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What Strengths, Weaknesses, Opportunities, and Threats Are Mercedes-Benz Facing after Entering the Electric Vehicle Industry?

Ruixin Zhang[1,a,*], Songjie Zhou[2], Jiawen Zhao[3], Chengxun Li[4], Zekai Zhang[5]

[1]Tsinglan School, Dongguan, Guangdong, 523808, China
[2]Fairmont Schoo, Shanghai, 200241, China
[3]College of Liberal Arts and Sciences, University of Connecticut, Storrs, 06268, United States
[4]Marianapolis Preparatory School, Thompson, 06277-2802, United States
[5]Arlington Catholic High School, Arlington, 02474, United States
a. orion210707@gmail.com
**corresponding author*

Abstract: Mercedes Benz, a German automobile company in the luxury segment which began with traditional combustion cars like sports cars and SUVs, is making the transition towards sustainable mobility and electric vehicles. This paper identifies the rising factors of car electrification through a PEST analysis and analyzes Mercedes in the electric vehicle market using a SWOT model. Our recommendations focus on differentiating Mercedes from its top competitors by promoting influencer marketing and producing a more comprehensive range of electric vehicles not only limited to passenger cars. Overall, Mercedes needs to strengthen its differentiation strategy in the EV market due to intense competition and, thus, increase its mindshare.

Keywords: electric vehicles, Mercedes-Benz, SWOT analysis

1. Introduction

In recent years, with the acceleration of the Global Energy Transition, mitigating climate change and decarbonizing emissions have risen to the top of the global news agenda. A significant trend influencing this transition is electrification, or car electrification specifically. New research from Harvard University shows that fossil fuel emissions are responsible for one in five deaths worldwide [1]. Therefore, the electric vehicle (EV) sector has taken a gigantic leap in the industry because they support the green transition by emitting zero exhaust emissions and are far more cost-effective than combustion engine cars. This paper applies a SWOT Analysis model (strengths, weaknesses, opportunities, and threats) to assess the target firm's internal factors and external environment, Mercedes.

2. Industry Overview

Electric vehicles have motors that need to be powered continuously by batteries to function. The market covers a range of vehicles, including battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV), and fuel cell electric vehicles (FCEV) [2]. Despite the recent COVID-19 pandemic

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and supply chain chip shortages resulting in high production costs, the growth of electric and battery-powered cars has been enormous. In 2021, the number of electric vehicle sales worldwide doubled from the previous year, increasing by 51.8%, and is projected to grow at a CAGR of 34.5% [3]. Tesla, the best-selling electric vehicle manufacturer worldwide, for example, had 13.84% of the market share in 2021, with VW Group (11.28%) and BYD (8.84%) following behind [4].

3. Driving Forces of the Market

It is crucial to understand the factors that influence the EV industry due to their significant impact on the analysis and development of the strategy. For instance, this section applies the PEST research method (political, economic, social, and technological) to analyze the driving forces of the electric car industry.

3.1. Political

In the past decade, more and more policies and incentives have been introduced to speed up the transition towards sustainable mobility. For instance, the "Fit for 55" program refers to the European Union's goal to cut net greenhouse gas by at least 55 percent by 2030 through revising and updating the EU's climate, energy, and transport-related legislation [5]. Additionally, President Biden announced a target of 50% of the EV sale shares in the United States by 2030 [6]. As a result, demand for electric cars has skyrocketed.

3.2. Economical

Despite the Covid-19 pandemic and resulting supply shortages, EV sales are still growing at a high rate due to moderate economic growth, significant investments, government funding, and more. According to Statista, EV sales have increased by 51.8% compared to 2020 and are projected to reach a market volume of US $869.30 billion by 2022. [3].

3.3. Social

The Paris Agreement from COP 21 adopted by 196 Parties and other initiatives have increased climate awareness from world governments and the community [7]. In other words, sustainable cars have become more common and accepted with changing consumer behavior and awareness. In a 2022 survey by Convenience Store News, the majority (52%) of US consumers have developed a favorable opinion toward EVs, and installing EV chargers has become a high priority [8].

3.4. Technological

Inevitable advancements in technology and investments targeted toward companies working on car electrification reduce EV costs and cause a significant shift in the whole supply chain. In 2020 alone, the industry attracted $100 billion in investments [9].

4. Company Overview

Mercedes-Benz is a multinational automotive company headquartered in Stuttgart, Germany that was founded in 1926 by Karl Benz, Gottlieb Daimler, Wilhelm Maybach and Emil Jellinek. As the world's oldest car brand, it all started in 1886 when Karl Benz introduced the first petrol-powered car, the Motorwagen, in 1886 and from there on, Mercedes Benz has become one of the best-known luxurious and innovative brands [10].

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Mercedes's brand positioning statement "The Best or Nothing", refers to its high quality in engineering, safety, and luxury. In terms of market segmentation, Mercedes has established global markets in the luxury segment with a focus on China due to its large population and urbanized location. The brand targets an array of audiences such as female drivers, young families, and business professionals through its different marketing campaigns but focuses on high-income middle-aged individuals [11].

Mercedes, like many others, is making the transition towards sustainable mobility and a emissions free, AR-driven future. According to the Mercede's home website, all launched EVs from 2025 onwards will be all-electric, if market conditions allow [12]. (see table 1)

Table 1: summarizes points mentioned in this SWOT analysis.

Strengths	Weakness
● Global branding ● Innovation technologies ● Corporate social responsibility	● Luxury orientation limited customer ● Negative recall of vehicles ● Regional cultural crisis ● Limited brand awareness
Opportunities	Threats
● Legislation support ● Trends of increasing fuel price ● Trend of environmentally friendly	● Highly competitive market ● Consumers concerns ● Global semiconductor chip shortage ● Irreplaceable advantages of traditional fuel car

5. Company Strengths

5.1. Global Leading Brand Reputation

Mercedes-Benz's global branding enables its efficient electric vehicle promotion. This European brand has been continuously cementing its reputation worldwide. According to Interbrand [13], a renowned ranking system widely accepted by CEOs worldwide, Mercedes-Benz ranks No.8 in "Best Global Brands 2021". The brand retains this position for the sixth year, and its value has risen three percent since 2020 to 50.866 billion U.S. dollars [14]. Besides, its electric vehicle EQS is ranked No.1 in luxury electric cars according to the U.S. News & World Report [15]. Such popularity is an excellent basis for Mercedes-Benz to enter the E.V. field because there will be more admiring consumers and word of mouth, thus achieving more purchases.

Mercedes-Benz's international manufacturing facilities enable it to meet the global demand for E.V. more flexibly and efficiently. Its manufacturing facilities are headquartered in Germany, while other factories are located in 17 countries with 93 total locations across four continents. Besides, the corporation indicates that it readies plants for E.V., preparing to switch to all-electric by 2030 [16]. In its sustainability report for 2021, Mercedes-Benz states that the battery systems in E.V. models will be from factories in 7 locations on three continents [17]. As a result, Mercedes' global production networks will prepare it well for future large-scale manufacture.

In conclusion, Mercedes-Benz's worldwide solid reputation laid a certain foundation for its entry into the E.V. market. At the same time, its continuous investment in manufacturing facilities worldwide enables it to provide its vehicles to international consumers with more flexibility and efficiency.

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5.2. Corporate Social Responsibility-Oriented Brand Image

An effective social responsibility program is conducive for a company to build a stronger brand image [18]. In this paragraph, Mercedes's social responsibility is examined from three main aspects: its sustainable development, care for communities and engagement in female empowerment.

5.2.1. Sustainability

Mercedes-Benz is making efforts in climate protection and has set its goal of becoming CO2 neutral and complete electrification by 2039 [17]. Mercedes exercises in many aspects to achieve this goal. First, it has significantly invested in environmental-friendly and energy-efficient products, including its battery-powered automobiles- EQ models since 2018. Second, Mercedes sets a series of monitoring strategies in the car production process. For example, it monitors CO2 emissions in its supply chain. Third, the corporation has awards for its suppliers with lower CO2 emissions during production and those who generate electricity from renewable energy sources. Forth, Mercedes-Benz also utilizes solar power to generate electricity for its systems and buildings. Moreover, it has an app for its users to record individual fuel consumption. Therefore, it is safe to say that Mercedes-Benz's commitment to climate protection will prepare it for its "greener" future and "greener" consumer consumption.

5.2.2. Community-based Support

Mercedes-Benz has been providing community-based support through various projects to strengthen its brand image globally. For instance, Mercedes-Benz USA is committed to "Driving Your Future", showing its care and support for children, junior and military families in the community. First, it cares about kids' road safety through partnerships with Safe Kids Worldwide to educate families about injury awareness. Second, it collaborates with Junior Achievement to offer skills and knowledge to young people for economic success. For instance, in one of its field studies, students were taught how to distribute their money wisely for daily shopping and bank branches in an experimental study [19]. It also supports military families. Mercedes supports Johnny Mac Soldiers Fund and provides scholarships and assistance to military families and their kids.

5.2.3. Gender Empowerment

Mercedes-Benz also stands for gender equality. The corporation attaches tremendous significance to female empowerment and is sensitive to their needs and developments in various aspects: individual, family, and society. During the last five years, Mercedes actively engaged in "She's Mercedes" internationally [20]. It's a program that aims to emphasize females' achievements historically and gives the community opportunities to hear and get inspiration from them. It will benefit Mercedes to be attractive to women by promoting an equivalent environment for female employees in the workplace and providing good experiences for female consumers. As mentioned above, Mercedes-Benz's commitment to environmental protection and its devotion to various communities and future generations will positively impact its brand image. It is beneficial for the brand to create loyalty in present consumers and attract potential consumers as its market develops.

5.3. Innovation Technology in Electric Vehicle Models

Technical support is another strength for Mercedes-Benz in entering the EV market. The mild-hybrid system-EQ boost is one of the unique innovations of Mercedes's EV. It boosts the effectiveness and performance of a traditional internal combustion engine by using a 48-volt electrical design [21]. Besides, EQ-boost is more like a conventional engine so that people who used to drive non-electric

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vehicles don't need to change their driving patterns. These features set Mercedes-Benz's EV apart from those in the market.

Such technology is reflected in the full range of Mercedes-Benz's EQ models: EQS, EQE, EQB etc. All those EQ models employ synchronous motors, renowned for their high efficiency, compact design, and capacity to produce significant quantities of torque at low speeds. And among them, the EQS model is a masterpiece with the best luxury design and futuristic technology. Three of its characteristics are discussed below.

5.3.1. Impressive Power

EQS has shown its excellent performance as an electric car while incorporating emerging automotive technologies. A 107.8 kWh lithium-ion battery, a single electric motor with 329 horsepower and 419 pound-feet of torque are included as standard equipment in the 2022 Mercedes-Benz EQS 450+. These figures are comparable to those on the spec sheet for combustion engines in mid-range luxury vehicles. And when the drivers reach greater speeds, acceleration is robust and constant with quick power delivery [22].

5.3.2. Luxury Design

Mercedes-Benz's EV is different from Tesla in a significant feature: the sophisticated design and luxury interior. Its luxury positioning increases its competitiveness in the market as well as diversifies its different audiences. Its interior gives consumers a more engaging experience. As Mercedes-Benz describes [23], consumers appreciate its luxurious and comfortable design and the broad space and versatility of its SUV interior dimensions. These features combine visual and tactile, allowing Mercedes-Benz to stand out in the EV market. Weiss describes its major competitor Tesla, "It might be the fastest car in the world, but the Tesla Model S Plaid's build quality leaves a lot to be desired" [24].

5.3.3. Digitalization

The designs of the EQS models express the idea of digitalization by developing three features: MBUX screen, Augmented Reality, and ambient light. The cabin of the car is mainly covered by the 56-inch curved MBUX screen, and its seamless design includes the instrument cluster, infotainment and passenger display [23]. The front passenger has access to the screen including media like TV or video streaming while the car is moving, within the bounds of the local legal rules. Mercedes also protects driver's safety by detecting driver's evy movement; the dynamic material on the display will immediately fade if the driver stares at the display. Moreover, the augmented reality feature displays a view of the road ahead on the center screen, a head-up screen in the driver's sight simultaneously shows arrows, making it simpler and safer to view them without taking eyes off the road. Furthermore, the expansive sense of space and the interior ambience is enhanced by seven harmonious color options, giving drivers and passengers a more immersive journey. Therefore, Mercedes-Benz utilizes unique technology and creative design combined with digitalization in its electric vehicles. Hence, consumers who look for high-performance and luxury interiors will be drawn to these attractive features.

6. Company Weaknesses

6.1. Mercedes's Luxury Orientation

Mercedes-Benz is known for its luxury design which could limit its ability to win over more customers. Its two main markets are middle-aged upper class, historically over 40 years old, and

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young people aged from 25-40 years old. The common feature of these two groups is their high purchasing power. Especially for the upper class, the high cost of Mercedes-Benz cars is an indicator of their wealth and prestigious status [25].

Mercedes-Benz also sets high prices for its electric vehicles besides its conventional ones. Its most expensive EV model EQS starts at $102,310, which has the highest base price among luxury electric vehicles. And its most affordable EV model EQB has a start price of $56,800. Furthermore, its costly long-term maintenance fees also limit its approach to a broader range of consumers. According to Caredge [26], Mercedes-Benz has an average ten year maintenance cost of $15,986, ranked No.5 of 13 in "most expensive luxury brands to maintain". But its primary competitor in the EV market, Tesla, has the least cost for 10-year maintenance, about $5,867.

Therefore, Mercedes-Benz's luxury positioning and its costly long-term maintenance fees are parts of its weaknesses in attracting a larger group of consumers in the EV market.

6.2. Vehicle Recalls

Mercedes-Benz underwent several large-scale recalls in its history due to emission scandals and fire risks in its EV model EQS and EQC.

One large-scale recall was from Mercedes-Benz's parent company, Daimler. Groups sued Daimler in Germany for manipulating emission figures deliberately to meet the emission standard in Europe [27]. This scandal harmed its brand image and caused a trust crisis among consumers. And the aftermath was severe. Daimler was fined nearly 1.5 billion dollars in Europe and the U.S., and almost 800,000 vehicles were involved.

And two other recent recalls happened to its EV models. In the U.S., 24 EQS models were recalled due to lose ground connection inside the battery system. In China, 10,104 EQC models were recalled due to coolant leakage. The latter aroused strong dissatisfaction among Chinese consumers and created a public relations crisis [28].

The recall of vehicles aroused consumers' concern about vehicle safety, especially for the Mercedes-Benz new EV models. And it's difficult for Mercedes-Benz to promote its EV models efficiently if it unbales to deal with the safety issues and consumers' worries in time.

6.3. Regional Cultural Crisis

Mercedes-Benz has faced several cultural crises in regional countries that might hurt its brand image. In this section, China, the biggest market for Mercedes-Benz, will be the primary example to be analyzed.

One cultural crisis in China was related to nationality. In February 2018, Mercedes-Benz used a quote from Dalai Lama on Instagram, provoking an outcry from Chinese internet users [29]. Dalai Lama was considered a dangerous separatist by the Chinese government because of his intent to split the country in the name of "autonomy". Although Mercedes-Benz deleted the post and made an apology for its "extremely erroneous message" [30], its negative impact on the Chinese market was irreversible. It caused hurt feelings among Chinese consumers and was criticized as an "enemy of the people" by the People's Daily. Also, many people pledged to boycott the Mercedes brand [30].

The other one was about stereotypes about Asians. In December 2021, the makeup on one female model's face in Mercedes ads aroused controversy among Chinese on Sina Weibo and gained over 170 million views [31]. Some critics lash out against the brand for promoting Chinese beauty stereotypes because they thought the model's makeup was created for "slanted eyes". The episode makes Mercedes-Benz the latest target of consumer nationalism in China that has in the past dealt a blow to Dolce & Gabbana, Hennes & Mauritz, and others.

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Therefore, Mercedes-Benz's insufficient knowledge of Chinese culture and values are parts of its weakness. And it should learn from these crises to avoid conflicts in the future. Efficient crisis communication is of great significance in China because China is Mercedes-Benz's largest market worldwide. According to its annual report for 2021, car sales in China made up ¾ of total sales in Asia-Pacific for Q1-Q4, exceeding the total sales in Europe. Although its sales in China decreased by 2% compared to last year-2020 [32], China is still one of most promising markets, accounting for over a third of all new car sales in 2021 [33].

6.4. Limited Brand Awareness in the EV Market

Mercedes-Benz has limited brand awareness in the EV market, which is also a non-negligible internal weakness. Even though Mercedes-Benz has established a global reputation within the luxury cars segment, from SUVs to sports sedans, the brand is rarely associated with electric vehicles. In other words, Mercedes has low social mindshare: when people think of EVs, Mercedes-Benz is hardly the first brand that comes to mind. According to Investopedia, mindshare is the amount of consumer awareness there is around a certain product or idea [34]. Tesla, being the biggest driver of the market, has a high mind share because for many people, when they think of electric cars, Tesla first comes into their mind. Tesla has high public exposure in the EV industry, whether generated by its marketing campaigns, its received widespread social media coverage, or even its controversial founder, Musk.

Hence, Mercedes should strengthen their brand position in the EV market and maintain long-term sustainable consumer relationships.

7. Opportunities Facing Company

7.1. Proactive Governmental Policies

Government policy support has been and will be a catalyst for the development of the electric vehicle industry. These policies have created many external opportunities for Mercedes-Benz trams as well. Evidence of government assistance to consumers and electric car manufacturing companies are shown in this paragraph. Also, this paragraph identified clues that could reasonably lead to the assumption that Mercedes-Benz could receive funding from the German government for Daimler and an example of funding from the U.S.

As governments continue to pay attention to protecting the earth's ecological environment, each country has set out to limit energy emissions. For example, China's dual control energy and environmental goals from COP26 [35]. Electric vehicles can reduce carbon emissions and decrease the greenhouse effect significantly compared to traditional fuel cars. Therefore, promoting EVs has become a crucial goal for many countries. For instance, the local government in Guangdong, China, announced that in May and June, consumers who purchase a new electric car to replace an existing vehicle could receive a subsidy of 10,000 yuan (US$1,513) [36].

Similarly, people who buy an electric car in the U.S. could receive a tax credit of up to $7,000. Besides, purchasing specific electric vehicle models can even be exempt from road tax [37]. The U.S. and China are not the only two countries where the government offers benefits. Countries like India, Japan, and South Korea have similar benefit policies for EV buyers. Therefore, in the future, it is reasonable to speculate that the sales of the EQS series of pure electric cars produced by Mercedes-Benz are promising with the aid of these government benefits.

The U.S. government claimed to spend $7.5 billion to help electric vehicle companies build charging stations [38]. The government also provided funding for the electric car manufacturing company. It is reasonable to speculate that Mercedes-Benz can receive massive funding from the German government because the country's ambitious goal is to put six million electric vehicles on German roads by 2030 and become a significant market and electric mobility [39]. Moreover, the

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German government saw Mercedes' attitude towards the manufacture of electric cars, with the company Daimler giving 68billion euros for electric vehicles in 2021 and the idea of launching three new pure electric models by 2025 [40].

Therefore, through government policies, Mercedes-Benz EV can seize this opportunity to attract customers. Also, Mercedes can perfect EV technology and launch new EVs through government funding.

7.2. Increasing Global Fuel Prices

The recent increase in oil prices can increase the demand for electric vehicles and positively impact Mercedes' electric vehicle sales. This segment has a comparison of oil prices with past prices and forecasts. There is also an analysis of how fuel efficiency, which is not a strength of Mercedes-Benz, can benefit Mercedes-Benz electric vehicles.

Due to the Russia-Iraq war and the impact of the global pandemic, oil prices are at a rare all-time high. On March 10th, global benchmark oil prices traded for $115 per barrel, up from $80 per barrel at the end of the previous year. In addition, according to analysts at JP Morgan Chase & Co. and Bank of America, the oil supply interruptions in Russia may boost oil prices as high as $185 to $200 per barrel [41]. In 2022, gas prices will no longer be as low as they once were and will become more of a burden to live with.

In terms of the drastically increased global fuel price, pure electric vehicles with zero fuel consumption or hybrid vehicles with fuel- efficiency predictably become very attractive. It is worth mentioning that the average MPG of the classic cars on sale in the Mercedes-Benz market is lower than other cars such as Audi and BMW. After calculating the average MPG/city, Mercedes, Audi, and BMW have an average of 22.75 MPG/city, 24.87 MPG/city, and 34.42MPG/city, respectively. Therefore, Mercedes-Benz loyalists can have the potential expectation of suffering less from high fuel prices. Also, Mercedes-Benz plans that every Mercedes model will have an all-electric alternative by 2025, so consumers can be less concerned about the high price of series EQA and EQS [42].

Because of the rise in gas prices, electric vehicles are a good option. This factor is good for the electric car market and Mercedes-Benz electric cars. Furthermore, the weakness of the Mercedes-Benz fuel car can bring high attraction for its electric vehicle.

7.3. Increased Awareness of Environmental Protection and Sustainability

More and more people are becoming aware of protecting the environment, which has an unpredictable value for the future development of Mercedes-Benz electric vehicles. This paragraph finds many authoritative surveys that prove people's attitude towards the environment, especially the future consuming force----Gen Z.

Nowadays, customers show great passion in slogans, advertisements, and ideas related to environmental-friendly and sustainability. A Nudge theory can explain that people's ideology has changed, and people will spontaneously pay attention to things that are friendly or harmful to the environment. According to BCG's recent cross-country survey with more than 3,000 participants, in the wake of the pandemic, individuals are more dedicated to addressing environmental concerns and modifying their behavior to improve sustainability [43]. According to a recent PwC report, Southeast Asia and the Middle East customers have become more eco-friendly over the past six months, making up half (50 percent) of consumers worldwide [44]. In this favorable environment, the timing is perfect for Mercedes-Benz's massive investment in and launch of the electric vehicle. This will also raise Mercedes-Benz's already strong brand presence and brand value. Potential customers can realize that Mercedes-Benz is a car brand with the willingness to take responsibility for society. This is an opportunity for Mercedes-Benz to act as a social activist.

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Besides, another good news is that Mercedes will not have to worry about its sales soon because GenZ will be the leading consumer. GenZ is the generation with environmental consciousness. According to a surveying consultancy, DoSomething, 75 percent of Gen Z respondents claimed that whether brands conduct actions to protect both customers and employees may affect their purchasing choices. Another report also found that Gen Z will be the first to raise a concern if [brands] are not genuine [45].

Given people's attitude towards environmental protection, especially the future consumer Gen Z group, the growth trend of Mercedes-Benz electric vehicles in the future is up-and-coming.

8. Threats Facing Company

8.1. A Highly Competitive EV Market

In recent years, driven by the energy and environmental crisis, EVs have become one of the daily transportation tools. Many brands have taken the lead in the electric car market, using innovative methods to gain more customers. For Mercedes, the need to capture more market trends is an important issue.

According to the global plug-in electric car market share in 2021 [46], Mercedes-Benz accounted for 4.15%, which ranked ninth. The first three are Tesla, with 13.84%; VW Group, which accounted for 11.28%; ranked third is China's own brand BYD, accounting for 8.84%. The main reason is that Tesla, as the leading industry of electric vehicles, is the first choice of tram enthusiasts because Tesla can distinguish itself from similar products by its insistence on "low carbon" - its body is made of lighter aluminum. The third place is independent brand BYD because of the price advantage, which most Chinese people favor. "BYD's attractive Han sedan priced from about $32,800" [47]. By comparison, "the average price of a new electric vehicle spiked to $54,000 in May 2022" [48]. Porsche brand's new Lycan pure electric car, while maintaining the "fast" characteristics of sports cars, has gained customer groups by retaining the driving sense of gasoline cars while improving the speed of electric cars. In more depth, the leading brands participating in the electric car market, such as Tesla, BMW, and Porsche, share the same characteristics as Mercedes, creating novel ideas to attract consumers, making it difficult for Mercedes to differentiate itself in the EV market. Hence, in the face of huge competitors, Mercedes must find a more sophisticated way to differentiate itself in the EV market.

To sum up, the potential threat of Mercedes is still very much in the face of strong competitors. Mercedes needs to find innovative ways to reach opportunities and customers and more accurately tap its unique advantages for layout and marketing in the highly competitive electric vehicle market. Whether it is Mercedes, BMW, or Tesla, they all have a common goal - to capture the market for electric vehicles.

8.2. Consumer Concerns

With a variety of EVs coming into our perspective, more consumer concerns about the safety of EVs have emerged. Consumers' concerns are mainly about slow charging speed, unstable batteries, high battery costs, and poor fire and water resistance.

First, the charging speed of electric vehicles is much slower than the refueling speed of traditional gasoline vehicles [49]. When a gasoline car runs out of fuel, the vehicle can be refueled in 3 to 5 minutes after driving into a gas station. Charging an EV, on the other hand, takes anywhere from 30 minutes to half a day. Two reasons for this are that there are insufficient installments charging stations and that the speed of charging an EV depends on the current battery capacity of the EV; the battery condition; the maximum charge rate that the current EV can accept; the maximum charge rate of the

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charging station used; and environmental factors such as the need for longer charging times in colder ambient temperatures.

The second is the stability of the battery. As the purchase of electric vehicles is a high involvement thing, the endless phenomenon of spontaneous combustion of EVs has increased consumers' concerns about buying electric vehicles. Most of the news of spontaneous car combustion that can be seen online today are EV accidents. For instance, a Tesla Model 3 caught fire in Shanghai in January 2021. Tesla then judged that the vehicle collision caused battery damage which triggered the accident [50]. In February, an Xpeng P7 burst into flames, and it has not been determined whether the accident was caused by spontaneous combustion [51]; in April, an Xpeng G3 chassis caught fire outside the parking lot [52].

Third, the cost of the battery and the motor controller is higher. The battery costs electricity in winter, the air conditioner costs electricity in summer, and the actual range data of electric vehicles is less than the official data. The lack of mileage for the already existing vehicles and the high battery cost makes consumers' concerns even more severe.

Fourth, some electric cars are designed with no thermal isolation between the battery and the passenger compartment and no safety protection in case of fire. The other is the waterproof problem. Due to the manufacturing level, the sealing performance of the vehicle is relatively poor. Heavy rain or wading may make the critical parts water, causing a short circuit fire.

8.3. Global Shortage of Semiconductor Chip

During the pandemic, the rising demand for electronics and inefficient production has led to a gap in the semiconductor supply chain, which is a significant threat to electric vehicles.

The surge in demand for COVID-19, cell phones, and computers has led to an oversupply of semiconductor chips and longer delivery times for chip orders than before, resulting in a squeeze on orders. Moreover, by the global epidemic, many chip foundries have encountered the problem of supply chain stagnation. There are about 3-4 large chip manufacturing foundries in the world. However, the express logistics are affected by the epidemic, the production of chips cannot arrive as scheduled, and the production costs will also increase.

These impacts also occur in electric vehicles, where companies have had to make essential changes or close due to ongoing shortages. In terms of changes, in February 2022, Tesla decided to remove one of the two electronic control units included in the bogies of its Model 3 and Model Y cars to meet fourth-quarter sales targets. The decision was made in light of a shortage that has affected tens of thousands of vehicles for customers in China, Australia, the United Kingdom, Germany, and other parts of Europe. Tesla did not notify customers of this removal action because the part is redundant and not required for the Level 2 driver assistance feature.

According to data: "Volume slumped by 25 percent in the fourth quarter as the semiconductor shortage continued to hit supply" [53]. This impact has left the top companies in the EV market unable to deliver new cars on time. In turn, most customers are unwilling to wait, so they have turned to the second-hand market, where soaring prices also impact brand sales.

8.4. Irreplaceable Advantages of Petrol Car

Electric cars cannot replace the strengths of traditional fuel cars in terms of endurance, maintenance time, driving experience [54], and engine sound.

In many ways, electric cars cannot replace the strengths of traditional gas-powered cars. A gasoline car's driving feeling and experience are much higher than that of an electric car. Alternatively, example, gasoline cars have been around longer than electric cars, making their range easier. Especially on long trips, the range of electric cars is a big problem; Gasoline car troubleshooting time

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is relatively short in maintaining a complete system. The breakdown maintenance of electric vehicles needs to combine with chip and high-tech maintenance, which needs to be handled by special repair centers for electric vehicles, and it takes more time to solve the problems [55].

The most striking thing about electric cars is that they have no engine sound [56]. Electric cars are powered by batteries and do not have the engine of classic cars, so there is no noise on the road. However, the silence of electric cars can create a collision risk for people and other vehicles on the road. Because of all the noise outside, some people or vehicles cannot notice the arrival of electric cars, which has led to many dangerous car accidents.

For now, electric cars still cannot completely replace traditional gasoline cars because Mercedes' move into electric cars means that these common problems with electric cars will also appear in their products. If Mercedes can reduce these threats and make fuel cars no longer an irreplaceable advantage, it will gain a more significant customer market.

9. Recommendations

Provide middle-class consumers with high-quality but affordable electric cars with prices between $45,000-$50,000 and offer them allowance for charging fees if possible. This recommendation is because the upper class is the current primary market for Mercedes. Moreover, even the most affordable EQ model in Mercedes-EQB starts at $56,800, but the average annual middle income globally in 2021 is about $14,600-$29,200 [57]. Furthermore, if people are being offered charging fees supplement, it will likely be for Mercedes to attract more potential middle-class consumers without hurting its elite brand image.

Developing other EVs not limited to passenger cars such as golf carts and school buses. This way, Mercedes can host golf competitions or collaborate with local schools by providing electric school buses. By doing this, Mercedes-Benz can give people a sense of a caring society, and consumers can see Mercedes-Benz's electric cars on more occasions which, in turn, can help strengthen the firm's mindshare and differentiate it in the highly competitive EV market.

Test various functions of electric vehicles frequently, such as braking, range, heat resistance, and charging more frequently. Update the collected data every month on the Mercedes-Benz official website. The high frequency of testing and the data's transparency will help eliminate some safety concerns and improve the performance of electric vehicles from Mercedes. Invite the public to follow the actual situation, let consumers have a sense of participation in their safety and security, and strengthen trust in the brand.

Strengthening influencer marketing on social media platforms such as TikTok and Instagram through micro-influencers as they are more cost-effective, have higher engagement rates, and have a more specialized audience. This is because Gen Z, the consumers with the most significant purchasing power in the near future, has a crucial impact on Mercedes-Benz's EV sales. They are more likely influenced by word-of-mouth methods (WOM), which emphasize relevance and authenticity. Also, promoting influencer marketing can improve the limited brand awareness of Benz EVs, strengthening Mercedes' brand position and mindshare in the EV market.

Host cultural events/parties 2-3 times a year where international employees and faculty can share their cultural values, customs, and etiquette by enjoying cuisine, music, and more. While having fun, people can learn from each other's culture and develop communication skills in a culture-diverse scenery. The reason for holding the cultural events is that communicating in different cultural environments and adapting to the region's cultural dimension are essential factors Mercedes should consider for promoting their products in local markets. Thus, those employees can better deal with cultural issues and prevent cultural crises like the one in China from happening.

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10. Conclusion

In conclusion, this paper uses a SWOT model to analyze Mercedes in the EV industry. The strengths of Mercedes-Benz promoting its EV include its recognizable global reputation, innovative and unique features of its EV, and its social responsibilities to the worldwide communities. However, its luxury positioning will limit its ability to attract more consumers. In addition, its recall of vehicles and poor cultural crisis communication will leave a negative impression on consumers. Moreover, we found many opportunities for Mercedes to seize in the future. Those include government assistance to both customers and manufacturers, rising gasoline prices, and increasing environmental awareness, especially with the GenZ, all hinting at high sales and popularity of Mercedes electric cars in the future. Finally, the threats for Mercedes include a competitive EV market, consumer concerns regarding safety, chip supply shortages, and the missing features of fuel vehicles. All together, we proposed five recommendations: giving middle-class consumers access to high-quality, reasonably priced EVs; creating a more comprehensive range of EVs not only limited to passenger cars; testing EV features frequently to improve data transparency; promoting influencer marketing to increase mindshare; and hosting cultural events to develop cross-cultural communication skills. Mercedes needs to strengthen its differentiation strategy in the EV market and improve its mindshare through methods like WOM.

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