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The Evolution and Regulatory Barriers of Chinese Automotive Brands in International Trade

The Role of Quality Function Deployment and House of Quality in
Strategic Decision-Making and the Case Study of LeapMotor

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Abstract

The expansion of Chinese automotive brands has become a prominent force in the global automotive market, with companies striving to establish their presence in diverse international regions. This thesis provides a detailed analysis of the evolution of these brands, with a particular focus on LeapMotor, a rising player in the industry. Drawing from my internship experience at Stellantis Europe SpA, specifically in the Middle East and Africa (MEA) region, this research is enriched by practical insights into the strategies and challenges Chinese automakers face when entering international markets.

The study explores the historical growth of Chinese automotive companies and the external factors, such as government policies, technological advancements, and economic shifts, that have enabled their success. In addition, it addresses the regulatory hurdles that these brands encounter, including compliance with global trade laws, safety protocols, and environmental standards. My experience working within Stellantis for the MEA region serves as a valuable resource in understanding the dynamics of market entry and brand expansion.

A detailed case study on LeapMotor forms the core of this thesis, examining its strategic approach, technological innovations, and quality management. Using the House of Quality (HoQ) framework, the study evaluates the alignment between consumer expectations and the Chinese brands' product offerings, assessing the feasibility of their vehicles in the global marketplace. The findings highlight both the opportunities and obstacles that may be faced by LeapMotor as it seeks to expand its international footprint, offering broader insights into the future trajectory of Chinese automakers.

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Chapter 1

Introduction to topics and internship activities

During my last semester of Master's degree in Management Engineering I had the opportunity to participate in an activity of stage in the international company of Stellantis Europe S.p.A. where for 6 months I witnessed and collaborated in the activities of product planning for the region of Middle East and Africa. My internship was centered around learning about the dynamic and rapidly evolving automotive industry, effective product planning skills which are crucial for maintaining competitiveness and meeting the ever-changing demands of the market; during this time I was exposed to a variety of strategic and operational processes that underpin the successful development and launch of new vehicles that undergo a number of phases to ensure a final level of quality standard. This thesis aims to provide an overview of my internship experience at Stellantis plus an in-depth analysis of the Chinese automotive market ecosystem with the case study analysis of the LeapMotor brand.

1.1 Introduction to the thesis

The automotive industry is undergoing significant transformation, with Chinese automotive brands emerging as influential players on the global stage. This thesis aims to explore the quality perceptions of Chinese automotive brands, focusing on their competitive positioning, particularly in the Middle East and Africa region where I was assigned. The study will dive into various aspects of quality from both consumer and corporate perspectives, using the Leapmotor brand as a detailed case study to illustrate these dynamics. In the last 10 to 15 years, the global automotive market

has seen a strong influx of Chinese manufacturers, challenging traditional Western and Japanese dominance. With increasing technological capabilities, competitive pricing, and strategic market entries, Chinese brands have conquered markets worldwide, including the MEA region.

The significance of this thesis lies in understanding how these brands, which were once considered inferior in quality, are now perceived on the same level of the traditional European and Japanese ones, especially in emerging markets where they are gaining faster traction. The paper is structured to provide a comprehensive analysis of this phenomenon. It begins with an overview of Chinese automotive brands, examining their evolution, strategies, and the factors contributing to their growing influence (Chapter 2). Following this, the application of the Quality Function Deployment (QFD) tool will be explored (Chapter 3), which is instrumental in understanding how quality is perceived and managed by these brands. The focus will then shift to Leapmotor, a prominent Chinese automotive brand, to conduct a detailed case study (Chapter 4). The final chapter (Chapter 5) will summarize the findings, draw conclusions, and provide recommendations based on the analysis.

The internship experience at Stellantis S.p.A., particularly within the product planning function in the MEA region, serves as the practical foundation for this research. The exposure to real-world market dynamics, strategic decision-making, and competitive analysis has provided valuable insights that enrich the thesis and by integrating these experiences, the research not only contributes to academic knowledge but also offers practical perspectives on the challenges and opportunities faced by Chinese automotive brands in international markets.

1.2 Overview of Stellantis and the Product Planning Function: role and responsibilities

Stellantis, formed through the merger of Fiat Chrysler Automobiles (FCA) and PSA Group in 2021, is one of the world's leading automotive manufacturers, with a strong presence across various global markets, including the Middle East and Africa (MEA) region. The company's diverse brand portfolio, with more than 10 different makes and 400.000 employees worldwide, positions it as a significant player in the global automotive landscape.

Within Stellantis, the product planning function plays a crucial role in shaping

1.2. OVERVIEW OF STELLANTIS AND THE PRODUCT PLANNING FUNCTION: ROLE AND RESPONSIBILITIES

the company's strategic direction, ensuring that vehicle models align with market demands and consumer preferences. The role of the product planner involves a diversified approach that encompasses market analysis, competitive benchmarking, product strategy development, and lifecycle management. The function is responsible for identifying emerging trends, assessing consumer needs, and defining product attributes that will resonate in specific markets. In the context of the MEA region, this role is particularly challenging due to the diverse consumer base, varying economic and political conditions, and the presence of strong local and international competitors, including the increasingly influential Chinese automotive brands. During the internship at Stellantis, the focus was on supporting the product planning team in the MEA region, the stage provided hands-on experience in market analysis, where tasks included gathering and interpreting data on consumer preferences, competitive products, and market trends.

This data-driven approach is critical for Stellantis to develop vehicles that meet the specific demands of the MEA market while also anticipating future trends that could impact product success. Additionally, the internship involved contributing to the development of product strategies aimed at enhancing Stellantis' competitiveness in the MEA region. This included participating in cross-functional meetings where insights from brand, engineering, pricing, and finance were integrated into cohesive product plans; the role also required close collaboration with teams responsible for vehicle launch planning and lifecycle management.

The experience gained through this internship was instrumental in understanding the complexities of the automotive industry, particularly in relation to product planning and market strategy. It provided a practical foundation for the thesis, offering insights into how a major global automaker like Stellantis approaches product development in a competitive and rapidly evolving market. These insights are directly applicable to the study of Chinese automotive brands in the MEA region, providing a comparative backdrop for analyzing how these emerging competitors are positioning themselves against established players like Stellantis.

1.3 Contextualizing Chinese Automotive Brands in the Middle East and Africa Region

The Middle East and Africa (MEA) region has become an increasingly important market for global automotive manufacturers, and Chinese automotive brands have been particularly active in expanding their presence in this region. This section of the thesis, later expanded in chapter 2, aims to provide a comprehensive overview of the MEA automotive market, with a specific focus on the factors that have facilitated the rise of Chinese brands within this diverse and dynamic landscape. Understanding the context in which these brands operate is essential for analyzing their strategies, market positioning, and the quality perceptions they face.

The MEA region is characterized by its vast geographical diversity, encompassing both rapidly developing economies and more mature markets. This diversity is reflected in the varied consumer preferences and economic conditions across the region. In certain areas, there is strong demand for affordable, entry-level vehicles, while in others, there is a preference for more luxurious, feature-rich models. Chinese automotive brands have efficiently positioned themselves to cater to this wide range of consumer needs by offering vehicles that are competitively priced while also incorporating modern features and technologies.

One of the key drivers behind the success of Chinese brands in the MEA region is their ability to deliver value for money; most consumers are highly price-sensitive, and Chinese manufacturers have capitalized on this by offering vehicles that are not only affordable but also equipped with features that were previously only available in more expensive brands. This combination of affordability and advanced features has allowed Chinese brands to quickly gain traction among MEA consumers, particularly in markets where purchasing power is limited. Additionally, the strategic approach of Chinese automakers in entering the MEA market has been a crucial factor in their growth. Many Chinese brands have established joint ventures and partnerships with local companies, enabling them to better navigate the regulatory environments and cultural differences of these markets. These partnerships have also facilitated the localization of production, which helps in avoiding trade barriers and improving the overall competitiveness of Chinese vehicles in several countries. Moreover, local production often enhances the perception of quality and reliability among consumers, further boosting the appeal of Chinese brands.

The rapid expansion of Chinese automotive brands in the MEA region is not without its challenges. Historically, Chinese products have been associated with lower quality, and this perception persists in most markets. Overcoming these negative perceptions has required Chinese manufacturers to focus heavily on improving product quality, investing in after-sales service, and building stronger brand identities. Furthermore, this section will discuss the broader economic and geopolitical factors that have influenced the rise of Chinese automotive brands in the MEA region thereby creating a more favorable environment for Chinese businesses.

In summary, chapter 2 will later provide a detailed contextualization of the MEA automotive market and the growing influence of Chinese brands within it. It will highlight the strategic initiatives, market dynamics, and challenges that have shaped the current landscape, setting the stage for a deeper analysis of the quality perceptions of Chinese automotive brands, which will be explored in subsequent chapters. This contextual understanding is crucial for evaluating the success of Chinese brands in the region, particularly in relation to their ability to compete with established global automakers and to meet the quality expectations of MEA consumers.

1.4 Methodology: Application of QFD and Construction of the House of Quality

This section delves into the methodology employed in the thesis to analyze the quality aspect of the matter, focusing on the use of Quality Function Deployment (QFD) and the construction of the House of Quality (HoQ) as tools to translate the requirements of the Middle East and Africa (MEA) markets into technical specifications for Chinese automotive models.

The QFD methodology serves as a structured approach to ensure that the vehicles produced by Chinese brands, such as Leapmotor, align with the specific needs and preferences of consumers also of the MEA region, while also assessing the technical feasibility of implementing these requirements. Quality Function Deployment is a customer-driven planning process used in product development to transform customer demands into technical specifications. It systematically identifies customer needs (the "WHATs") and correlates them with the design characteristics (the "HOWs") that will fulfill those needs. This methodology is particularly valuable for automotive companies looking to enter or expand in international markets, where

understanding and meeting local consumer expectations is crucial for success.

In this thesis, QFD will be applied to bridge the gap between the perceived quality expectations of consumers and the technical capabilities of Chinese automotive brands. By employing QFD, the research aims to ensure that the vehicles developed not only meet market demands and are technically feasible but also align with the strategic objectives of the Chinese automakers, thereby enhancing their competitiveness. The House of Quality is a key component of the QFD process, serving as a visual matrix that maps customer requirements against technical features. In this thesis, the HoQ will be constructed to decode and translate the market requirements into specific design and engineering parameters for Chinese automotive models. The construction of the HoQ involves several steps:

1. **Identification of Customer Requirements:** The process begins with gathering detailed data on the preferences and needs of consumers. This includes factors such as reliability, which in this particular case is also assessed with specific car tests in extra hot countries where products suffer the biggest stress; from customers' requirements like safety, fuel efficiency, design aesthetics, and after-sales service, to mandatory and forbidden items dictated by local regulations. The research will draw from surveys, interviews, and market studies to compile a comprehensive list of these CRs.
2. **Technical Feasibility Assessment:** Once customer requirements are identified, the next step involves translating these into technical specifications that Chinese automakers can implement. This step assesses the feasibility of meeting the identified needs using the current technological capabilities and manufacturing processes available to Chinese brands. The HoQ will help visualize how well the existing technologies align with market demands and where potential gaps or challenges lie.
3. **Correlation Analysis:** The heart of the HoQ lies in its ability to correlate customer requirements with specific technical features. Each requirement is analyzed in relation to its corresponding technical specification, allowing the thesis to identify which areas of vehicle design and production need to be prioritized or adjusted to meet the expectations. This analysis will highlight the strengths and weaknesses of Chinese automotive models.
4. **Competitive Benchmarking:** To further refine the HoQ, the research will in-

clude a benchmarking analysis, comparing the technical specifications of Chinese vehicles with those of competitors in the same market segment. This will help to identify areas where Chinese brands excel and where improvements are needed to compete more effectively.

5. Finalization and Recommendations: The completed HoQ will provide a clear framework for understanding the alignment (or misalignment) between market demands and technical feasibility.

The use of QFD and the construction of the HoQ in chapter 3 are central to this thesis because they provide a rigorous and systematic approach to analyzing the quality perceptions of Chinese automotive brands. By directly linking consumer needs with technical capabilities, this methodology not only assesses the current state of Chinese vehicles in the market but also offers a roadmap for future product development and improvement.

The findings from this methodology will be critical in the Leapmotor case study and will inform the strategic recommendations presented in the final chapters of the thesis. In summary, this section outlines the methodological approach that underpins the research, emphasizing the importance of QFD and the HoQ in translating market requirements into actionable technical specifications. This approach ensures that the thesis provides both a detailed analysis of quality perceptions and practical guidance for Chinese automotive brands seeking to succeed in the MEA region.

1.5 Introduction to Leapmotor: A Case Study Focus

Leapmotor, one of the emerging players in the Chinese automotive industry, has quickly gathered attention for its innovative approach to electric vehicles (EVs) and its ambition to expand into global markets, including the Middle East and Africa region. This section introduces Leapmotor as the central case study of the thesis, providing an overview of the brand's history, market positioning, and strategic objectives.

By focusing on Leapmotor, this thesis aims to explore how a relatively new Chinese automotive brand navigates the challenges of international expansion, particularly in a region that presents both significant opportunities and unique hurdles.

Founded in 2015, Leapmotor is part of the new wave of Chinese automotive startups that specialize in electric vehicles, reflecting China's broader push towards sustainable and high-tech industries. Unlike many of its older Chinese counterparts, which initially focused on internal combustion engine (ICE) vehicles, Leapmotor was established with a clear focus on EVs from the start. This positioning has allowed the company to align itself with global trends toward electrification and environmental sustainability, making it a strong contender in the rapidly growing global EV market.

LeapMotor, in order to explore international markets and expand globally, signed in October 2023 a partnership with Stellantis where the latter invested 1,5 billion euro; the partnership aims to further increase Leapmotor sales in China, the world's largest market, while leveraging Stellantis' established international commercial presence to significantly accelerate Leapmotor brand sales in other regions, starting with Europe. Later, in May 2024 a new joint venture named LeapMotor International was ready to operate, the agreement included the exclusive rights to export and sell, as well as manufacture, Leapmotor products outside of "Greater China." From September 2024, sales started first in Europe, using Stellantis distribution channels and with the support of dedicated Managing Directors. The points of sale will be 200 by the end of the year, including Stellantis & You, and will reach 500 by 2026, to ensure a high level of customer service. By the end of 2024, LeapMotor's commercial operations will also be extended to the Middle East & Africa, India & Asia Pacific and finally South America.

The brand distinguishes itself with a strong emphasis on innovation, integrating features such as advanced driver assistance systems (ADAS) for autonomous driving, smart connectivity, and in-car entertainment systems. These attributes are designed to resonate particularly well with tech-savvy consumers who value modern conveniences and cutting-edge technology in their vehicles, like for example Tesla and BYD drivers. The decision to expand into the MEA region is a strategic move for Leapmotor, given the region's growing interest in sustainable transportation solutions and its increasingly favorable regulatory environment for electric vehicles. Several MEA countries, like for example Turkey, Jordan, Israel and Saudi Arabia, have announced ambitious plans to reduce carbon emissions and promote the adoption of EVs, creating a potential growth market for Leapmotor. However, entering the MEA market also presents significant challenges for Leapmotor. The region is highly competitive, with established global brands already having a strong foothold.

Furthermore, the perception of Chinese brands, while improving, still faces skepticism regarding quality and reliability. Leapmotor will need to navigate these perceptions carefully while benefiting from STLA support on the practical challenges of establishing a distribution network, providing reliable after-sales service, and ensuring that its vehicles are adapted to the specific needs and preferences of MEA consumers.

This section, elaborated in chapter, 4 will delve into LeapMotor's entry strategy into the MEA market, examining how the company plans to differentiate itself from both its Chinese counterparts and established international competitors. It will explore the brand's marketing approach, including how it positions its vehicles in terms of pricing, features, and brand identity. Additionally, it will discuss the challenges Leapmotor faces, such as building brand recognition, overcoming quality perception barriers, and establishing a robust support infrastructure in a new and diverse market. By focusing on Leapmotor, this thesis aims to provide a detailed case study that not only illustrates the broader themes of Chinese automotive brand expansion but also offers specific insights into how a new entrant can compete in a complex and evolving market like MEA. The analysis of LeapMotor's strategies, challenges, and opportunities will contribute to a deeper understanding of the competitive dynamics in the region's automotive market and the evolving role of Chinese brands in the global automotive industry. Leapmotor can be seen as a focal point for examining the intersection of innovation, market strategy, and quality perception in the context of Chinese automotive brands' expansion into the MEA region. This case study will serve as a critical component of the thesis, providing real-world insights into the challenges and opportunities faced by Chinese automakers in their quest to become global leaders.

Chapter 2

Chinese brands overview

This chapter provides a comprehensive examination of the rise, development, and current standing of Chinese automotive brands in the global market, with a focus on their quality, technology, and strategic approaches. The chapter will set the foundation for understanding how these brands are perceived, especially in the context of the Middle East and Africa (MEA) region, and prepare the ground for more focused analysis in later chapters.

2.1 Overview of the Chinese Automotive Brand Landscape

As of 2024, the Chinese automotive market is the largest and most rapidly growing in the world, characterized by a diverse array of brands and a dynamic mix of established players, new entrants, and a strong focus on electric vehicles (EVs). Internal Stellantis forecasts from July 2024 report that just in 2023 the domestic market of China counted 22 million cars sold, while exports reached a record high of 2.1 million units. The market's complexity is reflected in its structure, which includes a wide range of companies, from state-owned enterprises (SOEs) to private firms and innovative startups. Some estimates suggest that there are over 100 distinct Chinese automotive brands when considering all types of vehicles, including passenger cars, commercial vehicles, and EVs. Chinese automotive brands can be categorized into several key groups:

- **Major State-Owned Brands:** Companies like Dongfeng Motor and Changan Automobile are some of the largest and most established SOEs. These brands

benefit from significant government backing, extensive manufacturing capabilities, and a long history in the domestic market. Their operations often extend into international markets, facilitated by China's diplomatic and economic influence;

- **Private Brands:** Companies like Geely, BYD, Great Wall Motors have gained prominence both domestically and internationally. These companies have been at the forefront of China's automotive innovation, particularly in the development of electric and hybrid vehicles. Their success is often attributed to their agility, strong focus on research and development, and strategic global expansions, including acquisitions of foreign automotive assets;
- **Electric Vehicles Startups:** The rapid growth of electric vehicles (EVs) in China has fostered the rise of numerous EV-focused startups. Companies like LeapMotor and Li Auto are leading this wave, capitalizing on China's supportive policies for new energy vehicles (NEVs) and the increasing demand for environmentally friendly transportation options. These startups are increasingly seen as the vanguard of China's automotive future, often pushing the boundaries of conventional technology and design;
- **Joint Ventures:** Many international automakers have JVs with Chinese companies like for example Wuling, a brand co-developed by Saic and GM. The aim is to benefit from local expertise and market access while also blending Western designers with Chinese engineering;
- **Niche and Local Brands:** There are also a number of smaller regional or niche brands that cater to specific market segments or geographic areas.

Given the fluid nature of the market, with frequent mergers, acquisitions, and new startups, the exact number can fluctuate, but it is safe to say that there are well over 100 distinct automotive brands in China.

2.2 Historical Development of the Chinese Automotive Industry

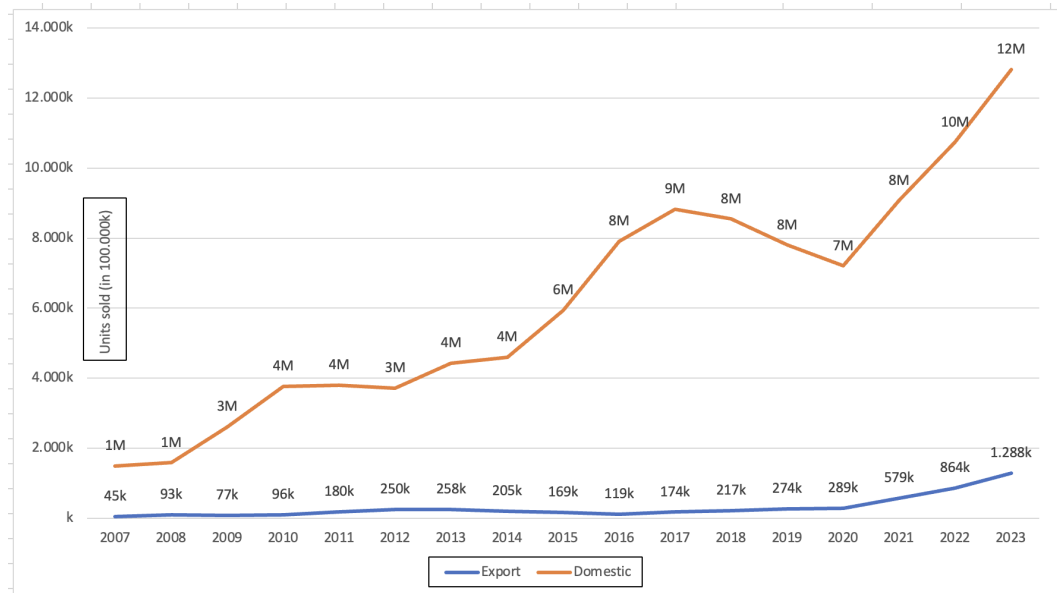
The evolution of the Chinese automotive industry is traced, highlighting its progression from its inception to its current status as a major global player. This historical overview will serve as the foundation for understanding the strategic and technological advancements that have shaped the industry's present dynamics.

- **Foundational Period and State-Led Industrialization:** The narrative begins in the mid-20th century, a period characterized by the establishment of the Chinese automotive industry under stringent State control. During this era, the industry was predominantly focused on the production of basic, utilitarian vehicles, primarily serving governmental and military needs. The development of key state-owned enterprises (SOEs), such as First Automobile Works (FAW) and Dongfeng Motor Corporation, is crucial to this early phase. These entities played a foundational role in establishing China's automotive production capabilities. It is also worth to mention that for private citizens the ownership of a vehicle was virtually not allowed at this stage.
- **The Reform Era and the Introduction of Joint Ventures (1978-Present):** The period following China's economic reforms in the late 1970s, often referred to as the "Reform and Opening-Up" era, marks a significant turning point in the development of the Chinese automotive industry, with the re-introduction of private property. Often these reforms facilitated the introduction of joint ventures between Chinese SOEs, and international automotive giants like for example the JV between SAIC and Volkswagen formed back in 1984 or the former Nanjing-Fiat joint venture which terminated in 2006. Additionally, it is worth mentioning the gradual emergence of privately-owned automotive companies during this era, such as Geely and BYD, which began to challenge the dominance of traditional SOEs. Their rise reflects the diversification and growing competitiveness of the Chinese automotive market.
- **Shift Towards Innovation and Quality (2000s-Present):** The early 21st century marks a strategic shift in the Chinese automotive industry from a focus on producing volumes to an emphasis on quality and innovation. What really shifted is the role of government initiatives, particularly the "Made in China 2025"

2.2. HISTORICAL DEVELOPMENT OF THE CHINESE AUTOMOTIVE INDUSTRY

strategy, which aimed to enhance the technological sophistication and global competitiveness of Chinese manufacturing, including the automotive sector. Another effort made by Chinese automotive brands which is worth to mention is the never-ending willingness to enhance product quality, integrate advanced technologies, and expand their presence in international markets. The increasing investments in research and development (R&D) and the establishment of innovation centers both domestically and globally, will be highlighted as key drivers of this transformation. Special attention should be given to the Chinese government’s prioritization of electric vehicles (EVs) as a strategic industry, for this reason the government put in place policies such as subsidies for EV production and adoption, the development of EV infrastructure, which in return eased the rapid ascent of domestic EV manufacturers like NIO, Xpeng, and Leapmotor, which have positioned China as a leader in the global EV market.

- **Export Strategies and Global Market Penetration:** The final part of this historical outlook examines the export strategies of Chinese automotive brands and their penetration into global markets. Most brands underwent a shift from a domestically focused industry to one increasingly driven by international ambitions.



Chinese Brands’ Exports

The trends depicted in this graph, which was provided by Stellantis internal analysts, highlight two distinct phenomena. First, the rapid growth of do-

mestic automotive brands' sales in Mainland China, which experienced only a brief decline during the 2020 pandemic, followed by a substantial recovery that led to a record high of 12 million cars sold in 2023. Secondly, the graph illustrates the export trend of Chinese-branded cars (vehicles exported from China by foreign carmakers are excluded), which initially saw modest growth each year. However, starting around the onset of the COVID-19 pandemic, the export market experienced a marked acceleration, reflecting a significant increase in global demand for Chinese vehicles; just in the period from 2020 to 2023, exports went from representing 4% of the total Chinese OEMs production to almost 10%.

Chinese automakers have adapted their products and strategies to meet the demands of various global markets, including emerging economies in Africa, the Middle East, and Latin America, as well as more established markets in Europe and North America; naturally this process didn't come without challenges, such as competition with established players, overcoming perceptions of low quality, and navigating different regulatory environments. The role of government support in facilitating exports, through policies like favorable financing terms, export subsidies, and diplomatic efforts to open foreign markets, was of course of main importance for the success of the export strategies.

2.3 Challenges, Opportunities and Competitive Environment for Chinese Brands in the MEA Region

This paragraph delves into the unique challenges, opportunities, and competitive dynamics that Chinese automotive brands encounter in the Middle East and Africa (MEA) region. As these brands expand their global footprint, the MEA region represents a critical and complex market, offering both significant growth potential and formidable obstacles.

2.3.1 Challenges in the MEA Region

- **Market Entry Barriers:** Chinese automotive brands face various entry barriers in the MEA region, including stringent regulatory requirements like for exam-

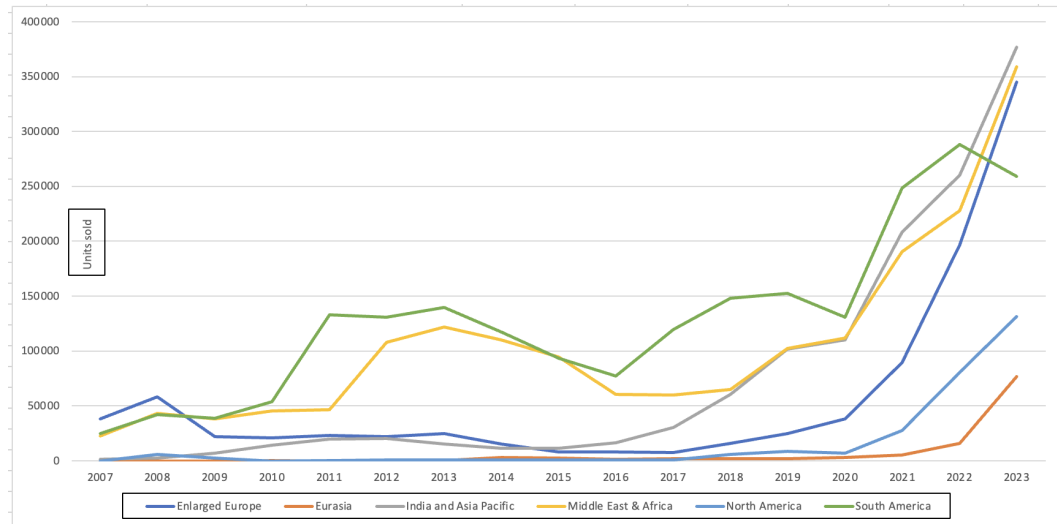
ple the need of specific SIM cards for Turkey or the mandatory Arabic label on the side mirrors in Saudi Arabia, but also complex import procedures, and varying standards across different countries. These regulatory challenges can impede market access and increase operational costs.

- **Perceptions of Quality:** One of the primary challenges for Chinese brands is overcoming the longstanding perception of Chinese products as being of lower quality compared to established Western, Japanese, and Korean brands.
- **Competition from Established Players:** The MEA automotive market is already populated by well-established global brands with strong customer loyalty and that are already implementing strategies to lower their costs. For example Japanese and Korean brands have increasingly turned to countries like Vietnam or Thailand where the labor costs can be anywhere from 10% to 15% lower than in China. These nations also offer favorable trade agreements and incentives on taxes. Chinese brands as a result must navigate this competitive landscape by differentiating themselves through pricing, innovation, and value-added services.
- **Economic and Political Instability:** The MEA region is characterized by economic volatility and political instability in certain areas, which can disrupt market conditions and pose risks to foreign companies. These factors create a challenging environment for sustained business operations and long-term investments. An example of this instability is the restriction that Egypt and Algeria have put on foreign currency exchange that reduced drastically the number of vehicles that can be imported each year.

2.3.2 Opportunities in the MEA Region

- **Growing Demand for Affordable Vehicles:** The MEA region has a high demand for affordable vehicles, particularly in emerging economies where price sensitivity is a key factor. Chinese brands, known for offering competitively priced vehicles with a good balance of features, are well-positioned to capitalize on this demand.

2.3. CHALLENGES, OPPORTUNITIES AND COMPETITIVE ENVIRONMENT FOR CHINESE BRANDS IN THE MEA REGION



Chinese Brands' Regions of Export

The graph, again derived by Stellantis internal data, shows that among the export regions served by Chinese automotive brands, the markets experiencing sustained high demand for a longer period are South America, the Middle East & Africa (MEA), and the India-Pacific region. Meanwhile, Enlarged Europe has seen a sharp rise in Chinese car sales only in recent years, reflecting a later expansion into that market. In contrast, Eurasia and North America, limited to Mexico since virtually none of the Chinese brands comply with US product regulations, have consistently lower demand compared to other regions. The sales volumes in these latter regions remain relatively modest, especially when considering their population sizes, indicating that Chinese brands have yet to fully penetrate these markets. Unlike Europe, the region of MEA has seen a steady increase in the population in recent years which contributes to the increase in demand from 1st time car buyers. The Population Reference Bureau has estimates that between 2001 and 2050 the population of the Middle East and North Africa (MENA) area will increase from 385 million to 719 million, with a fertility rate increase much higher than the European one which is already below the replacement level of 2.1 children per woman, leading towards an average aging population. First-time buyers, the bulk of the MEA growth, are typically not loyal to a specific brand which gives to the Chinese makers the incentive to invest in attractive marketing and publicity campaigns.

- Expansion of the Electric Vehicle (EV) Market: As global trends shift towards sustainability and environmental consciousness, there is a growing interest

in electric vehicles in the MEA region. Again the PRB, for example states that Turkey has issued an Energy Efficiency Law that encourages to adopt energy-saving technologies through grants and tax reductions. Another example stated in the PRB is the Project 2030 in which Saudi Arabia aims to diversify its economy away from oil which include a focus on EVs and clean energy. Chinese automakers, with their strong foothold in the EV market, have the opportunity to lead in this segment by introducing cost-effective and technologically advanced electric vehicles tailored to the region's needs.

- **Strategic Partnerships and Joint Ventures:** Opportunities for collaboration with local businesses and governments can facilitate market entry and expansion. Chinese brands can leverage joint ventures, strategic partnerships, and government incentives to establish a strong presence in the MEA region. Several Chinese joint ventures in Africa operate semi-knocked down (SKD) and completely knocked down (CKD) assembly plants as part of China's strategic push to expand its automotive and industrial footprint across the continent. The Citizen reports how a recent JV between the Chinese brand BAIC and the South African industrial Development Corporation (IDC) was formed; the JV, which contributed to the creation of 3000 job positions, focuses on assembling vehicles from CKD kits in a plant which has a capacity of 50000 cars a year.
- **Investment in Infrastructure Projects:** The involvement of Chinese companies in large-scale infrastructure projects across the MEA region, often backed by the Chinese government, presents opportunities for cross-sector synergies. Automotive brands can benefit from these projects by securing fleet contracts, enhancing brand visibility, and building relationships with key stakeholders.

2.3.3 Competitive Environment in the MEA Region

- **Market Segmentation and Positioning:** The competitive landscape in the MEA region is diverse, with different market segments displaying varying levels of brand loyalty and price sensitivity and Chinese brands are positioning themselves within these segments.
- **Local and Regional Competitors:** In addition to established global brands, Chinese automakers must contend with local and regional manufacturers that understand the market dynamics and consumer preferences more intimately.

2.3. CHALLENGES, OPPORTUNITIES AND COMPETITIVE ENVIRONMENT FOR CHINESE BRANDS IN THE MEA REGION

The ultimate goal is to have in place a clear and competitive strategy. Analyzing the data gathered from internal Stellantis estimates from July 2024, an evident example of how local preferences may differ in case of domestic products can be depicted by Turkey and South Africa: if we analyze the automotive volumes of the former, 85% of the cars sold were domestically manufactured leaving very little room for imported products, while for the latter only 39% of the cars were locally made.

- **Adapting to Local Preferences:** Success in the MEA market requires a deep understanding of local consumer preferences, including vehicle size, design, and features. Chinese brands are adapting their product offerings to meet these preferences, with a focus on popular vehicle types such as SUVs, which are highly favored in the region. Other examples of adaptation could be in the equipment of the product: each brand must understand which features are a must have for each country and what could be irrelevant or indispensable to each particular customer segment. Following this reasoning, the Chinese brand Geely has implemented for some of its models an optional pack titled "Middle East Climate Pack" which include specific tailored features for cars driven in extreme weather conditions; for example it includes enhanced air conditioning and engine cooling systems but also rust-resistant components and sand and dust protections from sand and dust.
- **Marketing and Branding Strategies:** The competitive environment also extends to the realm of marketing and branding. Chinese automotive brands are increasingly investing in local marketing campaigns, sponsorships, and brand-building activities to enhance their reputation and consumer appeal in the MEA region.

By examining these challenges, opportunities, and competitive dynamics, it is now clear which is the initial background from which Chinese brands start building their strategic landscape in the MEA region. It sets the stage for the subsequent analysis of specific market entry strategies and initiatives in the following sections of the chapter.

2.4 Strategic Initiatives and Strategies to enter the Market

As a region characterized by diverse markets, varied consumer preferences, and distinct regulatory environments, the MEA region requires Chinese automakers to adopt tailored strategies and initiatives to achieve success and expand. The following list will explore the different approaches these brands have taken to establish and grow their presence in the region:

2.4.1 Tailored Market Entry Strategies

- **Joint Ventures and Partnerships:** One of the primary strategies for entering the MEA market has been through joint ventures and strategic partnerships with local companies. These collaborations allow Chinese brands to leverage the local partner's market knowledge, distribution networks, and regulatory compliance experience.
- **Direct Investment and Establishing Local Production:** Some Chinese brands have pursued direct investment strategies, including establishing manufacturing plants and assembly facilities in other regions. This approach not only helps in reducing costs associated with tariffs and import duties but also enables quicker response times to market demands. An example of these investments can be the Chinese brand BYD that has announced that it is going to open a production plant facility in Turkey.
- **Export-Oriented Strategies:** For brands that are not yet ready to establish a physical presence in the MEA region, an export-oriented strategy has been a common approach. This involves exporting vehicles directly from China to MEA markets, often focusing on key markets with favorable trade conditions or lower entry barriers. Export strategies are being optimized nowadays through logistics improvements, competitive pricing, and targeted marketing campaigns.

2.4.2 Adapting Products to Local Markets

- **Customization of Vehicle Offerings:** Chinese automotive brands have increasingly recognized the importance of customizing their vehicles to meet the spe-

cific preferences and needs of MEA consumers. This includes adapting vehicle features such as climate control systems for hot climates, offering robust off-road capabilities, and ensuring compatibility with local fuel types.

- **Introduction of Affordable and Entry-Level Models:** Understanding the price-sensitive nature of many MEA markets, Chinese automakers have strategically introduced affordable and entry-level models that offer value for money. These models are often positioned to compete with used cars and are marketed towards first-time car buyers. However, the Chinese vehicles' high value formula now presents no compromise on equipment, performance, dimensions, while offering a more affordable price than traditional rivals.

2.4.3 Marketing and Branding Strategies

- **Localization of Marketing Campaigns:** Chinese brands have adopted localization strategies for their marketing campaigns to comply with MEA consumers. This includes using local languages, engaging with cultural norms, and highlighting features that are particularly relevant to the region.
- **Brand Positioning and Image Building:** Building a strong brand image is crucial for Chinese automakers, especially given the historical perception challenges related to quality. It is relevant to understand how Chinese brands are positioning themselves in the MEA market, whether as budget-friendly alternatives like Changan, innovative technology leaders as BYD, or premium brands like Hongqi.

2.4.4 Leveraging on Government Relationships and Trade Agreements

- **Diplomatic and Economic Ties:** Chinese automotive brands benefit from the broader diplomatic and economic ties between China and MEA countries like for example government-to-government relationships and bilateral trade agreements which have facilitated a smoother entry for Chinese vehicles into the region. Other factors which contributes to the Chinese entrance in the market are political tensions, for example many former colonies and Arab countries actively seek to shift away from American and European dominance and accept Chinese support.

2.4.5 Sustainability and Future-Oriented Strategies

- **Electric Vehicles (EVs) and Green Technologies:** With the global shift towards sustainability, Chinese automakers are also focusing on introducing electric vehicles and other green technologies to the MEA market. Chinese brands are positioning themselves as leaders in sustainable mobility in the region, including efforts to build EV infrastructure, partnerships with local governments, and marketing of EVs as a solution to rising fuel costs and environmental concerns.
- **Innovation and Digital Transformation:** As part of their future-oriented strategies, Chinese brands are investing in digital transformation, including smart vehicle technologies, connectivity features, and autonomous driving capabilities, packing cars up with loads of features but still wanting to keep their products in a low-medium pricing range. An example of the introduction of contemporary advanced technology into the automotive world is the wide use of sophisticated systems like Lidars (light detection and ranging) and Artificial Intelligence for what concerns the ADAS (Advanced driver-assistance systems) of the vehicle; the former technology measures distances between objects using laser impulses, giving real time information about possible obstacle to the car, the latter instead is widely used in the autonomous driving features of modern cars.

By analyzing the competitive environment and the strategic initiatives, this chapter provides insights into how Chinese automotive brands are navigating the complexities of the MEA region. It highlights the multifaceted approaches required to achieve success in this diverse and dynamic market, setting the stage for a deeper exploration of individual brand strategies and their outcomes in subsequent sections of the thesis.

Chapter 3

Use of the Quality Function Deployment and Construction of the House of Quality

This chapter will focus on the implementation of Quality Function Deployment (QFD) and the construction of the House of Quality (HoQ) as tools to analyze and improve the quality of Chinese automotive brands, particularly within the context of the Middle East and Africa (MEA) market. The aim is to demonstrate how QFD can be employed to translate customer requirements into technical specifications, ensuring that vehicles align with consumer preferences in the MEA region while maintaining technical feasibility.

3.1 Introduction to Quality Function Deployment (QFD)

The chapter must begin with the definition of Quality, which is the *"degree to which a product/service/entity is conforming to its requirements"*. At the same time requirements, otherwise known as needs, can be divided either in stated/declared ones, which identify products' specifications, or implied/implicit ones which identify customers' expectations.

Another definition important to state is the QFD itself: *"a system to translate customer requirements into appropriate company requirements and technical features at every stage, from research through design, manufacturing, distribution, marketing"*

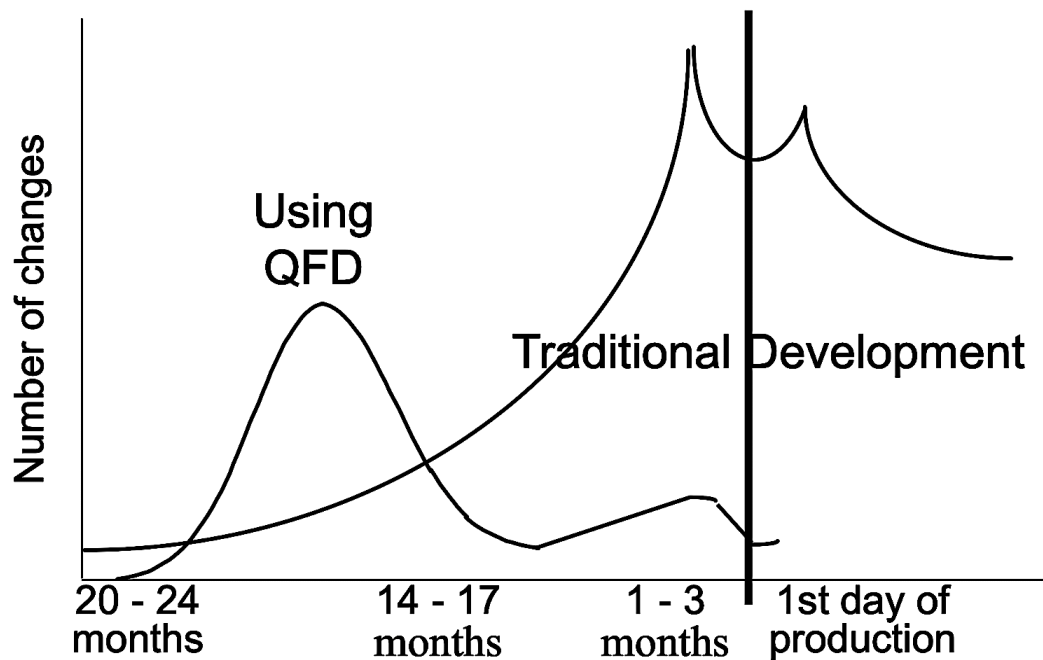
sales and services".

As of today the Quality Function Deployment is a very useful tool that organizations integrate in the design of new products, especially if the approach is systematic like with concurrent engineering. CE is a methodology which emphasizes the parallelization of tasks and improves the design phase of a product considering a diversity of variables associated with the product itself.

The activities involved in the design process can be associated in the following steps:

1. Analysis of the market needs: definition of market expectations and of the preliminary features of the products;
2. Product functional analysis: a more detailed report of all the functions and features of the product;
3. Definition of internal and external design activities: planning of activities, supplier's roles, definitions of criteria for design and responsibilities with supporting documents;
4. Preliminary design: feasibility verification against specifications;
5. Production planning and manufacturing analysis: decision to make in-house or outsource each part of the process after a technical/economical evaluation;
6. Design review: analysis of the design to assess the capability and adequacy to meet requirements and identify problems;
7. Detailed design: design of each single part and documentation;
8. Product/process engineering: standardization of the manufacturing process;
9. Design qualification: prototype manufacturing and verification of results;
10. Design changes management: management of changes in design.

Traditionally, the number of changes a design undergoes in its lifetime, grows the more time comes close to production date which of course creates realistically a lot of confusion and reworks very close to end goal; at the same time the cost of the changes grows over time. With the implementation of the QFD, changes in design both are reduced in number and are shifted to the early stages of the process, giving time to the developers to assess the problematic and resolve the issue.

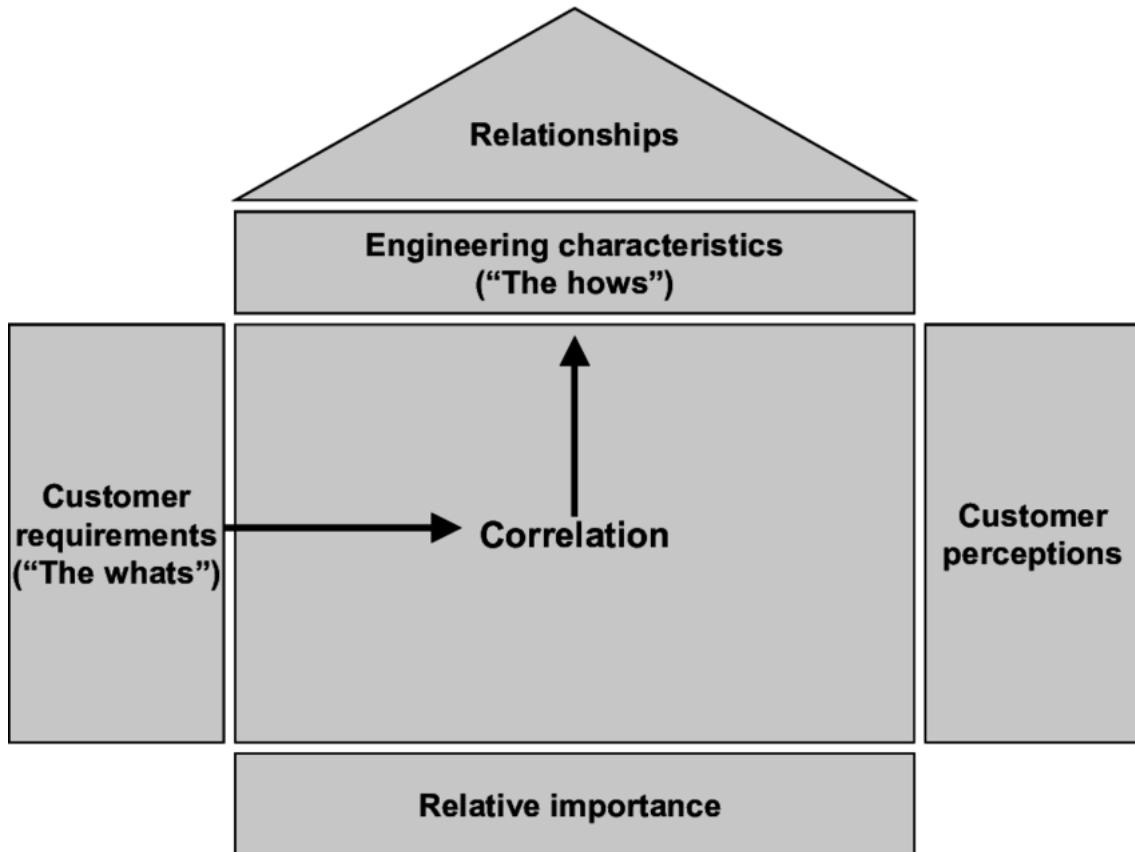


3.1.1 Steps involved in the QFD: Construction of the House of Quality (HoQ)

The Quality Function Deployment (QFD) process is a structured method used to transform customer needs and expectations into specific technical requirements and actions that ensure product quality. The process is often visualized through the construction of a House of Quality (HoQ), which helps facilitate decision-making by aligning customer desires with design and production capabilities.

The HoQ is a tool used in the first phase of the QFD planning structure, the product planning one, which output is a matrix and similarly also in the following steps of subpart deployment, process planning and quality control the output is some type of matrix. The House of Quality is built with the following steps which correlate the "WHATs" (CRs) to a set of technical solutions, the "HOWs":

1. Identifying customer requirements CRs
2. Identifying product and engineering/technical characteristics TCs
3. Drawing up a relationship matrix
4. Deploying the perceived quality benchmarking
5. Rating and ranking the TCs and determine a technical benchmark
6. Analysis of the correlations among TCs to build the "roof" of the matrix



3.2 Application of the HoQ to a particular case

In this paragraph, the House of Quality methodology is applied to a specific type of car, a D-SUV from a Chinese electric vehicle brand. The scope of the analysis is to highlight strengths and weaknesses of the peculiar Chinese custom of integrating in their vehicles, a high number of valuable features and innovative technologies while being apparently able to keep prices in a low to middle range. This study will be conducted comparing an internal current model, against two competitors of the same market segment that tend to offer similar features; the final goal of the HoQ will be to compute target values for both the degree of importance of each customer requirement and also the functional characteristics of the internal product.

3.2.1 Customer requirements and their prioritization

The first step of this analysis is to effectively determine the *customer requirements* that the study wants to investigate; but only the actual people that use the product and interact with it, can list what requisites need to be met by it. Making the most out of my experience at Stellantis, for this initial data gathering I translated the

CRs from a document which encloses all the answers of car customers to specific product questions, the "New Car Buyer Survey" (NCBS) from 2023, filtering the car segment under exam in this particular instance. The sample, of 94 respondents from the Middle East, identifies the "Voice of the Customer" and through their answers, 12 CRs were collected and divided into four categories by affinity:

- Performance:
 1. Driving range;
 2. Acceleration and power;
 3. Battery longevity;
- Charging and convenience:
 1. Fast charging capabilities;
 2. User friendly infotainment; system
- Safety:
 1. Driver assistance features;
 2. Advanced safety features;
- Design and aesthetics:
 1. Modern exterior design;
 2. Spacious interior;
- Sustainability and affordability:
 1. Low environmental impact;
 2. Energy efficiency;
 3. Competitive price

The same sample of customer was asked to rank each CR on a ordinal scale from 1 to 5 on what they believed was the *degree of importance* of each one in relationship to the product; assuming that the distribution of the answers can be approximated with a unimodal distribution, then for each CR the degree of importance is represented by the median value between the responses and the relative importance is

the same value expressed as a percentage.

Technical Characteristics / Customer Requirements		Degree of importance of CR	Relative importance of CR
1	Driving range	5	10,9%
2	Acceleration and power	3	6,5%
3	Battery longevity	5	10,9%
4	Fast charging capability	5	10,9%
5	User friendly infotainment system	3	6,5%
6	Driver assistance features	4	8,7%
7	Advanced safety features	5	10,9%
8	Modern exterior design	3	6,5%
9	Spacious interior	4	8,7%
10	Low environmental impact	3	6,5%
11	Energy efficiency	4	8,7%
12	Competitive price	2	4,3%
Total		46	100%

Looking at the picture, it is possible to understand that for customers the highest value requirements are related to performance, charging capabilities and safety (green, blue and yellow groupings); at the same time CRs pertaining to categories about design and sustainability have on average a lower degree of importance (pink and grey groups).

3.2.2 Competitors benchmarking and initial target values

The following steps in the construction of the HoQ is the benchmarking between the internal current product and in this case two competitors from the same market segment. The same sample of respondents from the previous step was again asked to rank on an ordinal scale each CR on their *degree of satisfaction*, but this time the judgments given must answer the question: "To what extent does the existing model/competitor's model satisfy the i-th CR?". The same reasoning from before will also apply now, the answers can be approximated with a unimodal distribution

so that each satisfaction level, both for the internal current model and the competitors, can be expressed by the median value.

On the basis of benchmarking and strategic consideration, a *target satisfaction level* for an internal future model is defined for each CR on the same 5-level ordinal scale. Having values for the internal model, one version ranked by consumers and one being the target, an *improvement ratio* for each CR can be computed as the fraction between the latter over the former:

- if the ratio is positive: CR needs to improve from original model
- if the ratio=1 : CR is already at target
- if the ratio is negative: CR was already above target in the current model and could be downgraded

Another important strategic consideration that can be made on the customer requirements is their potential impact on sales. For each CR it is assigned a *strength* value based on the expected influence they could have; there are only three possible numbers:

- 1,5: real influence
- 1,2: potential influence = possible investment by the company
- 1: unimportant

The last part of the CR benchmarking is the computation of the weights of said requirements; for each one of them the *absolute weight* is computed as the product of the degree of importance, times the improvement ratio, times strength. The relative weight of each CR is just expressing the absolute one in percentage terms.

3.2. APPLICATION OF THE HOQ TO A PARTICULAR CASE

Technical Characteristics / Customer Requirements		Degree of importance of	Relative importance of	Our existing model	Competitor 1's model	Competitor 2's model	Target (new model)	Improvement ratio	Strength	Absolute weight of CR	Relative weight of CR
1	Driving range	5	10,9%	3	4	3	5	1,67	1,5	12,5	15,7%
2	Acceleration and power	3	6,5%	2	4	2	3	1,50	1	4,5	5,7%
3	Battery longevity	5	10,9%	3	4	3	4	1,33	1,5	10,0	12,6%
4	Fast charging capability	5	10,9%	3	4	3	4	1,33	1,5	10,0	12,6%
5	User friendly infotainment system	3	6,5%	2	4	3	3	1,50	1,2	5,4	6,8%
6	Driver assistance features	4	8,7%	3	4	2	4	1,33	1,2	6,4	8,1%
7	Advanced safety features	5	10,9%	3	5	3	4	1,33	1,5	10,0	12,6%
8	Modern exterior design	3	6,5%	3	4	3	3	1,00	1	3,0	3,8%
9	Spacious interior	4	8,7%	4	4	3	4	1,00	1,2	4,8	6,0%
10	Low environmental impact	3	6,5%	3	4	3	3	1,00	1	3,0	3,8%
11	Energy efficiency	4	8,7%	3	4	4	4	1,33	1,5	8,0	10,1%
12	Competitive price	2	4,3%	5	4	5	3	0,60	1,5	1,8	2,3%
Total		46	100%							79,4	100%

IMPROVEMENT RATIO_i = TARGET LEVEL_i/ SATISFACTION LEVEL OF OUR MODEL_i
ABSOLUTE WEIGHT CR_i = DEGREE OF IMPORTANCE_i * IMPROVEMENT RATIO_i * STRENGTH_i

From the image we can understand how those CRs which don't have to improve, with a ratio equal to 1, usually tend to be the same ones who are considered to have little to no impact on sales, with the exception of the CR(2): Acceleration and power, which instead needs some upgrading to reach the target. It's not surprising that, even after factoring in the improvement ratio and the strength of requirements that aren't directly influenced by customer opinions, the highest-weighted CRs from the benchmarking process are still those that held the most importance for customers.

3.2.3 Technical characteristics and relationship matrix

Shifting from the "Voice of the Customer" to the "Voice of the Engineer", the next step is to determine a set of functional characteristics that the product will need to

have and again categorize them by affinity. A *technical characteristic* to be properly defined must be clearly explained and objective, must be measurable and should be related to a specific preference sense. In the case of this House of Quality, in order to better represent a complex object which is an EV, 18 TCs were determined and grouped into five categories:

- Performance related:
 1. Driving range (km, positive sense);
 2. Acceleration time (seconds for 0-100 km/h, negative sense);
 3. Battery capacity (kWh, positive sense);
 4. Battery degradation rate (% , negative sense);
- Charging and convenience related:
 1. Fast charging time (min, negative sense);
 2. Learning time for on-board systems (min, negative sense);
- Safety related:
 1. Battery temperature system (C°, negative sense);
 2. Crash test rating (stars number, positive sense);
 3. Number of advanced driver assistance systems (ADAS) on-board (count, positive sense);
 4. Number of airbags (count, positive sense);
- Sustainability related:
 1. Use of recycled materials (% , positive sense);
 2. Energy consumption (kWh/100 km, negative sense);
 3. End of life recyclability (% , positive sense);
- Comfort and design related:
 1. Number of seats (count, positive sense);
 2. Infotainment screen size (inches, positive sense);
 3. Cabin space (m³, positive sense);

4. Noise level (dB, negative sense);
5. Price (€, negative sense)

Technical Characteristics / Customer Requirements	Driving range (km)	Acceleration time (sec for 0-100 km/h)	Battery capacity (kWh)	Battery degradation rate (% for 100,000 km)	Fast charging time (min)	Learning time for on-board systems (min)	Max battery temperature system (C°)	Crash test rating (number of stars)	Number of advanced driver assistance systems (ADAS) on-board (count)	Number of airbags (count)	Use of recycled material (%)	Energy consumption (kWh/100 km)	End of life recyclability (%)	Number of seats (count)	Infotainment screen size (inches)	Cabin space (m³)	Noise level (dB)	Price (€)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R

Each TC needs to be analyzed in combination with each CR, and the result is the *relationship matrix* between these two components. The intensity of the relationship between a CR and a TC can be of four levels:

- strong: value=9
- medium: value=3
- weak: value=1
- non present

Relationship matrix:

Strong Relationship	●
Medium Relationship	○
Weak relationship	△

Through the use of these symbols, the matrix is filled, creating the ground for a following phase where each TC will be prioritized based on the relationship it has with each CR.

3.2. APPLICATION OF THE HOQ TO A PARTICULAR CASE

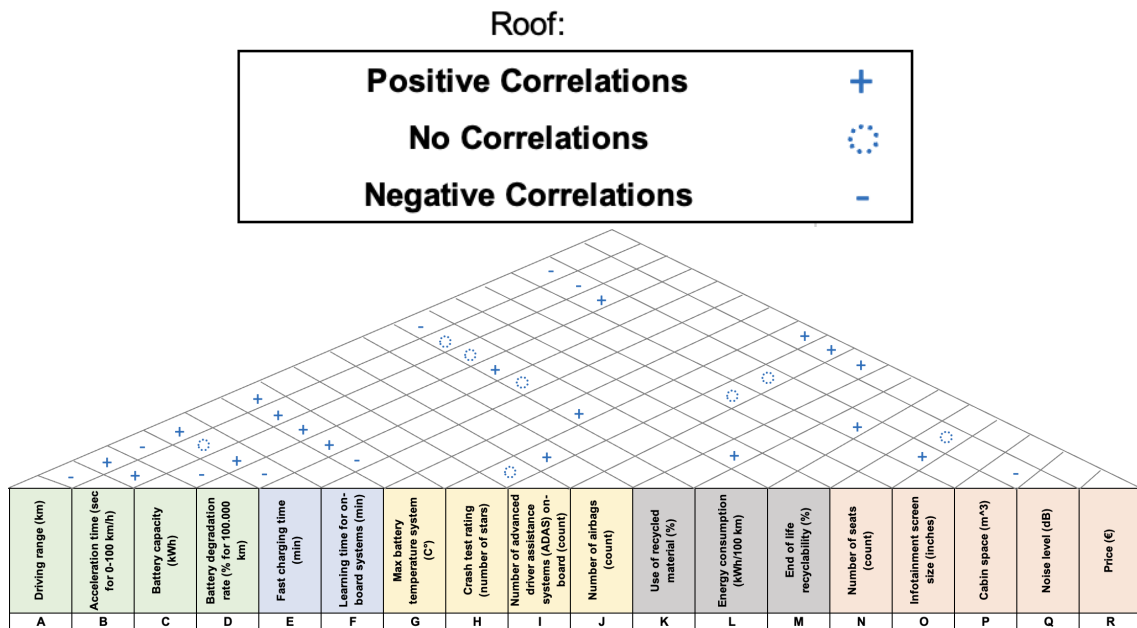
Technical Characteristics / Customer Requirements		Driving range (km)	Acceleration time (sec for 0-100 km/h)	Battery capacity (kWh)	Battery degradation rate (% for 100,000 km)	Fast charging time (min)	Learning time for on-board systems (min)	Max battery temperature system (C°)	Crash test rating (number of stars)	Number of advanced driver assistance systems (ADAS) on-board (count)	Number of airbags (count)	Use of recycled material (%)	Energy consumption (kWh/100 km)	End of life recyclability (%)	Number of seats (count)	Infotainment screen size (inches)	Cabin space (m³)	Noise level (dB)	Price (€)
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Driving range	●	○	●	○	△		○		△			●			△	△		
2	Acceleration and power	○	●	○	△			●		△			○				△		
3	Battery longevity	○	△	○	●	○		●					○	○					
4	Fast charging capability	△		●	○	●		●					○						
5	User friendly infotainment system						●			○						●			△
6	Driver assistance features	△							○	●						○			○
7	Advanced safety features								●	●	●								○
8	Modern exterior design	△	△						○	△	△	○	△	○	△		△	△	○
9	Spacious interior	△	△	△									△		●	△	●	△	
10	Low environmental impact				○							●	●	●					
11	Energy efficiency	○	△	○	○	△		○					●						△
12	Competitive price	△	△	△		△			△	△	△	△	△	△	△	△	△	△	●

The information which are most relevant that can be gathered from the matrix are that every TC has at least one strong relationship with a CR except from the TC(Q):Noise level which only weakly relates with any CR. Some TC like (G):Max battery temperature system and (L):Energy consumption have instead multiple strong relationship with CRs, some of which are from a different grouping of theirs; this strong interconnection between TC and CR of different nature highlights how the complexity of a product, in this case an EV, is a result of every aspect of it, the performance but also the design, the safety but also the pricing and so on; nothing can be maximized leaving something completely neglected, because the relationships comprehend everything.

3.2.4 Correlation matrix and the semi-automated procedure

To build the roof of the House of Quality, the so called *correlation matrix*, this time the relationship examined and displayed will be between TCs and the mechanism behind is called *semi-automated procedure*. Each TC is seen as a vector of numbers where the coefficients, are zeros if in the relationship matrix the correspondent spot is empty, or ones if in the spot is present a symbol. For each pair of vectors, if a precise inequality holds, it identifies a correlation between the respective TCs. The nature of the correlation can be of three kinds:

- positive
- negative
- no correlation, which means the potential correlation was excluded



Some interesting correlations can be found analyzing the roof of the HoQ. For example a growing number of safety feature like airbags or ADAS systems will make the price of the car grow as well; this is the effect of a positive correlation. The same reasoning can be seen between the TC(D):Battery degradation and the TC(L):Energy consumption; here the reasoning is that vehicles which consume energy less efficiently

tend to place more stress on their batteries which will be drained faster to cover the same distance as a normal driven car. On the other hand it is easy to understand that the correlation between the TC(C):Battery capacity and TC(D):Battery degradation is inversely related, as the usage with time of the car will reduce the initial total capacity of the battery in an EV.

3.2.5 Prioritization of TCs and definition of final target values

The last phase in the construction of the HoQ is to give a priority to the TCs in order to identify which functional requirement deserve a higher degree of attention and finally, benchmarking the values of each TC for the internal model and the two competitors, an algorithm will provide the optimal solution for each characteristic. For each TC the absolute weight is computed using the *Independent Scoring Method*: the final value is a weighted sum of the relationship matrix coefficients using the CR absolute weights, again the relative weights of TCs is just the expression of absolute ones in percentage terms.

$$\text{ABSOLUTE WEIGHT TC}_j = \sum_i [r_{ij} * \text{ABSOLUTE WEIGHT CR}_i]$$

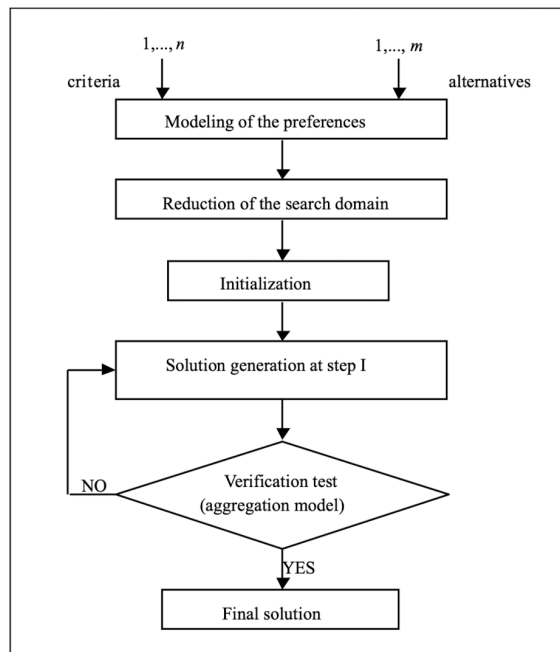
Now is time to list for each of the models, internal and competitors, the values corresponding to each TC. When defining the TCs' target values for our new model there are a multitude of aspects to consider:

- Budget is limited: the idea is to concentrate the most resources on the most predominant TCs
- Try to reach competitors where needed: improve those TCs which are significantly weaker than others
- Changing is expensive: never change to worsen a performance of the existing model
- Consider trade-offs between TCs from the roof of the HoQ: maximizing conflicting TCs is impossible

Lastly all the data runs in the *QBench algorithm* which will find, in an iterative way, an optimal solution. At first, for each TC, an upper and a lower bound are set

3.2. APPLICATION OF THE HOQ TO A PARTICULAR CASE

based on the feasibility of the feature, the type of functionality, and the technology available in that moment on the market; then when a set of alternatives (models) and criteria (TCs) are defined, the algorithm runs a first iteration reducing the search domain, keeping the TC weights and preference sense as the ordering logic. The algorithm then generates a possible solution giving a value to each TC starting from a reduced domain, and verifies its optimality before stopping the process; the *ELECTRE II* method iteratively checks the optimality of the solution proposed by the algorithm: if the verification test is passed, then the algorithm stops and the solution is considered optimal, if the test is failed, a new solution is generated with a new reduced domain and verified again.



Technical Characteristics / Customer Requirements	Driving range (km)	Acceleration time (sec for 0-100 km/h)	Battery capacity (kWh)	Battery degradation rate (% for 100,000 km)	Fast charging time (min)	Learning time for on-board systems (min)	Max battery temperature system (C°)	Crash test rating (number of stars)	Number of advanced driver assistance systems (ADAS) on-board (count)	Number of airbags (count)	Use of recycled material (%)	Energy consumption (kWh/100 km)	End of life recyclability (%)	Number of seats (count)	Infotainment screen size (inches)	Cabin space (m³)	Noise level (dB)	Price (€)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Absolute weight	2,59	1,33	3,48	2,46	1,79	0,61	3,55	1,51	2,34	1,19	0,48	3,71	0,85	0,60	1,09	0,82	0,12	1,11
Relative weight	8,8%	4,5%	11,8%	8,3%	6,0%	2,1%	12,0%	5,1%	7,9%	4,0%	1,6%	12,5%	2,9%	2,0%	3,7%	2,8%	0,4%	3,7%
Unit of measurement	km	min for 0-100 km/h	kWh	% for 100,000 km	min	min	C°	n° of stars	count	count	%	kWh/100 km	%	count	inches	m³	dB	€
Our existing model	540	7,5	69,9	5%	30	30	38°	5	6	6	20%	19,8	85%	5	10,25	1,85	65	25.000
Competitor 1's model	420	7,3	60,4	5%	29	30	60°	5	9	8	20%	16	85%	5	12,8	1,82	60	30.000
Competitor 2's model	340	7	44,9	5%	28	25	55°	5	7	6	15%	15,2	80%	5	12,8	1,62	62	23.000
Target (new model)	580	7,3	70	5%	25	28	38°	5	8	7	20%	17	85%	5	12,8	1,85	60	27.000

3.2.6 Conclusions and recommendations

The final House of Quality analysis provides key insights into the competitive positioning of internal model within its segment. Through this structured framework (which can be found in its totality in the Appendix), we have been able to, not only prioritize the critical customer requirements, but also discern the technical characteristics that will drive future enhancements and long-term competitiveness. The alignment between CRs and TCs highlights several strategic areas where some strengthening may be needed to improve the product offering.

One of the most revealing insights is the clear interdependence between driving range, battery capacity, and energy consumption. These factors underscore the importance of optimizing the vehicle's energy efficiency systems, not only holding significant weight in customer satisfaction, but also being tightly correlated. As the data shows, focusing efforts on improving energy efficiency could yield direct benefits in both driving range and overall customer perception of value, especially in markets where infrastructure for electric vehicles is still developing.

In terms of battery longevity and fast charging capabilities, the HoQ highlights the intricate balance between these two TCs. While customers prioritize both features highly, a deep dive into the correlation matrix reveals that enhancing fast charging capabilities may come at the expense of battery degradation if not carefully managed. Thus, the recommendation is to explore innovative battery management systems (BMS) that not only allow for rapid charging but also mitigate the negative impact on battery health. This trade-off demands further investment into advanced materials and thermal management systems that can reduce wear on the battery during high power input, ensuring both performance and longevity.

Another strategic takeaway lies in the infotainment system and driver assistance features. While the infotainment system ranks lower in importance, customer satisfaction levels indicate that this remains an area where the internal model is currently underperforming. An enhanced, user-friendly interface, capable of seamlessly integrating with smartphones and offering intuitive control, could serve as a powerful differentiator in a segment that is increasingly looking for technology-driven comfort. Investing in this system also has the potential to support the overall brand perception, especially when coupled with cutting-edge driver assistance features. However, the trade-off between technological complexity and usability must be managed carefully to avoid overwhelming users.

In contrast, advanced safety features remain a high-priority area with strong customer demand, and while the test car scores well here, the analysis suggests further expansion of ADAS functionalities. This could include real-time data integration from external sources, a critical factor as competition in safety technology intensifies. To leverage this, companies could consider partnerships with technology providers to accelerate development and deployment of next-generation ADAS solutions, ensuring the company remains at the forefront of automotive safety innovation.

Additionally, the insights around material recyclability and environmental impact suggest opportunities for differentiating further by reinforcing the sustainability narrative. As the correlation matrix shows, an investment in sustainable materials, while not necessarily a primary customer demand, has indirect benefits across multiple other technical areas, including weight reduction, energy efficiency, and even manufacturing cost control. These sustainable innovations, when combined with market-effective pricing strategies, could attract a wider, eco-conscious customer base, offering a dual advantage: both a responsible brand image and potential cost savings.

The price-to-performance ratio remains the most significant challenge, particularly as Chinese brands strive to offer competitive features at an accessible price point. Achieving optimal balance here will require incremental improvements in key technical areas without overextending financial resources. Company's strategy should involve a selective approach, concentrating on high-impact TCs (such as driving range and ADAS) while potentially deprioritizing less critical TCs (such as maximum screen size), which offer fewer tangible benefits to the target customer base.

Ultimately, the HoQ uncovers several critical paths forward, centering on the theme of balancing innovation with economic feasibility. As competition intensifies in the electric vehicle market, the focus must be on crafting a product that does not just meet current expectations but also anticipates future needs, delivering value where it matters most. By selectively advancing its technical capabilities in alignment with customer priorities, the brand can strengthen its competitive edge and secure a more sustainable, long-term market position.

Chapter 4

Leapmotor case study

During my internship in Stellantis, I was often assigned analysis and research for the brand LeapMotor: a Chinese start-up specialized in electric vehicles with which Stellantis had made a JV prior to me joining the company. The reasons behind this new alliance are multiple but at first it is important to understand what LeapMotor is, what can bring into the agreement and the strategy that led them to look into an international partner for their business.

4.1 Introduction to the brand

Before delving into LeapMotor's history, mission, and market positioning, it is essential to first understand the rapidly growing Chinese electric vehicle (EV) industry, the environment in which LeapMotor was founded and matured. China, over the past decade, has emerged as the world's largest market for electric vehicles, fueled by government initiatives, environmental policies, and rising consumer demand for sustainable transportation solutions. The Chinese government's strong push towards electrification, offering significant subsidies and incentives, alongside stricter regulations on emissions, has spurred unprecedented growth in the domestic EV market. This has led to the rise of numerous homegrown EV start-ups, including LeapMotor, each competing for a slice of this booming sector.

However, as this market continues to expand, it has also become highly competitive, with a saturation of local and international players aiming for dominance. Established companies like NIO, BYD, and Xpeng, as well as global giants such as Tesla, have intensified the competition. With the growing number of brands and the rapid pace of technological advancements, the Chinese EV market is now nearing

saturation, with fierce price wars and increasingly discerning consumers. This competitive landscape has become a driving force behind LeapMotor's strategic decision to explore opportunities beyond China's borders. Recognizing the constraints of a crowded market and the need for growth, LeapMotor looked towards international expansion as a means to diversify its customer base, mitigate risks, and capitalize on emerging markets where the demand for electric mobility is still nascent but promising.

By forming strategic alliances with global partners, such as Stellantis, LeapMotor aims to leverage new technologies, distribution networks, and market expertise, positioning itself as a key player in the global EV arena. This context is pivotal to understanding not only LeapMotor's motivations for international expansion but also the broader strategic considerations that shape the company's long-term growth ambitions.

4.1.1 Company background

LeapMotor, founded in 2015, is one of the newer entrants in China's evolving electric vehicle (EV) industry. The company was established, as a start-up, by Zhu Jiangming, one of the co-founders of Dahua Technology, a leading provider of video surveillance products. Leveraging his background in technology, Zhu sought to develop a company that could integrate cutting-edge tech solutions into the automotive sector, focusing on electric mobility and intelligent vehicle systems.

From its inception, LeapMotor has positioned itself as a company dedicated to innovation, with a goal to make electric vehicles accessible to a broad consumer base. This commitment to democratizing EV technology stands in contrast to some of its competitors, which have initially focused on premium market segments. LeapMotor's vision is to bring affordable, high-quality EVs to the mass market, offering consumers a reliable alternative to both traditional internal combustion engine (ICE) vehicles and high-end EVs produced by brands like Tesla and NIO; at the same time the brand's founding mission was to bridge the gap between high-tech EVs and affordability, targeting a mass market audience.

LeapMotor's headquarters and R&D centers are located in Hangzhou, China, with additional research and development (R&D) facilities located across the country. The company invests heavily in R&D, particularly in areas such as battery technology, autonomous driving, and connected vehicle systems. An initial milestone that

the brand achieved is its first production model in 2019, the S01, a small electric coupe. This vehicle marked the company's entry into the EV market and showcased its ability to produce technologically advanced vehicles at competitive prices.

4.1.2 Core values

LeapMotor's core values are grounded in innovation, affordability, and sustainability. These principles guide the company's approach to product development, market strategy, and long-term growth objectives. By focusing on electric mobility and intelligent vehicle systems, LeapMotor seeks to differentiate itself from competitors not only within China but also in international markets.

- **Innovation-Driven Approach:** LeapMotor is committed to leading the EV industry in terms of technological innovation. The company's strategy revolves around developing proprietary technologies, including its own electric drive systems, battery management systems, and vehicle operating systems. LeapMotor's in-house development capabilities give it greater control over product quality and cost efficiency.
- **Affordability and Accessibility:** One of LeapMotor's key differentiators is its focus on affordability without compromising on quality. The company aims to offer consumers access to advanced EV technologies at prices that compete with traditional gasoline-powered vehicles. This aligns with its broader goal of promoting the adoption of electric vehicles in both China and emerging markets, where cost is a significant barrier.
- **Sustainability:** LeapMotor is committed to sustainability, both in terms of producing zero-emission vehicles and developing energy-efficient production methods. The company's focus on EVs aligns with China's broader push toward green technologies and environmental sustainability.

4.1.3 Product portfolio

LeapMotor has steadily built a diverse and growing portfolio of electric vehicles, targeting various segments of the market, from compact city cars designed for urban commuting to larger, family-friendly sedans and SUVs aimed at broader consumer needs. This diversified approach reflects LeapMotor's commitment to providing electric mobility solutions that appeal to a wide spectrum of drivers, addressing different

lifestyle demands and budget considerations.

The company has prioritized creating vehicles that balance affordability, cutting-edge technology, and modern design, making EV ownership more accessible to the average consumer while still offering the advanced features that many buyers seek in the rapidly evolving electric vehicle market. In China, LeapMotor's product lineup is extensive, catering to a variety of consumer preferences. The brand has worked to develop electric vehicles that not only meet but also exceed the expectations of environmentally conscious buyers looking for both sustainability and performance. Their vehicles emphasize efficiency, safety, and innovative features such as integrated smart technology and user-friendly infotainment systems, making them highly competitive in the domestic market.

However, LeapMotor's offerings in the international market are currently more limited, as the brand is still in the early stages of expanding its global presence. The vehicles available for export are fewer in number and generally targeted toward specific segments where the company sees the most potential for growth. Despite this, LeapMotor's long-term strategy includes the introduction of a wider variety of models for global markets, with a particular focus on advanced technologies. Future developments are expected to incorporate more sophisticated autonomous driving features and improvements in electric powertrains, including extended range and better energy efficiency. By continuing to innovate and refine its product lineup, LeapMotor aims to strengthen its position not only in China but also in key international markets as the demand for electric vehicles continues to rise globally.



4.1.4 Brand positioning in China

LeapMotor has effectively carved out a niche within the highly competitive Chinese electric vehicle market by focusing on two core elements: affordability and advanced technology. Despite being a relatively new player in an increasingly crowded

industry, the company has managed to distinguish itself among both established automotive giants like BYD and NIO, as well as other fast-growing EV start-ups such as Xpeng. LeapMotor's market strategy primarily targets middle-income consumers who seek the advantages of electric mobility but are priced out of the premium EV models typically offered by competitors. This strategic focus has allowed the company to offer cost-efficient electric vehicles without sacrificing technological sophistication.

A significant aspect of LeapMotor's differentiation lies in its ability to offer innovative, technologically advanced vehicles at competitive prices. By developing a large portion of its technology in-house, including electric drive units and battery management systems, LeapMotor is able to reduce production costs. These savings are passed on to consumers, positioning LeapMotor as a more accessible brand in a market where affordability is a key factor driving EV adoption. The company's vehicles display features commonly associated with more expensive models, such as smart connectivity, semi-autonomous driving capabilities, and extended driving ranges, which appeal to tech-savvy buyers who are value-conscious.

However, despite its clear strengths, LeapMotor faces significant challenges in the domestic Chinese market. The company must contend with fierce competition from well-established players that dominate the landscape. Larger automotive manufacturers like BYD benefit from massive production capacities, more extensive product lineups, and greater brand recognition and reputation. Additionally, premium brands such as NIO and Xpeng attract wealthier consumers who are willing to pay a premium for high-end features, luxury design, and cutting-edge technologies. As a result, LeapMotor is positioned in a competitive middle ground, striving to balance cost-efficiency with technological sophistication to appeal to a broader consumer base.

Moreover, LeapMotor's relatively limited production capacity compared to its larger competitors may constrain its ability to scale quickly and capture significant market share. Building a stronger brand identity among the crowded Chinese EV market is a key challenge for the company, as it seeks to increase its visibility and consumer trust. Despite these hurdles, LeapMotor's focus on affordability and innovation provides it with a solid foundation to continue growing in the domestic market while also positioning itself for international expansion.

4.2 Global aspirations and strategy

LeapMotor's ambitions extend well beyond the domestic Chinese market, as the company seeks to position itself as a global player in the electric vehicle industry. Recognizing the growing international demand for electric mobility, LeapMotor is actively pursuing opportunities to expand its footprint across multiple regions. The company's global strategy is particularly focused on emerging markets, where demand for affordable and reliable electric vehicles is rising rapidly. These markets, such as the Middle East and Africa (MEA), Southeast Asia, and parts of Latin America, present significant growth potential due to their relatively low penetration of electric vehicles and the absence of entrenched competition compared to more developed markets like Europe and North America.

LeapMotor's strategy for international expansion is built around leveraging its competitive advantage in producing affordable, high-quality electric vehicles. In regions like the MEA, where cost-sensitive consumers are seeking lower-cost alternatives to expensive Western brands, LeapMotor's pricing model positions it as an attractive option. The company is also targeting markets that are beginning to adopt more favorable regulatory environments for electric vehicles, which could further accelerate its growth in these areas. However, LeapMotor understands that price alone will not be enough to succeed in these markets. It must also ensure that its vehicles meet the specific needs and preferences of local consumers. This may involve customizing features such as battery efficiency for hot climates, expanding range capabilities to suit longer driving distances, and ensuring that its vehicles are compatible with the available charging infrastructure in each region.

To support its international expansion, LeapMotor is actively seeking partnerships and collaborations. These may include joint ventures with local automotive companies, partnerships with distributors, or collaborations with government agencies to promote the adoption of electric vehicles. The company is also exploring the possibility of establishing local assembly plants in key markets, which would allow it to reduce costs further by taking advantage of local supply chains and avoiding import tariffs. By building local production capabilities, LeapMotor can improve its responsiveness to regional market demands and potentially increase its competitiveness against both local manufacturers and global brands.

While LeapMotor's international aspirations are promising, the company will face several challenges as it seeks to establish a global presence. One of the primary

hurdles is building brand recognition and consumer trust in markets where Chinese automotive brands are not yet well-known or may be viewed with skepticism regarding product quality and reliability. Furthermore, LeapMotor must navigate complex regulatory environments across different regions, ensuring that its vehicles comply with local safety, emissions, and technological standards. This requires a careful balancing act between maintaining the cost-efficiency that defines its brand and investing in the necessary certifications and adaptations to meet diverse regulatory requirements.

In addition to these challenges, LeapMotor must contend with competition from both established global automakers and emerging local competitors in the markets it seeks to enter. While its pricing advantage may initially attract consumers, the company will need to differentiate itself through innovation, quality, and service to sustain long-term growth. LeapMotor's ability to build strong after-sales support networks, provide reliable charging infrastructure, and continuously innovate its product offerings will be critical factors in determining its success on the global stage.

Despite these obstacles, LeapMotor's global aspirations align well with the broader trends driving the automotive industry toward electrification and sustainability. As countries around the world increase their commitments to reducing carbon emissions and transitioning to greener transportation options, the demand for affordable and efficient electric vehicles is expected to rise, even if at a lower pace than the one expected a few years back. LeapMotor's strategic focus on emerging markets, coupled with its competitive pricing and technological capabilities, positions it to play a key role in this shift. While its journey to global prominence may be challenging, LeapMotor's ambitions reflect a clear understanding of the opportunities and risks inherent in international expansion, and the company appears ready to capitalize on the growing demand for electric vehicles in diverse markets across the globe.

4.2.1 Brand's relationship with Stellantis

In recent years, LeapMotor's global aspirations have led to strategic partnerships with established international players, one of the most significant being its joint venture (JV) with Stellantis, a global automotive powerhouse. This collaboration marks an important milestone for LeapMotor as it seeks to expand its footprint beyond China and position itself as a key player in emerging markets, including the

Middle East and Africa (MEA) region. The JV between LeapMotor and Stellantis was officially signed at first in October 2023 and finalized in May 2024 with the establishment of a new entity named LeapMotor International, following months of negotiations that reflected both parties' mutual interests in leveraging each other's strengths.

The terms of the contract between LeapMotor and Stellantis focus on a mutually beneficial arrangement, with each company bringing complementary assets to the table; Stellantis will have the right to export and sell, as well as manufacture, LeapMotor products outside of China. For LeapMotor, the partnership provides access to Stellantis' vast distribution and service networks, particularly in regions where LeapMotor lacks an established presence, such as Enlarged Europe, North and South America, and MEA. This access to global markets aligns with LeapMotor's strategic vision of international expansion, allowing the company to accelerate its market entry without the need for building its own costly infrastructure from scratch. Additionally, Stellantis' extensive experience in regulatory compliance across different markets ensures that LeapMotor's vehicles meet the necessary standards, thereby smoothing the path for its global aspirations.

From Stellantis' perspective, the joint venture brings several advantages. First, partnering with LeapMotor allows Stellantis to strengthen its presence in the electric vehicle (EV) segment, an area where Chinese manufacturers, including LeapMotor, have shown considerable technological advancements. Stellantis gains access to LeapMotor's innovative EV technologies, particularly in battery management systems and electric powertrains, which are essential for the future of sustainable mobility. Furthermore, Stellantis can leverage LeapMotor's cost-effective manufacturing capabilities, which help the company reduce production costs in a competitive global market where affordability is a key driver of success. Stellantis' ability to integrate LeapMotor's EV expertise into its broader product lineup provides a competitive edge, especially as demand for electric vehicles continues to rise globally.

However, the joint venture is not without its challenges. In markets where Stellantis already has a strong presence, there may be a concern that LeapMotor's identity and value proposition could be diluted, making it harder for the Chinese brand to establish itself independently. Moreover, LeapMotor must ensure that its brand and products are not seen as merely budget alternatives within Stellantis' portfolio, which could harm its long-term positioning as a high-quality yet affordable EV manufacturer.

For Stellantis, the primary challenge lies in the integration of LeapMotor's technology and business practices into its own operations. LeapMotor, as a relatively young company, operates in a fast-paced, agile environment, whereas Stellantis, a much larger and more established automaker, tends to follow more traditional corporate structures and processes. Balancing these different corporate cultures and operational models will require careful coordination to ensure that both companies can fully capitalize on the partnership. Additionally, Stellantis may face some risks related to brand perception, as Western markets have historically been more skeptical of Chinese automotive products.

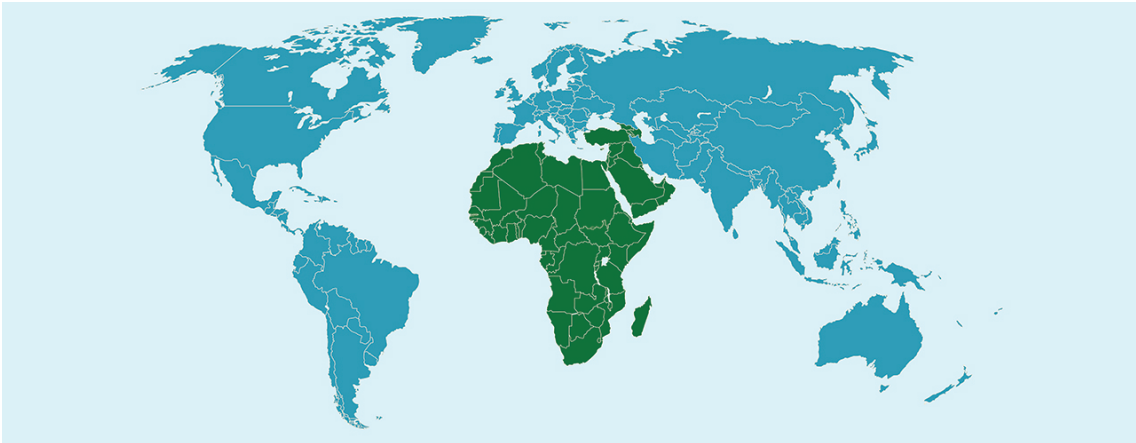
The timeframe for the establishment of the joint venture was relatively fast, with formal negotiations beginning in late 2022 and the official partnership announced by mid-2023. This rapid development reflects the urgency with which both companies are seeking to position themselves as leaders in the evolving EV market. LeapMotor's immediate priority within the JV is to utilize Stellantis' established dealer networks to distribute its vehicles across Europe and the MEA region, with initial vehicle shipments expected to commence in late 2024.

In conclusion, the joint venture between LeapMotor and Stellantis represents a strategic partnership with significant potential benefits for both parties. LeapMotor stands to gain invaluable access to global markets, regulatory expertise, and distribution channels, while Stellantis benefits from LeapMotor's cutting-edge EV technology and cost-effective production capabilities. Despite some challenges related to brand positioning and operational integration, the JV sets the stage for both companies to strengthen their positions in the increasingly competitive global EV market. The collaboration also highlights the growing importance of cross-border partnerships as the automotive industry transitions toward a more electrified and sustainable future.

4.2.2 Focus on the brand's entry in the MEA region

At first is crucial to understand and discover the region of Middle East and Africa because more than any other one, it is not possible to consider it as a unique market; inside of it the differences and complexities are vast. The region is marked by significant political, economic, and sociological variations across countries. Economically, the region spans oil-rich nations like Saudi Arabia and the UAE, with high purchasing power, to emerging economies in Sub-Saharan Africa, where affordability is key.

Political stability varies greatly, with some countries offering attractive investment environments, while others face challenges such as regulatory barriers and conflict. Sociologically, consumer preferences also differ, luxury and performance vehicles are favored in wealthier Gulf nations, while practicality and durability are prioritized in less developed regions. Regulations and homologations rules vary widely between countries, posing additional challenges for automotive brands. In wealthier nations, regulatory standards are often aligned with those of Europe, requiring vehicles to meet stringent safety, emissions, and performance criteria. Meanwhile, in other parts of Africa, regulatory frameworks can be less developed or inconsistently enforced, with local adaptation often necessary to accommodate varying fuel quality, road conditions, and environmental standards. Navigating these regulatory landscapes is crucial for automotive brands, as compliance with homologation processes and differing standards can significantly impact market entry and success across the region.



These complexities make the MEA region both a challenge and an opportunity for automotive brands looking to expand globally, and this is why LeapMotor's entry into the region marks a pivotal step in its global expansion strategy, as the company seeks to capitalize on the growing demand for electric vehicles (EVs) in emerging markets. Unlike Europe and North America, where EV adoption is driven largely by environmental regulations and established charging infrastructure, the MEA region presents a more complex landscape. LeapMotor's strategy for this unique market reflects this complexity, taking into account the diverse economic, political, cultural, and regulatory environments across different countries. As of 2024, LeapMotor's presence in the MEA region remains in its early stages, but the company has already begun laying the groundwork for long-term growth through strategic

partnerships, targeted product offerings, and localized marketing efforts.

Currently, LeapMotor's operations in the MEA region are focused on a few key countries that have demonstrated the highest potential for EV adoption. These include Turkey, Israel, and the French Overseas territories, which are viewed as entry points into the broader region.

LeapMotor's strategy in the MEA region is distinct from its approach in other international markets, particularly Europe and Southeast Asia, where government incentives and established infrastructure play a larger role in supporting EV adoption. In MEA, the absence of widespread charging networks and the slower pace of governmental support for EVs have required LeapMotor to adopt a more flexible and localized approach. For instance, in the Gulf states, where fuel costs are traditionally low and EV charging infrastructure is still developing, LeapMotor will focus on highlighting the long-term cost savings associated with EV ownership, particularly as fuel subsidies in the region are gradually being reduced. The company's marketing strategy in these countries will emphasize the advanced technology and luxury features of its vehicles, appealing to consumers who value cutting-edge innovation and environmental sustainability.

By contrast, in North African countries such as Egypt and Morocco, LeapMotor's strategy is more focused on affordability and practical functionality. In these markets, economic conditions and purchasing power vary significantly, and consumers are more price-sensitive. As a result, LeapMotor will tailor its product offerings to meet the specific needs of middle-income consumers, emphasizing features like low maintenance costs, reliability, and extended range capabilities. For countries where, for example, the EV charging infrastructure is still in its early stages, LeapMotor will introduce models with the range extender technology, which are capable of nearly 1,000 km range, in order to minimize the need for frequent charging and eliminate range anxiety.

One of the key challenges LeapMotor faces in the MEA region is the varying regulatory environments across different countries. While some Gulf states, such as the UAE and Saudi Arabia, are actively promoting the adoption of EVs through policy initiatives and incentives, many other countries in the region lack a clear regulatory framework for electric vehicles. In some North African and Sub-Saharan African countries, for instance, there are few or no government incentives to encourage the transition to electric mobility, and infrastructure remains a significant hurdle. In markets where EV policies are more developed, the company is positioning itself

as a leader in the electric mobility space, while in less mature markets, it focuses on raising consumer awareness and educating potential buyers about the benefits of EVs.

The cultural diversity of the MEA region also plays a significant role in shaping LeapMotor's market strategy. Consumer preferences differ widely across the region, not only in terms of price sensitivity but also in vehicle design and functionality. In Gulf states such as the UAE and Saudi Arabia, where SUVs are extremely popular due to the region's road conditions and consumer lifestyle, LeapMotor will prioritize its larger electric SUV models. These vehicles appeal to families and individuals who seek spacious, feature-rich cars, that are both modern and eco-friendly. In contrast, in North African countries like Morocco and Egypt, compact and affordable city cars would be more successful, as they cater to urban commuters looking for economical and environmentally friendly options for everyday use.

Another significant factor shaping LeapMotor's strategy in the MEA region will be the development of localized marketing campaigns, tailored to the unique cultural and economic contexts of each country. In wealthier Gulf states, LeapMotor's marketing should emphasize luxury, technology, and environmental consciousness, to appeal to younger, tech-savvy consumers. In countries like Egypt and Morocco, where economic constraints are more pronounced, the company's marketing focus should instead be on affordability, reliability, and the long-term financial benefits of owning an electric vehicle.

In summary, LeapMotor's entry into the MEA region represents a tailored and flexible approach designed to meet the diverse needs of a rapidly changing arena. Despite the challenges of uneven infrastructure development and varying regulatory environments, LeapMotor's commitment to localization, strategic partnerships, and targeted marketing, positions it as a strong contender in the evolving MEA electric vehicle market.

Chapter 5

Conclusions and interpretations

This final chapter encapsulates the major discoveries this thesis has made regarding the evolution of Chinese automotive brands, the implementation of the Quality Function Deployment (QFD) method, and the case study centered on the LeapMotor brand. These findings illustrate the growing importance of Chinese automotive brands in the global market and the strategic role of the QFD methodology in addressing customer needs. The thesis also reflects on the invaluable experience gained during my internship at Stellantis, providing insights into real-world automotive industry dynamics.

5.1 Overview and interpretation of key findings

5.1.1 Competitive edge of Chinese brands

The remarkable growth of Chinese automotive brands has transformed them into formidable players in the global market. Historically considered inferior to their Western, Japanese, and South Korean counterparts, Chinese brands have made significant strides in both domestic and international markets. This transformation is largely due to a combination of factors including government support, aggressive investment in research and development (R&D), and a keen understanding of evolving consumer demands.

One of the primary drivers behind the success of Chinese automotive brands is the robust backing they receive from the Chinese government. Over the past two decades, the government has implemented a variety of policies and subsidies aimed at promoting the development of the automotive industry, particularly the electric vehicle

sector. Incentives such as subsidies for purchasing electric cars, tax exemptions, and favorable loans for automotive start-ups have encouraged the rapid growth of the EV market. This government-led initiative is part of China's broader strategy to dominate the global EV landscape, reduce its reliance on imported oil, and tackle environmental challenges such as air pollution.

Another key factor in the competitive edge of Chinese brands is their focus on technological innovation, particularly in the electric vehicle sector. China's automotive landscape has evolved rapidly, with companies investing heavily in battery technology, autonomous driving systems, and smart vehicle features. Chinese brands are not just emulating existing technologies; they are pushing the barriers with advanced features such as long-range batteries, integrated driver-assistance systems, and over-the-air software updates, which allow vehicles to stay updated without needing to visit a dealership. This focus on smart, connected vehicles places Chinese automakers at the forefront of a significant shift in the global automotive industry.

Chinese automakers can be broadly divided into different categories: state-owned enterprises (SOEs), private brands, and EV-focused startups. Each segment operates with its own different advantages and challenges which create a multidimensional environment.

The internationalization of Chinese automotive brands is a strategic move driven by a saturated domestic market and the desire to compete on a global scale. Brands like BYD, NIO, and LeapMotor are targeting markets in Europe, the Middle East, Africa (MEA), and Latin America, where demand for electric vehicles is growing but remains underdeveloped compared to China. European markets, in particular, are attractive due to their stringent environmental regulations, which favor electric mobility. In regions like MEA, the combination of growing urbanization, increased purchasing power, and rising environmental awareness presents an opportunity for Chinese automakers to introduce affordable, technologically advanced vehicles; however the expansion strategy will differ by region. In Europe, Chinese brands are positioning themselves as environmentally conscious, technologically advanced alternatives to Western brands. In developing regions such as MEA and Latin America, they are emphasizing affordability and reliability, capitalizing on the demand for low-cost yet feature-rich vehicles. This tailored approach is essential, as different regions have varying levels of infrastructure, regulatory requirements, and consumer preferences.

The competitive edge of Chinese automotive brands lies in their ability to combine

government support, technological innovation, and a diverse range of products tailored to different market segments. As they expand internationally, these brands are meant to disrupt traditional market hierarchies by offering affordable, technologically advanced vehicles that cater to a broad spectrum of consumers. However, sustaining this competitive edge will require continued innovation, adherence to global standards, and the ability to adapt to the unique challenges of each region.

5.1.2 Role of QFD in strategic planning

QFD was introduced as a strategic tool that connects customer requirements (CRs) with technical characteristics (TCs) to better guide product development; in particular, the House of Quality (HoQ) is utilized to map out critical features and prioritize them according to customer needs, market demands, and technical feasibility. This process not only aids in understanding customer preferences but also serves as a foundation for long-term product development strategies. The QFD methodology facilitates the balancing act between innovation and cost-efficiency, which is crucial in the highly competitive automotive market. By mapping out these relationships in a structured way, QFD ensures that product development teams as well have a clear understanding of what technical features will have the greatest impact on customer satisfaction. This structured approach also helps prevent over-engineering or under-delivering, as it ensures that technical efforts are focused on areas that matter most to the market.

Another critical advantage of QFD is its capacity to foster cross-functional collaboration within an organization. In industries like automotive manufacturing, the development of a product involves multiple departments, including design, engineering, marketing, and production. QFD serves as a common language that bridges these departments, ensuring that everyone is working toward the same customer-focused goals. By encouraging input from various stakeholders, QFD ensures that all aspects of product development, whether technical, aesthetic, or commercial, are considered in the early stages of planning.

For instance, engineers may prioritize technical feasibility, while marketing teams may be more concerned with consumer appeal. By using QFD, these diverse perspectives can be reconciled early in the development process, preventing costly misalignments later on. This collaborative approach helps align the decision-making process, reduces the likelihood of miscommunication, and ensures that the final

product meets both technical and commercial objectives. Ultimately, this leads to a more efficient and cost-effective development cycle, as potential conflicts are resolved before they become major issues.

QFD helps organizations prioritize technical efforts by identifying which customer requirements are most critical to success and ensuring that the technical characteristics associated with these requirements receive the appropriate focus. For example, in the development of an electric vehicle, the driving range might be a top priority for customers, while aesthetic features like paint color or dashboard design might be less critical. By using QFD, a company can allocate more engineering and financial resources toward improving battery technology and energy efficiency, while de-prioritizing less important features. This ensures that the most valuable resources are directed toward the areas that will have the greatest impact on customer satisfaction and market competitiveness.

Furthermore, QFD can help companies make informed trade-offs between competing priorities. For instance, a company may need to balance the desire for a larger battery (to increase driving range) with the need to keep the vehicle lightweight (to improve energy efficiency). By clearly mapping out the relationships between customer requirements and technical characteristics, QFD helps decision-makers visualize the impact of different trade-offs, leading to more strategic and well-informed decisions.

At its core, QFD is designed to improve product quality by ensuring that every technical decision is driven by real customer needs. In an era where consumers have more choices than ever before, quality is often the differentiating factor that sets a product apart from its competitors. By systematically linking customer requirements to technical characteristics, QFD helps ensure that the final product not only meets but exceeds customer expectations.

In the automotive industry, for instance, safety is a non-negotiable feature for many customers. QFD allows automakers to translate this broad requirement into specific technical features, such as crash test ratings, the number of airbags, and the integration of advanced driver assistance systems (ADAS). By focusing development efforts on these high-priority areas, companies can create vehicles that are not only safe but also perceived as high-quality by consumers.

The retrospective application of QFD to Chinese automotive models, as explored in Chapter 3, underscores their strong alignment with consumer expectations and technical benchmarks. This trusted methodology, widely regarded for its rigor in

translating customer requirements into actionable technical specifications, reveals that Chinese brands are performing remarkably well in critical areas such as affordability, performance, and innovation. The ability of these models to score highly when analyzed through a structured and objective framework like QFD is a compelling validation of their competitiveness in the global market. By systematically correlating customer priorities with technical capabilities, QFD has highlighted how Chinese brands excel in delivering products that meet diverse market demands. The results indicate that their ability to integrate advanced features, such as safety systems, energy efficiency, and innovative infotainment, while maintaining competitive pricing is not coincidental but evidence of their effective quality management practices. If a methodology as robust and impartial as QFD confirms their strong performance, it is reasonable to infer that these findings are reflective of their real-world market success.

QFD also provides a mechanism for continuous improvement. By tracking how well a product's technical features align with customer expectations, companies can make iterative improvements over time, ensuring that their offerings remain competitive in a rapidly changing market. This focus on continuous improvement, driven by customer feedback, helps build brand loyalty and long-term success.

Another key advantage of QFD is its adaptability to long-term strategic planning. As market dynamics shift and customer preferences evolve, QFD offers a flexible framework that can be adjusted to meet new challenges. Companies can continuously update their QFD matrices to reflect changing customer needs, new technological developments, and emerging market trends. This adaptability ensures that the QFD process remains relevant, allowing companies to stay ahead of the competition. In long-term planning, QFD helps organizations identify opportunities for innovation and future growth.

5.1.3 LeapMotor's strategy as a model

The internal model's analysis provides a captivating case study, illustrating how Chinese automotive brands are leveraging technology, design, and cost-effective production techniques to compete in global markets. Through the lens of the startup LeapMotor, we observe how the company is addressing market demands with vehicles that balance affordability with innovation, especially in electric vehicle technology. One of the most intriguing aspects of the brand's journey is its emphasis on inno-

vation. The company invested heavily in its in-house research and development, which has allowed it to develop proprietary technologies such as its advanced battery systems. Unlike many other emerging brands that rely on outsourcing critical components, LeapMotor's vertical integration strategy has enabled it to maintain tighter control over both costs and quality. This approach, combined with competitive pricing, has helped the brand gain a foothold not just in China, but in an increasingly globalized EV market.

From a strategic standpoint, LeapMotor's use case is interesting because it reflects broader trends in the global automotive landscape, including the electrification of transportation, the rise of smart vehicles, and the importance of cost control in manufacturing. It is particularly relevant for understanding how new entrants can disrupt traditional market hierarchies by offering vehicles that appeal to a wide range of consumers without sacrificing innovation. The brand's trajectory also provides a roadmap for how Chinese automakers can leverage domestic success into international recognition and market penetration.

LeapMotor's vehicle portfolio is designed to serve both the domestic market and international expansion. For export, the brand has concentrated on its C-SUV and compact EV models, which are well-suited to both urban environments and emerging markets where infrastructure for larger vehicles or more powerful electric drivetrains may be limited. The C10 model, for example, is a compact SUV that combines an extended driving range with advanced smart features, making it appealing in a variety of regions. As LeapMotor continues to expand its global footprint, the portfolio will likely evolve to include more region-specific models, catering to local tastes and regulatory requirements. The brand's ability to scale its production while maintaining technological innovation will be key to its long-term success in international markets.

One of the defining features of the case study on LeapMotor is its strategic decision to partner with Stellantis for achieving global distribution and economies of scale. This collaboration, formalized through the creation of a joint venture, is a distinctive move within the Chinese automotive landscape, where most competitors such as BYD, NIO, and GAC have pursued international expansion independently. For LeapMotor, a relatively young startup, this partnership reflects a pragmatic approach to addressing the challenges of scaling operations and penetrating foreign markets. The alliance with Stellantis allows LeapMotor to leverage an established global network, including access to extensive distribution channels and market ex-

expertise, significantly accelerating its international expansion. This approach not only distinguishes LeapMotor from its peers but also underscores the urgency for startups to find innovative solutions to compete effectively in a landscape dominated by well-funded and established giants. The partnership exemplifies a strategic adaptation to the barriers that often impede smaller players in the highly competitive automotive industry, highlighting LeapMotor's ability to blend innovation with practical business strategies.

In conclusion, one of LeapMotor's greatest strengths is its commitment to affordability without sacrificing innovation. This focus has allowed the brand to carve out a niche in both domestic and international markets, where price sensitivity is a major factor in purchasing decisions. The company's ability to offer advanced features, such as integrated smart systems, high-capacity batteries, and autonomous driving technologies, at a lower price point than many Western brands, has positioned it as a serious contender in the global EV market.

5.2 Reflections on internship experience

The internship experience at Stellantis (STLA) SpA for the Middle East and Africa (MEA) region has been a transformative and eye-opening journey. As I reflect on the months spent working closely with industry professionals, collaborating with teams across various functions, and observing the intricacies of a global automotive giant, I realize that this internship has provided me with invaluable insights that go beyond technical knowledge. It has enhanced my understanding of both established and emerging automotive brands, developed key professional skills, and shaped my perspective on the future of the automotive industry.

One of the most enriching aspects of my internship was the opportunity to interact with a diverse range of professionals across departments, hierarchies, and geographies. Stellantis is a global powerhouse, and its operations span continents, which allowed me to engage with teams from different cultural and professional backgrounds. From marketing and product development experts to engineers and strategy leaders, I gained access to a wealth of knowledge and perspectives that deepened my understanding of the global automotive landscape.

Particularly, working with the Middle East and Africa (MEA) regional teams provided a unique lens through which to view the complexities of expanding into diverse and challenging markets. I learned from professionals who had spent years navigat-

ing the regulatory, cultural, and infrastructural challenges of these regions, which was a lesson in adaptability and flexibility. Collaborating with these teams highlighted the importance of local expertise and the need to tailor global strategies to fit regional market demands.

A key takeaway from these interactions was the emphasis placed on cross-functional collaboration. While I had theoretical knowledge of how various departments, such as marketing, R&D, and operations, must work together, witnessing it firsthand solidified the importance of communication and cooperation in delivering successful products. I was particularly inspired by the managers I worked with who demonstrated exceptional problem-solving skills and the ability to bring diverse teams together to work toward common goals. Their ability to balance strategic thinking with operational execution taught me valuable lessons about leadership in a fast-paced and ever-changing industry. The professionals and colleagues I met were not only mentors but also sources of inspiration, and their passion for the industry and openness to share knowledge have motivated me.

While I came into the internship with a solid academic foundation, the hands-on experience I gained at Stellantis was a crucial bridge between theory and practice. One of the most significant differences I observed between academic learning and the working world was the speed at which decisions had to be made and implemented. In the academic environment, there is often time for deep analysis, reflection, and iteration. In contrast, the automotive industry, particularly in a company as large as Stellantis, operates at a fast pace where decisions are often made with incomplete information, and agility is key.

Working on projects related to vehicle launches, market analysis, and competitor benchmarking allowed me to see how theory translates into real-world application. For example, understanding the lifecycle of a vehicle, from concept to market launch, helped me contextualize the role of engineering, marketing, and supply chain management. Seeing how quickly market conditions, customer preferences, and regulatory landscapes influenced these decisions was a powerful lesson in the importance of adaptability and foresight in the automotive industry.

Moreover, my work with the different teams focused on the MEA region highlighted the complexities of positioning vehicles in diverse markets. Understanding the unique needs of consumers in the Middle East, where luxury and off-road capabilities are highly valued, contrasted with the practical, fuel-efficient preferences in parts of Africa, helped me appreciate the importance of localizing global strategies.

This experience gave me a new understanding of how a global brand like Stellantis tailors its offerings to meet the diverse demands of various regions while maintaining its core brand identity.

During my internship, I was able to develop a range of hard and soft skills that will serve me well in my future career. The ability to turn raw data into strategic recommendations is a skill that I will carry forward, as it is crucial in making informed decisions. In addition to technical skills, my strategic thinking abilities were significantly enhanced. Being part of strategic planning discussions where market entry, pricing, and product positioning decisions were made exposed me to high-level decision-making processes. I learned how to approach problems from a macro perspective, considering not only immediate concerns but also long-term impacts.

One of the most fascinating aspects of my internship was the opportunity to observe the differences between working on established brands within Stellantis and newer, more agile brands like LeapMotor. Stellantis manages a vast portfolio of historic brands, each with its own identity, heritage, and customer base. Working on these established brands provided me with insight into how Stellantis approaches product evolution, focusing on innovation while respecting brand heritage. This balancing act between innovation and tradition is a unique challenge for established brands, where the risk of alienating loyal customers is high. On the other hand, the marketing efforts for these brands benefit from strong brand recognition, customer loyalty, and a well-established network of dealerships, making market penetration in both new and mature markets more streamlined.

In contrast, working on newer brands like LeapMotor, though not directly part of Stellantis, offered insight into the challenges and opportunities faced by startups. LeapMotor, as a newcomer in the automotive space, operates with much greater flexibility and a willingness to take risks.

Beyond the technical and professional skills I developed, the internship experience was also a period of personal growth. Working in a global corporation with a diverse set of teams has strengthened my ability to collaborate, adapt to new challenges, improve communication and maintain resilience in the face of complexity. I have gained a deeper understanding of the automotive industry and of myself.

Chapter 6

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Chapter 7

Appendix

Technical Characteristics / Customer Requirements		Degree of importance of CR		Relative importance of CR		Our existing model		Competitor 1's model		Competitor 2's model		Target (new model)		Improvement ratio		Strength		Absolute weight of CR		Relative weight of CR	
1	Driving range	4	40%	A	30%	240	133	340	133	240	133	240	133	1.73	1.5	1.5	1.5	1.5	240	133	1.73
2	Acceleration and power	3	30%	B	20%	4.5	3.5	4.5	3.5	4.5	3.5	4.5	3.5	1.29	1.29	1.29	1.29	1.29	4.5	3.5	1.29
3	Battery capacity	3	30%	C	10%	45%	45%	45%	45%	45%	45%	45%	45%	1.0	1.0	1.0	1.0	1.0	45%	45%	1.0
4	User friendly infotainment system	3	30%	D	5%	30	30	30	30	30	30	30	30	1.0	1.0	1.0	1.0	1.0	30	30	1.0
5	Drive assist features	4	40%	E	10%	2	2	2	2	2	2	2	2	1.0	1.0	1.0	1.0	1.0	2	2	1.0
6	Modern exterior design	3	30%	F	5%	4	4	4	4	4	4	4	4	1.0	1.0	1.0	1.0	1.0	4	4	1.0
7	Special interior layout	3	30%	G	5%	3	3	3	3	3	3	3	3	1.0	1.0	1.0	1.0	1.0	3	3	1.0
8	Energy efficiency	4	40%	H	10%	15%	15%	15%	15%	15%	15%	15%	15%	1.0	1.0	1.0	1.0	1.0	15%	15%	1.0
9	Competitive price	2	20%	I	5%	2000	2000	2000	2000	2000	2000	2000	2000	1.0	1.0	1.0	1.0	1.0	2000	2000	1.0
10	Relative weight																				
11	Unit of measurement																				
12	Our existing model																				
13	Competitor 1's model																				
14	Competitor 2's model																				
15	Target (new model)																				
16	Improvement ratio																				
17	Strength																				
18	Absolute weight of CR																				
19	Relative weight of CR																				

