainties are often not able to outline a precise classification and the SC strategies suggested do not find enough alignment with what is actually done.

The model by Christopher & Towill (2002) studies the appropriate strategies for global supply chains according to two main elements: the identification of two scenarios with relative market winner and market qualifiers (similarly to the concept of CSFs), and a three-dimensional classification of product SC with binary variables. In the case of luxury cars, the product is classified as special, with stable demand and long lead times. This combination is not studied by the two scholars since their effort excluded those situations that "are either unlikely to be encountered or are non-viable"(Christopher & R.Towill, 2002). Focusing on market winners and qualifiers, cost clearly does not represent a successful criterion for luxury car manufacturers which indeed do not have a lean SC configuration. The other CSFs scenario encompasses service level as market winner while quality, cost and lead-time as qualifiers. This corresponds to an agile SC strategy

characterized by end-to-end time compression or postponement of final product configuration. Such context surely better describe luxury automotive industry where high quality is always expected, and an excellent service level is critical. Nevertheless, as pointed out in the previous part of the research, there are also other CSFs (e.g., performance, craftsmanship, brand reputation, heritage) that are peculiar to high-end car market and should be considered as well along the whole value chain. Moreover, the interviews with Ferrari and Lamborghini do not support the idea of an agile strategy in their firms. What seems more likely is the combination of the lean and agile criteria according to the type of activities. Although the authors contemplate such approach and name it leagile, they do not propose any generic guideline for companies pursuing this strategy. Consequently, it is not possible to discuss the applied SC strategies and their matching with the prescribed model.

According to the theories by Childerhouse et al. (2002) there are four main SC configurations among which companies should chose the most suitable one for their product. The contingent model considers five product characteristics, that in case of luxury cars assumed the following values: long product life cycle (more than 2 years), low annual demand volume, high product variety due to great personalization, high order cycle time and low demand variability. Such products are associated with Material Requirement Planning (MRP) control with a focus on the flexibility of the supply chain and on the implementation of postponement techniques. Indeed, it is encouraged the application of a make-to-order approach with common raw material stocks and shared manufacturing resources. The goal is to maximise the availability within acceptable lead time, cost, and quality parameters. Such suggested guidelines encounter a match with what several luxury companies pursue, that is enhancing production flexibility and allowing “last minute” changes. For example, Porsche locks the final configuration of the car usually 15 days before starting manufacturing, that is months later than the placement of the order. Hence, Childerhouse et al. model seems valid also for luxury car industry being most of the suggestions already in place.

Vitasek et al. (2003) study SC strategies creating a model based on volume-variability analysis of demand. Luxury cars belong to cluster “C” where are included all products having small production volume, independently from their variability. The related

guidelines identify make-to-order (MTO) as the best approach leveraging on manufacturing on-demand when possible. Such solution implies higher cost per unit manufacturing, but the entire process results more cost-efficient because firms do not risk having to dispose of unused products or components. Moreover, it is indicated a distribution replenishment strategy where there is no inventory of finished goods and whenever possible a minimum level of raw materials. Vitasek's model finds evidence in real world companies that adopt a MTO strategy with waiting lists and thus do not have a finished goods. Still, it appears quite simplistic with limited utility in a dynamic context since the suggestions remain the same whether luxury cars, that have always low demand volume, are subjected to a variable demand or not.

A further contingency model developed by Cigolini (2004), the demand-supply matrix, is obtained by crossing the dominant life cycle phase of the end product, combined with product's internal complexity and the supply chain type. For what regards the demand side, supercars have, as dominant part of their lifecycle, the maturity phase, while internal complexity is high. Concerning SC, there is a prevalence of fixed costs, high manufacturing flexibility, low elasticity of demand to price and the main competitive weapon is the product and its CSFs. As a support of such considerations, Ponticelli et al. (2013) obtain the same value of the variables for luxury yachts, an industry very similar to the automotive one due to products and production process characteristics. The authors relate the majority of these characteristics to a Quick supply chain (corresponding to Fisher's responsive one) with the exception of the competitive weapon that does not find an exact match but just a similarity with the Lean type. Although, the model does not contemplate the complex-maturity-quick combination but instead proposes the complex-maturity-lean one, that is labelled as the one for mass market automobiles and white goods.

The SCM techniques suggested for that combination have as primary element the design and redesign of products for SC, decreasing their complexity and delegating the sub-assembly to other tiers of the value chain to obtain cost advantages and a simplification of logistics systems. Another element is the adoption of just-in-time supply of components that are delivered in small quantities to their customers through fast and frequent deliveries. In order to coordinate and better control a large number of suppliers, effective tools should be developed, such as vendor rating, cost accounting systems and wide-ranging on-line

connection systems, to directly link the information systems of customers and key vendors. Moreover, being often in place long-term partnerships with suppliers, the establishment of interface managers could facilitate the complex and articulated relational work that undergoes in key processes like new products development. Lastly, physical distribution has to be simplified to avoid bottlenecks and thus distributors “should place orders any time, know and book forecast-based production requirements issued by other retailers, and quote accurate delivery dates to customers” (R. Cigolini et al., 2004).

Among such variety of guidelines, a certain number seems to match what luxury car manufacturers have in place. This is the case of just-in-time supply of components, a vendor rating system that monitors partners’ performances and allows a bidirectional flow of information, long-term partnerships where interface managers collaborate and co-create together with suppliers, as stated by Ferrari. At the same time, a consistent number of guidelines does not find evidence in real SC management. First of all, the design and development of the product do not have among their primary drivers the optimization of the SC but rather the CSFs already presented. Similarly, delegating assembly activities to other tiers is strongly disincentivized in luxury car industry due to the high standard required for an excellent craftsmanship. Indeed, firm C gathers all the major activities, from design to assembly, in their only manufacturing facility where are kept under a strict surveillance. The only exception regards some branded components like seats that are outsourced to the best-in-class producer of luxury furniture and have just to be assembled on the car after quality control. Lastly, also the distribution strategy guidelines do not find a match, indeed distributors of Ferrari and Lamborghini have limited access to manufacturers data and need to control availability or other information before proceeding with an order. The overall process is not simplified but on the contrary it is enriched with multiple steps and relies heavily on human relationships to ultimately build an exclusive customer experience.

The model developed by De Treville et al. (2004) aims to address SC strategy from a different perspective than the previously mentioned model by considering the two variables of demand information transfer and relative supply lead time. Luxury car industry has a “full demand information transfer”, since actual demand information is transferred from customer (dealer) to manufacturer with no distortion, and a “no observed relative supply

lead time”, being the absolute supply lead time longer than the period of time during which meaningful indications of demand can be observed. This second variable does not encounter an appropriate match due to the fact that supercar production scheduling is initially estimated with the order placement by the end-customer but then it is adjusted months later when the car configuration is fixed. Nevertheless, the values assumed by the contingent variables correspond to a strategy that focuses on no market mediation and the stabilisation of the demand information transfer.

Indeed, information flow about customer requests is carefully managed in automotive industry. Specifically, the selection of the “optionals” (seats, interior material, rims, etc) and personalization requests have a significant importance because usually count around 15/20% of the product price, as stated by Ferrari. A high variety of choice for the components hampers production flow and increase the lead time, that is why some companies (e.g., Porsche) adopt a sort of progressive contracts where customer firstly reserved a production capacity slot for a determined time period for the desired car and then is left more time to finalize the configuration and eventually change it. Coherently with the effort of collecting high quantity of data to forecast future demand, Lamborghini has created a mobile application providing various services and collecting information and feedbacks from customers using quick surveys. Similarly, Ferrari has a platform where the most loyal clients are able to get previews of new models and eventually reserve one by simply placing a deposit. This approach clearly conveys a sense of exclusivity and personal care to the customers while it helps the manufacturer to understand the potential success and demand for a certain model. Therefore, it is confident to say that De Treville guidelines find a correspondence with what is actually implemented in the industry and the model could have interesting applications in the case the delivery mechanism will change in the future.

Therefore, considering the previous mass market SC models analysed, very few models revealed themselves to be still effective for luxury car industry. Indeed, Lamming’s model presents guidelines actually implemented but at the same time has a considerable lack regarding the competitive factors. Lee’s suggestions do not find an exact correspondence but just a partial match of some activities that are suggested by two different strategies. Vitasek’s framework describes just one scenario that could be applied to automotive, and it appears very simplistic without bringing any benefits. The only models recommending

actions that are actually performed by the interviewed companies are Childerhouse's and De Treville's ones.

Both of them could indicate beneficial alternatives whenever the contingencies change. Indeed, considering the contribution by Childerhouse, in the future there might be changes regarding window of delivery, variety of products or variability of demand. For those scenarios the model suggests different strategic alternatives. The same considerations could be made for De Treville's variables of demand information transfer and relative supply lead time.

<b>Author</b>	<b>Strategic guidelines for luxury cars</b>	<b>Real practice</b>
Fisher (1997)	Unclear if luxury cars could be classified as functional or innovative products	Unable to verify
Lamming et al. (2000)	Speed and flexibility as competitive priority together with supremacy of quality and innovation	Mostly match but significant lack on CSF
Lee (2002)	Not precise positioning regarding the uncertainties. Efficient tending towards Risk Hedging SC profile.	Partial match but also significant differences
Christopher & Towill (2002)	Do not exist exact contingencies for luxury car market. Agile strategy with time compression	Not match
Childerhouse et al. (2002)	MRP with a focus on flexibility, make-to-order and postponements techniques	Exact match
Vitasek et al. (2003)	Small production volumes imply make-to-order approach	Match but simplistic
Cigolini et al. (2004)	Decrease complexity, delegate assembly, just in time supply, information systems with customers and suppliers, simplify physical distribution	Mostly not match
De Treville et al. (2004)	No market mediation and stabilization of demand information transfer	Match

Figure 39 - Summary of mass market SC models validation for luxury cars

Lastly, some final considerations could be done regarding the models created specifically for luxury goods by Luzzini and Ronchi (2010) and Caniato et al. (2011). Their guidelines for complex products regarding sourcing, manufacturing and distribution find almost a perfect match with what companies are currently doing. Hereafter, it is reported an extract

of the information obtained during the interviews with Ferrari and Lamborghini that could represent best practices for the luxury car industry.

Starting with supply, Ferrari stated that they tend to outsource only non-core activities and components, while the most important ones such as foundry, engine design and production, body shell and R&D are entirely conducted in the headquarters. For what regards supplier selection, there are always tight criteria to be met in order to assure the creation of a long-term trustworthy partnership. Among these have been mentioned quality, sustainability and ethic, possibility for volume growth, economic, financial stability, independence from manufacturer. As mentioned also by Luzzini & Ronchi (2010), despite these are general requirements to be met by every type of partner, luxury car manufacturers differentiate between standard components and branded components suppliers (e.g. seats, braking system, tyres). For the first type, the selection considers price after a certain quality threshold is reached, while the most sophisticated components are outsourced to global renowned industry leaders that participate in a co-creation and co-innovation relationship to meet the exigent requests of luxury clients.

Concerning manufacturing, it usually followed a pre-scheduled production process where the levels are kept the most linear possible thanks to waiting lists that on average are of 18 months. Moreover, likewise other manufacturers in the industry, there is an organic growth of the yearly production volume that is kept monitored to always benefit from long lead times. The major criticality regards the personalization requests from customers, although Ferrari stated that these are strongly encouraged by the brand because they allow to make the purchasing experience more exclusive. Thus, the company maintains also an agile structure adopting for some components an assembly-to-order strategy for these types of requests that occur on daily basis.

Lastly, it is addressed the distribution process that presents partial inconsistencies with the guidelines provided by academics. Indeed, it is suggested a distribution through mono-brand directly operated or multi-brand independent stores, while interviews with Ferrari and Lamborghini highlighted that their typology of dealers are “B2B2C mono-brand stores”, regulated with contract of license similar to franchise. Thus, the stores are not operated by the brand itself, which never has a direct contact with the customers, but are managed by selected partners. The partners are under a contract where are stated the length of the partnership, the conditions and the revenue mechanism, that is often composed of a

fixed percentage of sales plus a variable one that depends on the services provided and the performances achieved. As mentioned also by Caniato, dealers are under a strict control of their activities and service level, that is why Ferrari has a predefined set of 50 criteria that have to be met. Moreover, these types of contracts often involve exclusivity clauses, aimed at ensuring that brand's cars are displayed independently from those of the competitors. Therefore, even when a dealership has multiple brand licence contracts, the exhibition areas are separated in proper different stores to observe the exclusivity requirements, and this explains why almost all distribution channels are considered mono-brand stores.

In conclusion, it could be said that the model that better provides strategic SC guidelines is the one created by Caniato et al. (2011) for luxury companies. Indeed, it is able to grasp some key contingencies that are common to most of the segments of luxury world, while the majority of the models for the mass market often miss relevant variables. Specifically, the practices reported in this chapter are extracted from interviews with Ferrari and Lamborghini, which are commonly believed as market leaders, and thus they could be considered as best practices that other players should follow to succeed. Nevertheless, the effectiveness of those manufacturers needs to be tested and analysed to guarantee that their SC management activities lead to successful results.

## Assessing the financial performance of luxury car companies

In the following section are going to be evaluated the financial performance of luxury car manufacturers leveraging on the set of indicators previously presented: sales growth, gross margin, operating profit, financial risk, cash flows and price to earnings ratio.

Foremost, it is created an overview of the market based on average turnover of each firm. The scenario highlights that luxury car manufactures represent a niche market and are not able to compete with bigger groups such as BMW and Daimler.

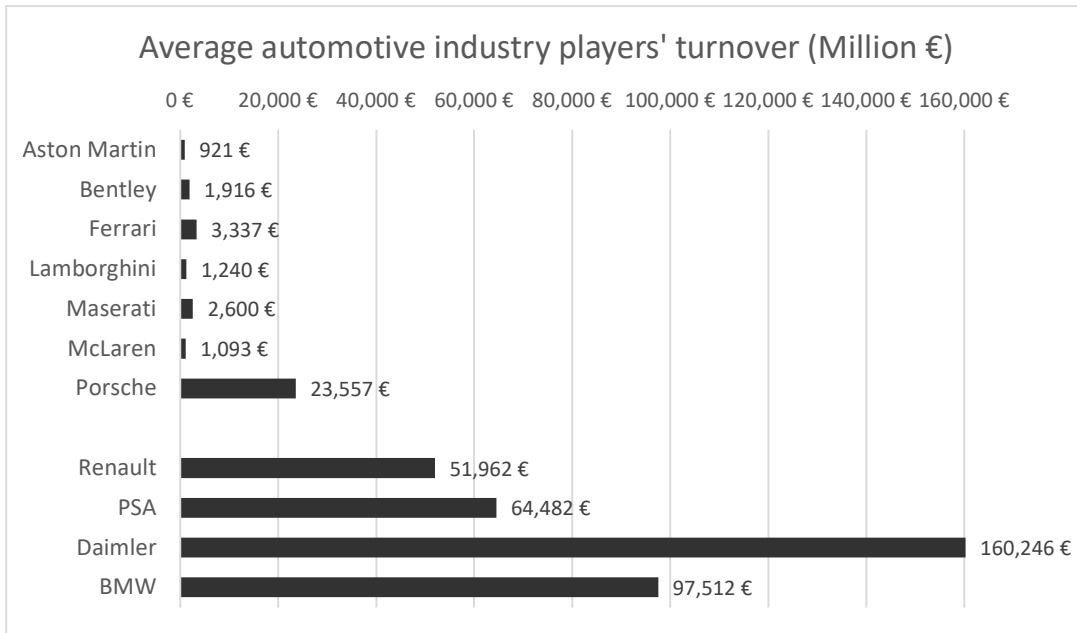


Figure 40 - Average firm sales in million euros (2015 - 2020)

Beginning with indicator sales growth rate, luxury automotive players reported over from 2016 to 2019 an average of +12.5%. That is a remarkable result when compared to the performance by premium (+3.5%) and mass market manufacturers (+7.0%). However, going deeper in the analysis, it is possible to see how luxury companies are instable in their results presenting both positive and negative peaks.

Thus, it can be concluded that there are signs underlining the potential of luxury automotive sector in terms of sales growth when compared to the non-luxury players. However, such indicator is affected heavily by the solidity of the brands.

Company	2016	2017	2018	2019	2020
Aston Martin	16.32%	48.21%	25.17%	-9.05%	-38.65%
Bentley	4.91%	-9.26%	-16.01%	35.08%	-2.01%
Ferrari	8.78%	10.04%	0.10%	10.12%	-8.15%
Lamborghini	5.18%	9.38%	52.20%	27.46%	-11.05%
Maserati	44.30%	16.64%	-34.38%	-39.80%	-13.66%
McLaren	24.90%	34.75%	44.22%	18.24%	-48.06%
Porsche	3.65%	-2.89%	9.20%	10.11%	0.10%
Renault	13.05%	14.69%	-2.30%	-3.28%	-21.72%
PSA	-1.45%	20.80%	13.72%	0.95%	-
Daimler	2.54%	7.22%	1.85%	3.22%	-10.67%
BMW	2.16%	4.79%	-1.85%	7.59%	-5.01%

Table 10 - Company growth rate (2016 – 2020)

For example, Aston Martin and McLaren have been firstly in an expansion phase and then have considerably suffered due to the pandemic, generating misleading results. Indeed, one could argue that the best example of the potential of the luxury sector is represented by Ferrari, which has shown a more contained but constant growth in its yearly revenues. If such assumption would be accepted, the result obtained will be different as the average luxury growth rate would be around 7% which is in line with the achievements of the other segments of the same industry.

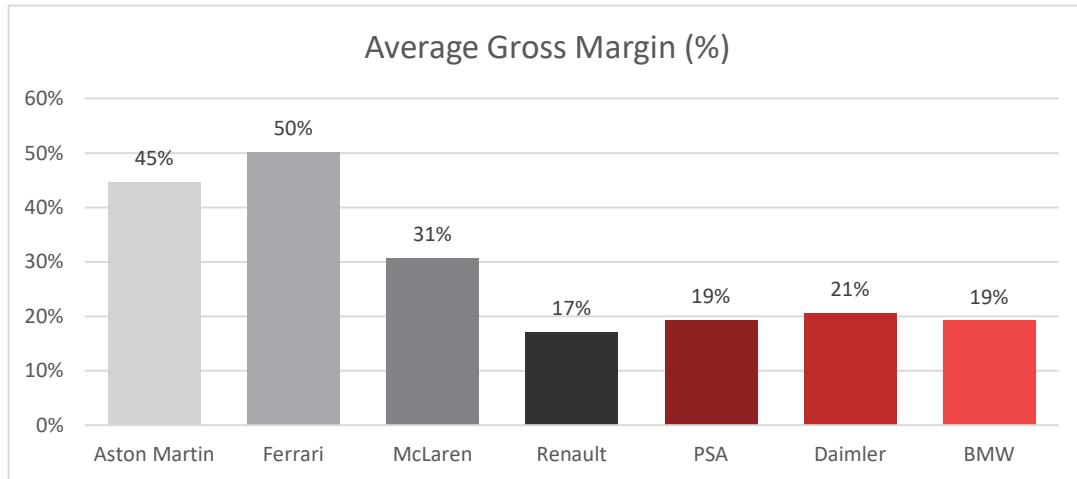


Figure 41 - Average gross margin (%) of automotive players (2016-2020)

Proceeding with the analysis, the successive step is the evaluation of average gross margin. As expected, substantial differences could be observed: luxury segment on average

achieves an impressive 42%, that is more than the double of the result obtained by premium cars manufacturers (20%) and common OEMs (18%). It is interesting to note how contained the difference between premium and mass-market oriented brands is, probably due to the inability by the premium ones to compensate the decrease in scale economies with a high enough mark up. Whereas, focusing on luxury players, Ferrari stands out for its impressive result, reaching the value of 50% Gross Margin. It is evident that the company of the prancing horse could be considered the leader of the market of companies considered and represents a case by itself that sets the standard for the entire sector.

The result is in line with the studies by Kapferer & Tabatoni (2011), even if in that scenario luxury companies Gross Margin was even higher. The motive relies in the different nature of the industries considered, being automotive a high-investment market contrary to the fashion one.

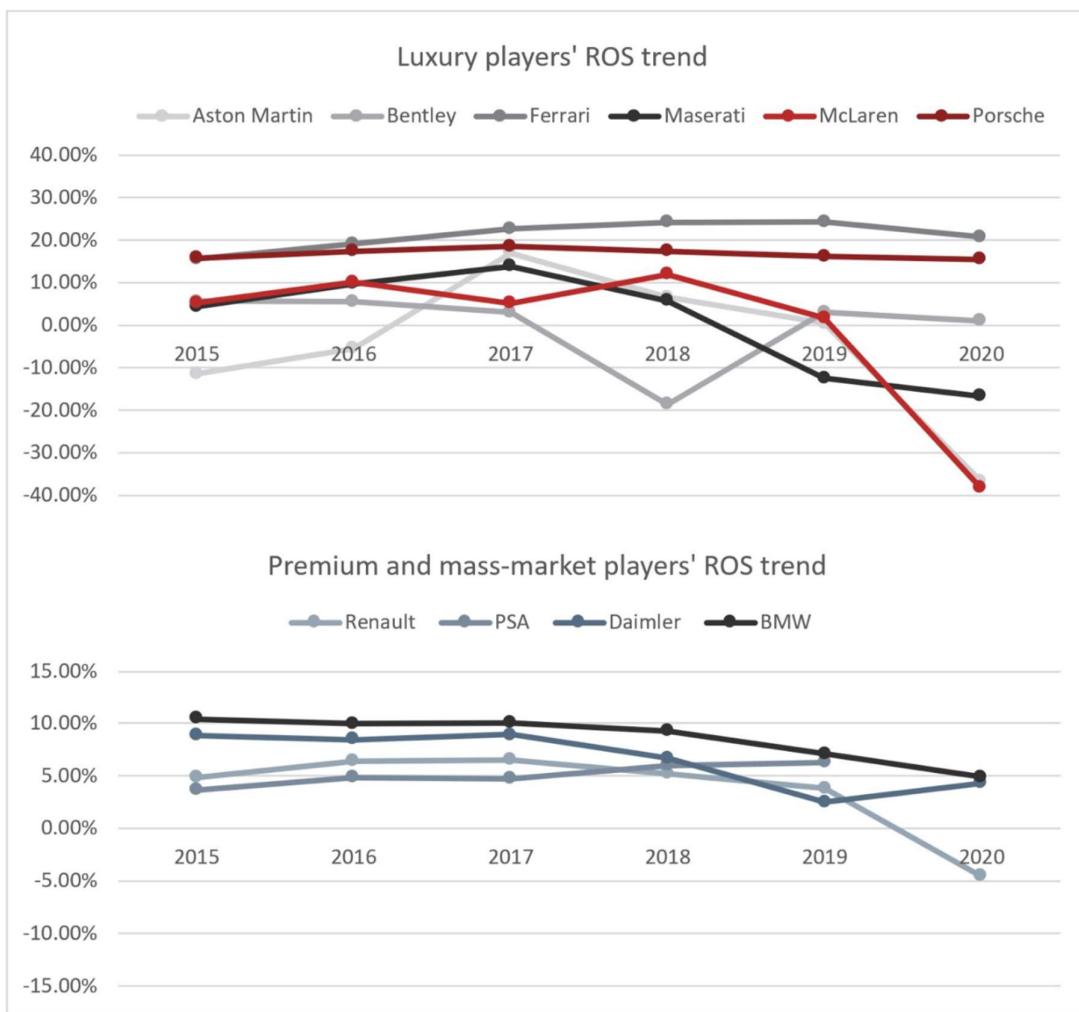


Figure 42 - Return On Sale trend (2015-2020)  
PSA group FY2020 data are not available due to the merger with Fiat Chrysler Automobiles to create Stellantis in 2021

The successive step concerns the operating profits, where is used the Return on Sale to evaluate the efficiency of firms. Luxury manufacturers do not perform differently than other companies, with the exception of rare cases, recording an average ROS of 5.5%, that is even lower than the achievements by premium (7.6%) and mass brands (4.5%).

Also, the study on personal luxury goods by Kapferer has found an equivalent picture, where only one company, Hermes, was able to stand out. The key to the success of the Parisian firm relies on the pure luxury strategy that has been following full control of the value chain, ownership of stores, no licenses, no delocalization of production, worship of the product, importance of hand-made and creativity, capitalization on heritage and history. A very similar strategy is being adopted by Ferrari and seems to pay off since it is widely recognized leader of luxury automotive for its ability to preserve the aura around the myth and being very strict in controlling the operations. Conversely, other firms such as Aston Martin and McLaren presents very unstable figures and a positive profitability in a limited number of years considered.

Summarizing, it appears that luxury companies are considered financial dreams just because they are able to charge clients above the average mark ups, even though such difference is not maintained when considering sales growth rate or return on sales. One could argue that these conclusions are misguided by the unstable results of some firms, while the true potential of the luxury automotive is represented by Ferrari's figures. However, assuming that every other manufacturer would be able to replicate Ferrari's actions and strategies, and without questioning the management's ability, it is reasonable to think that the success of the Italian brand is based also on intangible aspects that are difficult to reproduce.

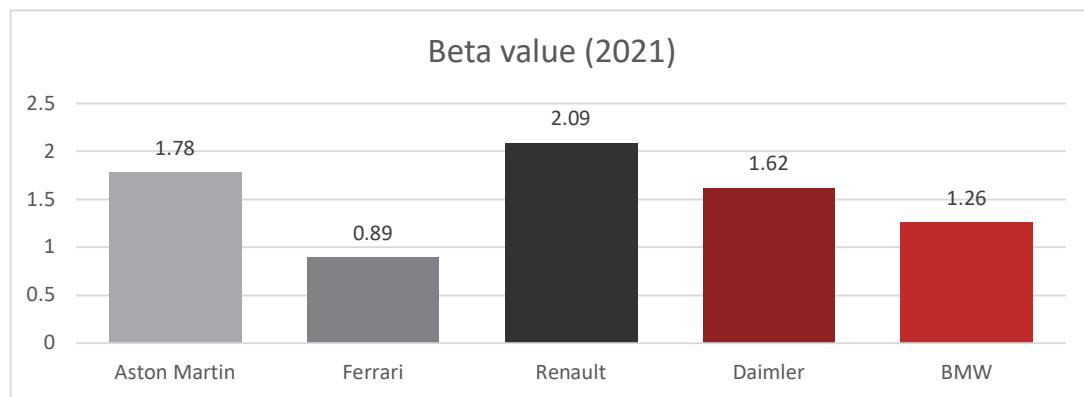


Figure 43 – Comparison of beta indicator in 2021

Regarding luxury automotive financial risk, beta index and financial leverage are measured. Luxury automakers have on average a lower volatility ( $\beta = 1.335$ ) compared to premium brands ( $\beta = 1.44$ ) or the Renault's one ( $\beta = 2.09$ ), still they appear riskier compared to the market having a coefficient above one. However, Ferrari has a  $\beta = 0.89$  which means that it is able to absorb better the sudden changes of the market, resulting in a more stable and secure stock.

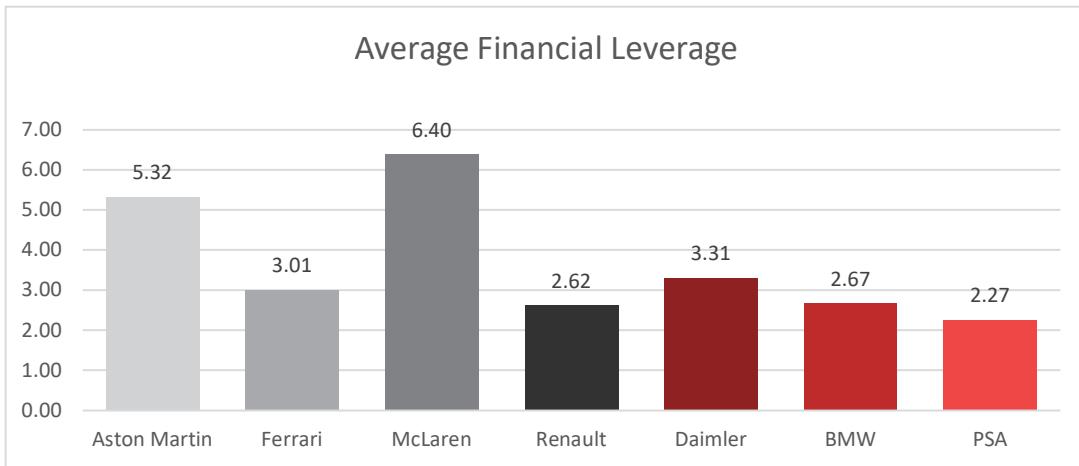


Figure 44 - Average Financial Leverage of each manufacturer

Proceeding with the risk analysis, it is important to remember that the automotive industry is a capital-intensive sector which requires large and frequent number of investments due to high levels of design and manufacturing complexity and intense competition. Therefore, the financial leverage results of the players analysed are all way above the value of two.

From the comparison it is possible to see how the luxury sector is adopting a riskier strategy with an average financial leverage of almost 5, much higher than the one of premium (3.00) and mass market brands (2.45). Thus, the results are in stark contrast with what was obtained by Kapferer. Luxury doesn't appear a stable and safe investment, even considering the peculiarity of the industry.

However, once again there is a huge difference in the figures of each luxury brands: on one side there is firm C which is constantly setting the standards for the industry and managing to run its business with contained financial risk, almost comparable to the one of bigger and stronger group such as BMW or Renault. On the other hand, there is McLaren with a financial leverage over the roof, which can be an alarming signal especially considering that in the last financial year the company was not able to register a profit and either a positive cash flow. Consequently, it doesn't seem fair to draw conclusions based on such

limited sample. Future research could analyse deeper the financial figures of the companies and should try to enlarge the sample in order to be able to draw more general conclusions.

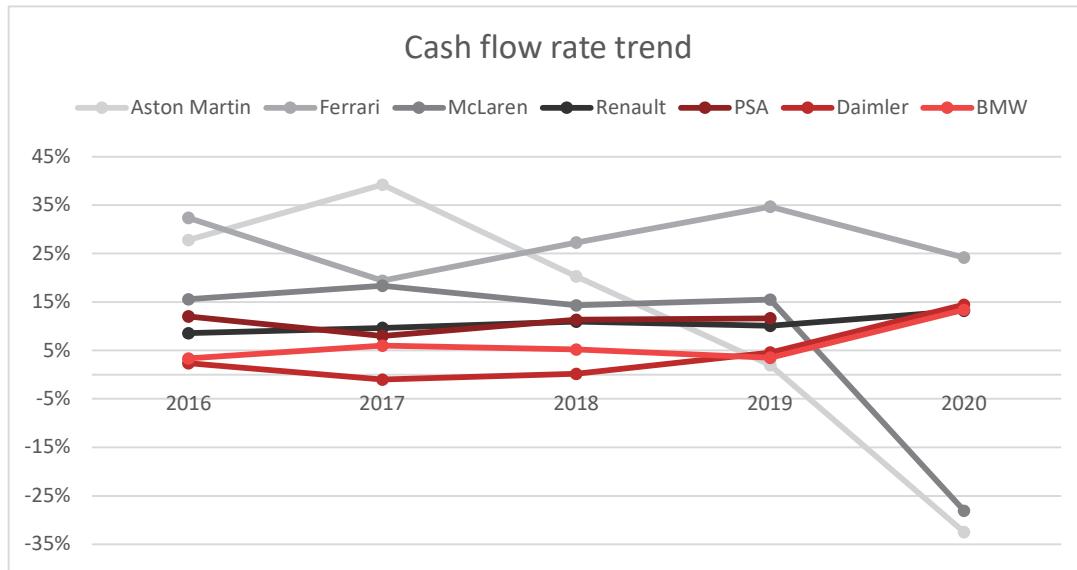


Figure 45 - Cash flow rate trend (2017- 2020)

The fourth object of analysis concerns the indicator Cash Flow from Operations. The study brings similar results to the ones already described: on average luxury companies behave similarly to less unique brands recording a not impressive 13% of cash flow rate. In addition, the same result was observed also by Kapferer & Tabatoni in their sample of luxury companies. As always, only Ferrari stands out with an average cash flow rate of 26% that is outstanding considering also that also this company had to deal with the pandemic outbreak and the semiconductor shortage.

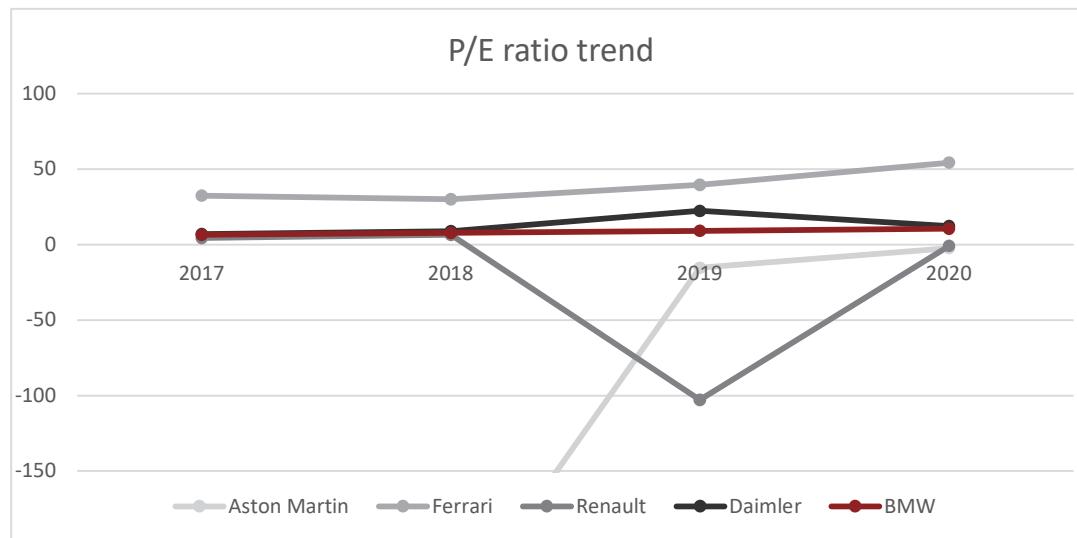


Figure 46 - P/E ratio trend (2017- 2020)

Lastly, the financial specificity of automotive luxury takes in consideration the valuation multiple P/E. In the comparison, the sample of luxury companies is reduced because firm F does not issue shares and no price data could be found. As shown by the figure luxury automotive seems to have a clear potential, with Ferrari able to score an average P/E of almost 40 which is an outstanding result if compared with the average of premium brands (10.55). On the other hand, Aston Martin's results have been affected by the negative loss registered in the three consecutive years, thus cannot be considered a reliable indicator. This is clear evidence of the interest that stable and financially strong luxury companies are able to create in the financial market.

In conclusion, luxury automotive companies do not appear as a financial dream when compared to premium and mass market ones. From the above analysis it results that companies entail above average gross margin and growth rate, although this last is affected by the financial fragility of the companies considered in the sample. Moreover, they show below par profitability (ROS), even if Ferrari can be seen as the real potential of the sector, being able to record an above average profitability.

However, luxury automotive industry has the potential to become attractive to investors, and similarly with what investigated on general luxury it seems that the results of the best-in-class company acts as a fuel for financial markets, which responds by acquiring and investing in luxury automotive companies.

One last result extracted from the financial analysis regards which player emerged as best-in-class of the market. Surely it is Ferrari, indeed it has outscored the entire industry in terms of gross margin, return on sales, cash flow rate while maintaining always a lower risk profile than others. Hence, even if the company has not followed precisely the marketing guidelines identified by the literature, it could be said that its action has been successful. Moreover, regarding the field of supply chain management, the activities and strategies performed by Ferrari could be considered as best practices emerged from a case study approach. Indeed, among the few interviews conducted with company representatives, the one with Ferrari's manager allowed to collect a wide variety of information that almost entirely matched the suggestions from the model by Caniato et al. (2011). Thus, the findings on SC models are furtherly verified and indicate best practices for luxury automotive companies in 2021's socio-economic scenario.

# CONCLUSIONS

The following chapter summarizes in three sections the results obtained through the research and provides insights on luxury automotive management. Specifically, the first section recalls the objectives outlined by the research questions and links them with key takeaways from the findings chapter. The second part focus entirely on the practical implications of such results for managerial and academic world. Lastly, the third section presents the limitations of the study and delineate the path for future research.

## Research highlights

Beginning by addressing RQ1, this thesis has been able to craft a new model where are presented the specific Critical Successful Factors for luxury cars, that are those characteristics essential for winning competition of other companies and represent also the differentiators from the mass market vehicles. The validity of the model has been tested on more than 340 real luxury car owners that confirmed the importance of the attributes included. Further analysis on the collected responses has allowed to identify five key factors that encapsulate the meaning of all the initial twenty variables. These are: technical aspects, social appeal, brand origin, uniqueness and innovation. Leveraging on these findings it has been possible to structure the model in a new layout based on two levels. On the first one there are only the five key factors and provide a macro perspective, while on the second level there is a group of CSFs connected to each factor, describing luxury car characteristics with an additional level of detail.

The successive step has been a further examination of the data to find the existence of different types of behaviours among luxury car owners. By performing a cluster analysis with a statistical software have emerged multiple groups of people with similar pattern in valuing the key factors. This means that an answer to RQ2 has been found; luxury car owners could be classified in 5 macro groups of people: Status symbols, Visionaries, Enthusiasts, Tailor made and Collectors.

Lastly, the final part of the thesis addresses RQ3 and take into examination companies' strategies. Indeed, from the literature review it was acknowledged that for luxury brands there are two main important fields where a correct management is crucial: marketing and

supply chain. For what regards the first subject it has been confronted if the guidelines elaborated by scholars specifically for luxury market are followed by the most successful companies. Specifically, the focus has been on brand positioning and differentiation, pricing and scarcity creation strategies, location of core manufacturers' activities. These were the most interesting aspects to consider because recent phenomena and trends in the luxury world might have changed high-end car companies' priorities. From a first general observation of the results appears that almost none of the suggestions is being actually followed by leader of the industry. Nevertheless, a detailed examination has allowed to discover that the main cause of such result is a strong influence on marketing strategies by practices for entry-level models. Indeed, in the latest years luxury car manufacturers have followed a process of "democratization" to capture new clients, and thus presented more affordable models within the range. These do not find a match with the practices suggested by literature studies because are managed similarly to premium and mass market vehicles: strong influence of competitors on positioning, higher production volumes and lower average price. Still high-end more exclusive models express the true brand values, and their marketing strategy encounters a good correspondence with scholarly writings.

On the other hand, supply chain management is described by researchers as something extremely important for luxury industry because it is what allows the product to be manufactured according to demanding requirements and deliver it to the final client through an excellent service level. Nevertheless, the majority of the models available in literature are crafted for mass market goods and thus it is not granted their validity also for luxury automotive sector. The research on the supply, manufacturing and distribution activities outlined that very few models actually maintain their effectiveness in the considered industry. Indeed, the concept of supply chain management relies on contingent variables that according to the context score different values and suggest appropriate practices. If the models consider variables not relevant for luxury market the outcome will provide wrong or simplistic suggestions. On the other hand, those models elaborated specifically for luxury industry find an almost exact match with practice and thus they still could be considered worthy nowadays together with the two mass market frameworks that have been verified.

## Managerial and academic implications

As a matter of fact, the results obtained from this study provide significant considerations to the academic world but also useful knowledge to be implemented in practical fields. Surely, being the topic of luxury automotive unexplored in the scholar panorama this thesis will possibly constitute a ground base for more specific researches on luxury automotive.

Considering the single elements provided, the CSFs model that has been created and validated constitutes an important contribution that provides a definition and supports the difficult job of classifying if a car is luxurious. Indeed, as outlined in the literature review, there is often confusion around the term luxury when is associated with cars because different people provide individual definitions including in this category multiple types of cars. Often premium cars are mistakenly incorporated in the family of luxury cars, thus by monitoring if the vehicle encompasses the CSFs it is possible to establish its nature. Moreover, the five key factors could be useful for a variety of applications, such as the one of clustering.

In regard to this, the classification created for luxury car customers presents an even higher number of implications. Indeed, from an academic perspective it is able to provide new knowledge to the panorama that leverages on solid behavioural theories such as snob effect, bandwagon effect and hedonistic behaviour. More significantly, such classification could be appreciated by company managers that could use it to identify the desired target of customers by looking what characteristics they value the most and consequently align brand strategy towards them.

Lastly, the literature models regarding strategies to implement in marketing and SC field have been analysed with the goal to validate or refuse their application to high-end cars. Those principles that have found a match with the actual practices performed by the sample of companies could be considered verified and thus that knowledge is available for managers, especially those of emerging luxury car brands. Conversely, part of the models deriving from mass market studies or created some years ago have not encountered any correspondence with the actual strategies and practices. Therefore, they should not be considered by company managers as guidelines because the validity is compromised, while need to be investigated and updated by academics. Concluding, those practices that have been discovered throughout interviews with Ferrari represent the best practices for luxury

automotive since also the financial assessment section highlighted that it resulted the most successful brand of the entire market.

## Limitations and further developments

In this last section are presented some final considerations on the findings for what regards possible limitations and suggestions for future directions of improvement.

It is possible to distinguish between limitations related to the methodology applied and the limits of the research in terms of subject studied. Regarding the first kind of limitations, despite the methodology implemented has been structured and organized, potential issues might emerge from the survey submitted to luxury car owners. Indeed, the distribution of the questions have been carefully monitored to assure that respondents were real owners, however this could not fully be granted because most of the answers has been collected with an online form shared with official owners' clubs, private Facebook groups and forums. Moreover, the value assigned by respondents to the questions are subjective and there is the risk that the scoring is influenced by temporary external factors. Nevertheless, basic statistical analysis has confirmed the goodness of the data collected and thus the chance of misleading results could be considered very limited.

In addition, the information used for the study of the managerial practices were manly gathered from interviews with company managers and documents available on manufacturers website. The validation of academic models relies in most of the cases on the testimonies of the brands, therefore there is no direct proof that those activities are actually pursued but the sources consulted have to be trusted. However, to solve completely the problem, future research could expand the above analysis on the supply chain management by also contacting the main suppliers and distributors of the brands. This would allow a better comprehension of the relationship between car manufacturers and their partners with all the direct consequences on the organization of production.

The last part of financial analysis has been successfully performed just on a limited number of companies due to the lack of information and financials data. This does not undermine the presented work that clearly indicated Ferrari as the best in class, however there might be also other manufacturers with a successful management that was not possible to examine.

Concerning the validity of the results obtained, especially for what regards the CSFs and the client classification, they are strictly limited to luxury automotive industry. Indeed, it has been underlined the great differences that exist with the management of mass market automotive industry or other luxury segments.

Finally, it is worth indicating possible line of development starting from the findings on this thesis. As presented in the “Model application and validation” section, there are some variables that have not been initially included and emerged only after the gathering of owners’ suggestions. These could be furtherly examined in future years to understand if their relevance has risen both from clients and customer perspective. Indeed, it could be worth it proceeding with a second validating attempt of the proposed CSF model, with a specific focus on a more precise definition of the variable “price” so that it can be accounted in the analysis.

Moreover, some initial data on the relationship between country of origin and consumer behaviour have been collected. Nevertheless, the geographical analysis did not lead to any relevant results, probably due to the restrained number of answers coming from different parts of the world. Therefore, another interesting field of study could be a detailed and comparative analysis on the perception of the CSFs identified with a significant sample of data obtained also from Asian and Middle East countries. Specifically, to gather more data, it is suggested to contact scholars of such countries which could be helpful to define the strategies and the channels to contact luxury car owners. Indeed, due to the constant high economic growth rate experienced by China and the neighbouring countries, studies on luxury perception and the alignment between companies’ strategies and Asian culture are arising, meaning that there is the possibility to contact the high-net-worth individuals.

Similarly, the analysis could also consider the differences in the importance attributed to the CSF due to sexual gender. Indeed, such sub area of research has been neglected in the present work due to the fact that the number of female’s responses were too low to be considered statistically relevant. However, it could be an interesting area of research, considering that the number of female millionaires is increasing very rapidly in the last years (Wealth X, 2019) and some brands have introduced new cars in their offering to attract this rising segment. An example is the strategy implemented by Lamborghini with their SUV “Urus”. In such analysis it will be important to account also for the cultural

differences of the different geographical areas considered, as they could influence the responses very much. As an example, in some countries of the Middle East women are still not free to drive a car, thus their answers could just describe their indirect experience of a luxury car, with a consequent impact on the value attributed to the different CSFs.

Additionally, the presented analysis could be furtherly expanded by also considering the smallest luxury manufacturers. Indeed, in the present work they were not considered due to the lack of available information. However, it could be worth to directly contact the manufacturers to compare their strategy and their operational organization with the ones of the brands already considered in the analysis. Examples of brands that could be introduced in the study are brands Bugatti, Dallara, Koenigsegg, Lotus and Pagani. Indeed, the limited number of vehicles produced by such manufacturers is expected to affect very much the strategies implemented in terms of both marketing and supply chain. Due to high level of rarity and the prohibitive price of such vehicles, it will be hard to find actual owners of the brands, thus a suggested research methodology is the case study interview.

Finally, being luxury cars part of durable goods category, it seems reasonable to extend the analysis also to the other durable products in the luxury sector. The research framework adopted for the present work could be the foundation also for the definition of what is luxury in motorbike, yacht and personal jets industry. Clearly, the CSFs to be considered and included have to be adapted to the specific context, however it is sensible to think that they will not differ too much from the ones already proposed for the automotive sector. Also, similar strategies are expected to be adopted in terms of supply chain management, where collaboration with partners and the management of personalization requests implies a high degree of complexity and long period for design.

In conclusion, the scope present thesis has been quite broad, but it reflected the necessity to deliver results covering multiple domains with the final aim of establishing a ground base knowledge in such under-investigated field. Each of the fields address by the research should be examined more thoroughly to obtain a complete understanding of luxury automotive world.

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## Annex

### Annex - Luxury car owners survey

Hereafter is reported the extract from the online survey distributed to luxury car owners

## Master Thesis Research on Luxury Cars - Club

Thank you for attending this brief questionnaire (3 min estimated time)

The aim of this survey is to understand in practice what characteristics luxury car owners value the most.

Your answers are not going to be disclosed publicly, will remain anonymous and analysed just as aggregated data

\* Obbligatoria

### Introduction

1. Country of residence \*

2. Brand of your luxury car/cars \*

3. Model of your car/cars (discretionary)

## Technical determinants

4. Rate the importance you gave to the following characteristics when buying your luxury car  
(1=not relevant at all; 7=extremely relevant) \*

	1	2	3	4	5	6	7
Performance	<input type="radio"/>						
Premium quality of materials and their perfect deployment	<input type="radio"/>						
High degree of craftsmanship	<input type="radio"/>						
Advanced technology and safety features	<input type="radio"/>						
Innovative production process	<input type="radio"/>						
Recognizable style and design	<input type="radio"/>						

## Exclusivity determinants

5. Rate the importance you gave to the following characteristics when buying your luxury car  
(1=not relevant at all; 7=extremely relevant) \*

	1	2	3	4	5	6	7
Price	<input type="radio"/>						
Rarity of materials used	<input type="radio"/>						
Personalization: creation of unique experiences by satisfying all requirements	<input type="radio"/>						
Collaboration with other luxury brands	<input type="radio"/>						
Limited edition models	<input type="radio"/>						

## Emotional determinants

6. Rate the importance you gave to the following characteristics when buying your luxury car  
(1=not relevant at all; 7=extremely relevant) \*

	1	2	3	4	5	6	7
Service level: exceptional attention in all the phases of customer journey	<input type="radio"/>						
Sense of belonging to brand's community	<input type="radio"/>						
Global brand reputation	<input type="radio"/>						
Embodyment of a lifestyle	<input type="radio"/>						
Recognizable style and design	<input type="radio"/>						
Country/Region of origin	<input type="radio"/>						
Heritage: reference on the market for decades	<input type="radio"/>						
Results achieve by the brand in competitions	<input type="radio"/>						
Nostalgia: memory of a happy moment in childhood related to a luxury car	<input type="radio"/>						
Passion for founder's history	<input type="radio"/>						

## Suggestions

7. Do you know other determinants of purchase that have not been taken into account

Questo contenuto non è stato creato né approvato da Microsoft. I dati che invii verranno recapitati al proprietario del modulo.

 Microsoft Forms

## Annex - Luxury brand manufacturers interview script

Hereafter are reported two scripts created for the interviews with company representatives. Specifically, they are separated in two parts: one that has been adopted for marketing managers while the other for supply chain managers.

### Marketing Interview

#### COMPANY INFORMATION

1. Company name
2. Interviewee name and role
3. Are there any categories in which your cars are distinguished?

#### DRIVERS OF PURCHASE

4. What are the main customers' drivers of purchase of your products? Please make a list
  - 4.1. Are they different according to the product categories? How are they distributed across them?
5. What positioning do you seek?
  - 5.1. How do you decide the price of your cars?
6. Here is a list of factors driving luxury cars purchase obtained from empirical evidence. Please rate them on a 1-10 scale according to their importance for your company.
  - Technical (performance, superior quality, craftsmanship, service level)
  - Social (reputation, lifestyle, community belonging, style and design, heritage)
  - Brand origin (country of origin, nostalgia, founder history, results in competitions)
  - Uniqueness (personalization, rarity of materials, limited editions, collaborations)
  - Innovation (advanced technology and safety, innovative production)
7. If relevant characteristics mentioned in 1 and 1.1 are not included in the previous question (n.2) rate them on a 1-10 scale

## CUSTOMER RELATIONSHIP MANAGEMENT & COMMUNICATION

8. What kind of experience do you want to create for your customers?
9. Do you agree that customers have to be dominated (in the sense that a distance must be preserved to keep the aura of the brand)? If yes, how do you do it? If no, why?
10. Do you make any distinction (in services or communication) among your clients? Why?
11. How do you manage online interactions?
  - High level of commitment: Brand & clients interact online; a communication team and economic resources have been allocated for this specific role
  - Medium level of commitment: brands & clients interact online but no specific team or resources have been created specifically for this task
  - Low commitment: brand posts on social media but doesn't interact
12. Do you have a structured/formalized approach for communication with customers?
13. How do you manage communication on innovation? How do you convey the innovation made by the brand?
14. How do you manage the trade-off between innovation & tradition?
15. There are some synergies among the group and the brand (if it is the case)?
16. How do you manage the trade-off between satisfying customers' wishes and maintain brand's DNA and authenticity?
  - Complete control: client can only choose among pre-defined features by the brand
  - Partial Control: client is given some freedom for personalization, but the majority of the specs are within a set of pre-defined list by the brand
  - Minimum Control: the brand seeks to satisfy whatever request from customers

# Supply Chain Interview script

## SUPPLY AND MANUFACTURING

1. What are the most important company core competences? (add other if not mentioned)

- Pre-sale
- Production and Engineering
- Technology
- Design and architecture
- Interiors
- Accessories
- After sale

2. Which are the activities done externally?

3. What is the percentage of outsourcing on final product cost? (if not possible state by other)

- X < 20%
- 20% < X < 0%
- 40% < X < 0%
- 60% < X < 0%
- X > 80%

4. What are the criteria for selecting suppliers? (add others if not mentioned)

- quality
- brand reputation
- cost
- lead time
- flexibility

5. What is the relationship with suppliers?

6. What is the degree of information visibility along the supply chain?

- Complete:
- Medium:
- Limited:
- None:

7. Do you accept last-minute changes? When is the latest point changes are possible?

8. Are there some practices implemented to pursue 1.1 drivers of purchase?

## DISTRIBUTION

1. Distribution model adopted
2. Typology of contract with dealers
3. List the criteria used for selecting the dealers
4. Is there a bonus scheme for rewarding the Point-of-Sale performances? If yes how is it designed?
5. How much information sharing there is with and among the dealers?
  - Complete: there is a shared CRM with the info of all customers worldwide and each dealer has access to it. Continuous exchange of best practices among dealers and brand manages an internal platform to manage the communication among all dealers
  - Medium: dealers have access only to the info of customers belonging to their geographical area but not to the others. No continuous exchange of best practices but just some general guidelines from the brand. No internal platform for communication among dealers
  - Limited: there is sharing of common practices among different dealers, promoted by the brand but dealers can't have access to the info of all customers worldwide.
  - None: no info access for the dealers, no general guidelines from the brand and no internal communication
6. How much control does the brand have on customers' info?
  - Complete: the brand knows everything about each car, customers, component mounted, revision done, problems, mileage, driving activities attended etc etc
  - Medium: the brand has the details of all cars sold and of their customers but don't have recording of aftermarket changes
  - Low: the brand has just the detail acquired at the selling of the car
7. Where do you collect the customers' info?
8. Average Lead Time experienced by customer (distinguish according to personalization)