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THE IMPACT OF A SUSTAINABLE TRANSITION STRATEGY IN THE AUTOMOTIVE INDUSTRY: ANALYSIS OF VALUE DRIVE MOTOR'S PATH AND A PERSONAL REFLECTION ON A BUSINESS SIMULATION

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Abstract

The current situation relative to the exploitation of natural resources imposes the urgency of a global strategy that prioritizes sustainable innovation. This work presents the results of implementing a sustainable transition strategy in an automotive company in the 21st century during an engaging business simulation experience, focusing on Strategy, Innovation and Finance. An integrated view across the various departments is of particular relevance. A personal reflection led to the conclusion that self-awareness and familiarity with all team members enhance the team's performance.

Keywords: Apply theory in practice; Business simulation; Develop a business strategy; Automotive industry; Reflective Practice; Sustainability; ESG; Sustainable innovation; Team dynamics; Cross-functional coordination.

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Introduction

This work corresponds to the last stage of a business simulation. We started by undergoing a firm analysis and finished with a personal reflection. The experience ocurred in the last three weeks of June 2024 and simulated six years of operating an automotive company.

1. Firm Analysis – Introduction

In the following section, we will analyse Value Drive Motors (VDM). Starting with its strategy, followed by an analysis of its innovation and finance departments.

In the Strategy Analysis section, we are going to first, understand what VDM's mission and vision were, followed by an external analysis of the industry, using the PESTEL and Porter's Five Forces frameworks. After, we will do an Internal analysis using the VRIO framework, and to summarize everything, a SWOT analysis. To finish the section, we will be analysing VDM's competitive positioning and recommendations to stay competitive in this dynamic market.

In the Innovation Analysis section, we are going to reflect on the results of the Innovation department. First, by understanding what the responsibilities of the Innovation director were, followed by an analysis of simulation data and results, emphasizing frameworks used by VDM relative to their decision-making process. To finish the innovation section, we will review the similarities between VDM's business model and Tesla's.

In the Financial Analysis section, we are going to discuss the financial department's path, understanding what the role of the finance directors was, followed by a financial analysis of VDM's results, focusing on key financial ratios and trends. To finish this section, we will explore how VDM took advantage of sustainable finance and how it stands next to other companies in the automotive industry.

Finally, in the last section, we are going to discuss the importance of having an integrated view across departments in the simulation.

1.1. Strategy Analysis

We live in a world where uncertainty makes the path for businesses as far from linear as possible. As Freedman stated: “There is a call for a strategy every time the path to a given destination is not straightforward” (Freedman 2013). Value Drive Motors was just assigned a new team of directors with the intention of revolutionizing the company. To do so, the directors needed to reformulate what was VDM’s destination and the strategy to achieve it. In the following section, we will analyse the strategy employed by VDM and the changes it suffered along the way.

1.1.1. Company Overview – Vision and Mission

The first step was to define the goals, vision and mission of VDM. By looking at the current world conditions, some decisions were straightforward: VDM decided that they wanted to be leaders in the EV market, taking an active part in the energy transition. To do so, they decided to progressively discontinue all the conventional models that were still in production and aimed to shift their entire fleet to fully electric as soon as possible, going into mass production of quality EVs at reduced prices by limiting the feature packages available for customers. And so, the name Value Drive Motors surged: “VDM. Electrification accessible for all”.

During VDM’s journey, however, this strategy suffered some changes. In Q15 VDM started the development of its’ first electric luxury model “LUX-Embourg” (Figure 1), contradicting its value of cars accessible for all. The reason behind this contradiction was that they realized there was unexplored demand in the market for higher-end vehicles, and chose to capture this demand, shifting their strategy towards selling quality vehicles with the best technology available in the market, significantly increasing investments in new technologies while still offering cheaper models, aiming to capture the demand from both ends of the spectrum.

1.1.2. External Analysis (PESTEL & Porter's Five Forces)

To analyse the external environment for VDM and the automotive industry we are going to use the PESTEL framework (Aguilar 1967) and Porter's Five Forces Framework (Porter 1980).

1.1.2.1. PESTEL

Looking at the Political factors, we see that governments worldwide are implementing stricter emission regulations, ("Euro 7: Council Adopts New Rules on Emission Limits for Cars, Vans and Trucks - Consilium" 2024) and incentives for EVs ("Norway's Electric Vehicle Incentives – Policies - IEA" 2023) to combat the climate crisis. VDM was faced with new regulations in Q6, shrinking the CO2 allowance per unit sold from 95.00 g/mile to 47.50 g/mile. Also, trade wars and tariffs highly affect the prices and availability of both vehicles and their components. In Q6 the tariffs imposed on imported Chinese vehicles increased by 100% and in Q9, China increased the tariffs on American imported EVs from 25% to 40%, requiring careful management and production placement of VDM's newly developed EV models.

Regarding Economic and Social factors, we know that consumer preferences are an ever-evolving topic and despite the increase in the consumers' environmental awareness, shifting their preference towards alternatives like EVs (Techa-Erawan, Ratisukpimol, and Bunditsakulchai 2024), in Q24 VDM was faced with an economic recession hitting the global economy, plummeting the demand for vehicles in general.

Looking at the technological and environmental factors, we know that to reduce their carbon footprint, VDM highly invested in the development of EVs and battery technology. Additionally, in Q8 they invested in the development of a power charging network to reduce range anxiety for their customers, while in Q13, VDM invested in external battery recycling solutions, reflecting positively from Q14 onwards as the issue of recycling end-of-life batteries worsened with the higher number of EVs on the road.

Finally, considering legal factors, companies in the automotive industry need to invest in compliance relative not only to emissions but also to safety.

1.1.2.2. Porter's Five Forces

Looking at Porter's Five Forces framework, we can evaluate the threat of new entrants as low due to the high capital requirements of the industry and the regulatory challenges concerning environmental and safety regulations which pose great challenges for new entrants.

Regarding the threat of substitutes, there have been some rising trends in the matter of urban mobility, with the introduction of "Mobility as a Service" models, for example, "Share Now", operating in several European countries, improvement of public transportation systems, the rise of ride-sharing services and the increase of micro-mobility options, all providing great threats for the traditional vehicle ownership model, and ultimately to the automotive industry as we know it (Jochem et al. 2020). However, because these options are not fully ingrained in our society yet, we considered the threat of substitutes for this industry to be moderately high.

Companies in the automotive industry have a high purchasing power, leading them to often dictate the terms to suppliers. However, there is also the case that in periods of high demand or supply shortages, suppliers' bargaining power increases. Therefore, the bargaining power of suppliers in the automotive industry is moderate to low.

Looking at the bargaining power of buyers, we know that there has been an increasing availability of EVs, and consumers have plenty of options at their disposal. Therefore, the bargaining power of buyers in this market is considered moderately high.

Finally, regarding the industry rivalry, we know that the automotive industry is widely known for its high competition, with numerous global players aiming at increasing their market shares, making the industry rivalry high.

1.1.3. Internal Analysis

After analysing the external environment VDM was set in, we are going to go through an internal analysis using the VRIO framework (Barney 1991) to understand which resources and capabilities VDM has, can provide them with a sustained competitive advantage over their competitors by evaluating these resources and capabilities in 4 different dimensions: Value, Rarity, Imitability and Organization.

Looking at some selected resources and capabilities VDM has (Table 1), it is possible to conclude that VDM has sustained competitive advantages over their competitors, for example, its focus on investments in continuous innovation and R&D Capabilities, that led to Advanced Battery technology early on. Additionally, being an already established brand and developing throughout the years an image of a sustainable brand, with quality vehicles developed trust and a positive brand reputation for their customers.

1.1.4. SWOT Analysis

To summarize the external and internal analysis, we are going to use a SWOT analysis (Figure 2) to understand VDM's strengths, weaknesses, opportunities and threats (Johnson, Scholes, and Whittington 2005).

Regarding VDM's strengths and weaknesses, they have shown great ability to lead innovation in the industry, showcasing strong R&D capabilities and offering advanced features and battery technology, building a positive brand reputation of a green company with quality products. Additionally, VDM has shown positive results, enabling it to keep investing in a green and just transition. However, as the transition to EVs is still in the early stages due to barriers such as limited power charging networks, consumers' willingness to change to EVs is still developing, making the strategy of constituting a 100% electric fleet extremely risky. (Techa-Erawan, Ratisukpimol, and Bunditsakulchai 2024).

Looking at opportunities and threats, we know that the EV market demand is growing, so, to take advantage of this, VDM can keep using its R&D capabilities to lead the path and capitalize on this growth. However, as previously mentioned, the automotive industry is characterized by its fierce competition and its numerous global players, possibly making this path more demanding, along with the vulnerability of the industry to macro factors such as economic uncertainties, regulatory changes and possible supply chain disruptions.

1.1.5. Competitive Positioning and Recommendations

VDM started by wanting to follow a cost leadership strategy, taking advantage of economies of scale by producing high volumes at competitive prices. However, midway through, there was a shift (Figure 3), and tried to differentiate, starting to produce luxury vehicles. By trying to offer both low and high-end vehicles, VDM may be facing risks associated with being "stuck in the middle" by not focusing on any of Porter's generic strategies (Porter 1980). This broad product mix may generate brand confusion in their customers by not communicating a clear brand identity, possibly diluting the brand identity in both segments. This may also generate operational inefficiencies, and complications in the cost structure as it will be challenging to achieve economies of scale while splitting the production.

To mitigate this issue, VDM could follow one of two paths. The first would be to specialize in one of the strategies to consolidate its brand identity and benefit the most from the pursued strategy. Secondly, they could target both market segments by splitting into two brands: One brand would target the mass market with a cost leadership strategy, while the other would target the luxury market with a differentiation strategy. Despite the risk associated with managing the latter strategy, it has been previously achieved by Toyota, launching Lexus in 1989 to compete in the luxury car market against already established brands (Saihjpal and Awate 2020).

1.2. Innovation Analysis

The importance of innovation in the automotive industry is consensual. As mentioned by varied authors (Mohd Zawawi et al. 2016; “Innovation in Business: Importance, Benefits, & Examples” 2024), innovation can be thought of as the process of doing something different to create value. Within the business world you can see it as creating or improving products, resulting in improvements within the company, which are relevant because the customer needs today will never stay stagnant, and to keep up with these changes we count on innovation to evaluate these preference shifts, adapt and improve the company’s offerings and efficiency.

There is also the need to answer to recent international commitments to hold the increase of the global average temperature (“THE PARIS AGREEMENT” 2016), incentivizing companies in the automotive industry to be part of the energy transition, developing newer and more energy-efficient models, EVs, charging infrastructure, battery recycling solutions, and even to develop alternative solutions for efficient urban mobility such as a potential shift from the traditional ownership model to “Mobility as a Service” (Chan et al. 2023).

In the simulation, the innovation director’s tasks were to develop new vehicles, in coordination with the marketing department to access consumer preferences in the three different markets VDM operates in (China, the US and Europe), and invest in R&D to get new technologies that would increase their new models’ demand by providing in-demand features. In addition to that, for VDM, it was also the innovation director’s responsibility to constantly monitor changes in policies on CO2 allowances and bonuses/penalties from CO2 emissions.

1.2.1. Analysis of Simulation Data

Since they decided that their strategy was to shift to a fully electric fleet as soon as possible, VDM started developing a plan to launch new models while maximizing the value of the older vehicles still in production. This strategy involved the gradual electrification of the fleet and discontinuation of vehicles that were in a declining stage of their lifecycle. We began by

developing electric versions of our traditional vehicles, starting the development of the models "E-MICRO" and "E-BIZ" in Q4, "E-PICKUP" was developed in Q5, "E-SPORTY" in Q6 and "C2E" and "Ebay4" in Q7, spending a cumulative amount of $4,935M towards new model development until the end of the first year (Graph 1). For the following years, this development cycle repeated itself, even discontinuing EVs that reached a declining stage in their lifecycle (Figure 1). By the end of the simulation, however, the team agreed that there was no need to re-develop newer versions of the EVs so fast and instead should have re-launched some EV models. Probably in the longer run, VDM could have taken more advantage of these multiple developments as their models were always top of the line with the most recent features.

Despite this, VDM's results were very positive, having a constant rise in E-Car Sales from Q5 onwards, reaching values of 3,579,398 units in cumulative E-Cars sales by Q28 (Graph 2).

Throughout the six years, the incentives for producing EVs also helped in deciding to shift to fully electric. The CO2 allowance started in Q4 at 95.00 g/mile with a penalty factor of $60 and a bonus factor of $20. In this quarter VDM was emitting 69.20 g/mile attaining bonuses of $51.44M. Two shocks were recorded ahead: first, in Q6 the CO2 allowance decreased to 47.50 g/mile. And finally, in Q12 the bonus factor dropped to $0. Throughout these policy changes, VDM's early investment in EVs allowed them never to pay penalties for emissions. From Q5 to Q12, VDM managed to gain cumulative bonuses amounting to $689.77M and from Q12 onwards the fleet was already fully electric, allowing them not to pay any penalties. (Graph 3)

1.2.2. Academic Frameworks on Innovation

During the simulation, impactful decisions had to be made by the team. This decision-making process was pivotal to the success and sustainability of the company, leading the team to use certain frameworks to base their decisions, promoting an environment of continuous innovation and growth. Throughout this section, we are going to refer to three frameworks used by VDM: Value Creation Wheel (VCW), Disruptive Innovation Theory and Open Innovation.

The Value Creation Wheel is a method designed to assist key decision-makers in identifying solutions to complex issues, innovating, and overall making decisions (Lages 2024). The VCW framework was many times a tool to guide VDM's decision-making process. While identifying market needs, together with the marketing director, the innovation director used the VCW to gather and analyse market data to identify the characteristics and features more demanded by the market, easing the integration of these insights in the process of developing new vehicles. Furthermore, the VCW also facilitated the prioritization of R&D investments, by evaluating the potential value of the different options to decide if the cost of opportunity for some investments was not too high at the moment of decision.

In the beginning, we wanted to take advantage of the fact that the EV market was still in the early stages and based ourselves on the Disruptive Innovation Theory (Christensen 2016) to make the decision to shift our whole fleet as soon as possible. This theory states that companies might fail by focusing too much on sustaining innovation and neglecting disruptive potential. With this in mind, VDM intended to pioneer this market and always stay ahead of the competition.

Also, when making the key strategic decision on whether we should invest or build from scratch a power charging network, we decided to support our decision with the Open Innovation Framework (Siota et al. 2003), simply investing and following an Inbound Open Innovation by sourcing external knowledge when entering this new side of the market instead of building it ourselves from scratch to take advantage of the expertise and know-how of local service providers regarding regional regulations, market conditions, and consumer behaviour.

1.2.3. Comparison with Real-world Case Studies

Looking at cases from comparable companies in the real world, our strategy was many times following Tesla's strategy and incentives. Tesla is a company that completely disrupted the automotive industry by focusing on innovation, sustainability, advanced technology integration,

and accelerating the energy transition, becoming a leader in the EV market (Andrew Rassweiler; Stephanie Brinley; Mark Boyadjis 2014). Some of the practices Tesla has in their core operation that reflect their relentless focus on Innovation and Technology integration were also a focus for VDM as their priority was to give the customer the newest features available through continuous innovation. In addition to that, Tesla disrupted the industry by implementing a direct-to-consumer sales model through online channels, reducing their reliance on traditional dealerships and enabling a higher control on the customer experience, education about the benefits of purchasing EVs and attaining higher profit margins. VDM decided to follow a similar business model to reduce their reliance on car dealerships after not winning a $1,920M increase in revenue from an important dealership client. VDM considered this to be the right path to move towards a more sustainable and efficient transportation future.

1.3. Financial Analysis

Financial management plays a critical role in every company, and if we look at the intricacies of the automotive industry we can understand its great reliance on efficient financial management because of its fierce competition environment, its complexity, and its high capital requirements (Lempp and Siegfried 2022). During the six years VDM operated under the new management team there were several periods of high investments for the development of new electric vehicle models, factories, R&D, marketing expenses and HR expenses, due to our objectives of transitioning to fully electric and accelerating the energy transition.

Within the simulation, the financial directors were responsible for allocating resources in the most efficient way possible. Their main responsibilities ranged from discontinuing models to deciding whether to issue shares or take loans to finance projects and cover the needs of the remaining departments. In addition to that, they also had at their disposal the option to issue green bonds, which we will later discuss in the sustainable finance section.

1.3.1. Analysis of Simulation Data

Throughout the six years of simulation, the common goal for every department was to increase VDM's value. Under the new management team, the company showed very promising results, almost doubling its value from Q1 with $1957.23, finishing in Q28 with $3676.19.

To better understand how these results were achieved we are going to be analysing several parameters, starting with the Free Cash Flow (FCF). FCF is a key indicator of a company's financial health, representing how much cash is available after making the necessary capital expenditures (Berk and DeMarzo 2017). Before the new management team, VDM was having positive and slowly decreasing FCF until Q5. After that, because of the strategic shift that required high capital investments to open new factories, R&D, and the development of new EV models (Figure 1), FCF became negative until Q13. In Q14 we started to get the upside from our strategy achieving positive FCF until the end of the simulation except for Q18 where we decided to re-invest in newer models with the most recent features to drive up demand. (Graph 4)

In the beginning, there was evidence of an increase in the demand for EVs in the market, and by focusing on this market, VDM managed to increase its revenues by 41.07% from Q1 to Q15 (Graph 5). However, by Q15 we realized we were overlooking a large part of the demand available in the market, and decided that we also wanted to capture the higher-end vehicle audience. This reflected positively from Q19 onwards upon the introduction of "LUX-Embourg", steadily increasing our revenues at an average rate of 3.29% per quarter until Q28 (Graph 5).

Due to the high capital requirements, it is paramount to analyse the company's WACC, as it shows the cost of capital to the firm from all sources, including debt and equity (Berk and DeMarzo 2017). To reduce the cost of capital in the specific context of the simulation we could:

optimize our capital structure by increasing our debt to a point where the risk of financial distress remains manageable (Berk and DeMarzo 2017); improve our credit rating by maintaining a financially healthy and balanced position (Abuhommous, Alsaraireh, and Alqaralleh 2022); or reducing equity costs through share buybacks (Wang and Chen 2023).

VDM managed to keep their WACC averaging 5.79% which compared to the industry average is considerably low, as the automotive sector averaged 8.8% in 2023 ("Cost of Capital Study 2023 - KPMG Germany" 2024). The trend for VDM's WACC was decreasing (with just a slight increase in Q14 due to a share issuance in the previous quarter) (Graph 6). This trend was due to three factors: a strong financial position; maintaining a prudent debt ratio; and reducing the cost of equity through share buybacks. VDM aimed to keep a prudent debt ratio, averaging 45,04% for the six years, indicating moderate leverage so that it is possible to both benefit from the upside of financing through debt, while also keeping a manageable financial risk. Two major shocks were recorded in VDM's debt ratio: Between Q8 and Q9 there was an increase in the debt ratio (44.10% to 50.80%), in a quarter where green bonds and bank loans were issued increasing the debt load. Between Q24 and Q25, we saw a decrease (43.50% to 36.40%) due to the issuance of new shares, increasing the capital raised from equity and ultimately reducing the debt ratio. In the automotive industry, this ratio averages 72% ("EV, Auto & Truck Manufacturers Industry Financial Strength Information" 2024) which is significantly higher, portraying the conservative route VDM took to stay secure during economic downturns.

1.3.2. Sustainable Finance & ESG

VDM's focus on investing in the energy transition through R&D and product development created the opportunity to issue green debt at a cheaper interest rate of 3% as opposed to the minimum interest rate for traditional bank loans which was 4.25% with a credit rating of AAA. VDM issued their first green bond amounting to $918M in Q5 to fund these investments. Later on, they kept on issuing green debt, achieving 100% of Green Capital Ratio by Q22, meaning

that VDM became fully funded by green debt (Graph 7). VDM's Green Capex Ratio has also had a positive trend, achieving 58.24% by Q28 (Graph 8), meaning that more than half of the investments were in green projects.

ESG is gradually making advances in the finance world. Investors and stakeholders are progressively requiring companies to report on their ESG performance, as it provides critical information to risk-proof their investments, prioritizing companies that showcase their commitment to improving their Environmental, Social and Governance Factors (Diwan and Amarayil Sreeraman 2024). Due to this growing trend, and to align with investors' expectations, VDM has prepared an ESG report for the first 20 Quarters of operation (VDM ESG Report).

This is becoming a standard in the automotive industry as other companies are also reporting on their ESG performance. Toyota and Ford are using reporting standards and guidelines from GRI (Global Reporting Initiative), SASB (Sustainability Accounting Standards Boards), and TCFD (Task Force on Climate-Related Financial Disclosures) (Toyota Motor Corporation 2023a; 2023b; Ford Motor Company 2023). These standards and guidelines are commonly recognized as leaders in the ESG and sustainability reporting market. In the future, it could be useful that VDM also starts reporting using these globally recognized standards as they will increase its credibility and transparency, possibly even helping to meet legal requirements or anticipate future regulations (Diwan and Amarayil Sreeraman 2024).

1.4. Integrated View Across Departments

Throughout the simulation, the need to share information between departments was evident. No one alone had sufficient information to make decisions by themselves, creating an essential environment of coordination and cooperation between roles.

The strategy was crucial to ensure alignment between every director's actions and decision-making, as every department acted according to the pre-determined strategy. By following the objective of "Leading the EV market", VDM's Innovation director knew that it was necessary

to coordinate with Operations for optimal development timeline, Marketing for the demanded features, and Finance for funding. Finally, the Finance directors needed to align with the same strategy to understand the priorities of the company, providing or denying funding for every department's requests.

1.5. Conclusion – Firm Analysis

This analysis of VDM focusing on Strategy, Innovation and Finance aims to portray the company's path while following a sustainable transition strategy. We started by understanding the motivations behind the team's decisions. After, we have undergone an external, internal, and competitive positioning analysis of VDM, followed by recommendations for the future. The key takeaway from this section was that VDM is taking a big risk by trying to target such a broad market segment and that re-defining the strategy towards either specializing on cost leadership or differentiation, or splitting into two brands to target both ends of the markets could be beneficial for VDM's future.

The second section, focuses on the Innovation department, analysing the results and some academic frameworks used by VDM to base their decisions, finalising the section by highlighting the similarities between VDM and Tesla regarding strategy, incentives, and practices such as online, direct-to-consumer sales model.

In the final section, we focused on the finance department of VDM, analysing their results and how they were achieved, finishing the section by analysing how sustainable finance played a crucial role in the sustainable transition for VDM and how it could be beneficial for VDM to start reporting on their ESG performance using globally recognized standards.

For the three weeks of running the business simulation, what stood out the most was the importance of maintaining an integrated view across departments. For Strategy, Innovation, Finance, Marketing, Operations and HR to be aligned, an environment of coordination and cooperation was necessary, highlighting the value of cross-functional collaboration in teams.

2. Personal Reflection – Introduction

In just three weeks of simulation, the team went from not knowing each other to managing an automotive company together. The experience itself was intensive and sometimes even stressful, but to resolve these stressful situations, we needed to come together and solve these issues so that we move on and grow as a team.

In the following section, we are going to analyse two incidents that happened during the simulation that stood out to me the most.

The first incident is regarding how me and my team reacted to a situation where one of the team members was not participating as much as the rest of the team, followed by an analysis of the incident and how this situation could have been prevented from the early stages.

The second incident is relative to my underwhelming performance in one of the roleplays in the simulation and my team's reaction to it, followed by an analysis of the incident and the creation of a roadmap to prevent similar situations from happening in the future.

Finally, we are going to conclude this section by reviewing the learnings from the experience and critically assessing my performance and my team's peer feedback.

2.1. Critical Incident One

The simulation had just started, and we needed to create group chats to get to know each other and start doing the practice rounds prior to the real simulation decision-making. Despite being a little late, I ended up reaching out to everyone on time and we all managed to access the simulation to see the platform and what the responsibilities of the different roles were. However, we decided to delay the remote practice rounds not only because we were short on time but also because we were still going to have a couple of practice rounds during the three weeks. Despite this, everyone in the group seemed to be motivated and active through the chat so my first impression was that everything was going to work out smoothly for the entirety of the simulation.

Once we met the team, however, I had a feeling that we were behind compared to the other teams regarding team dynamics. They had scheduled online or presential meetings before the simulation. They seemed to know each other better and were already making teambuilding activities and having lunch together, while our team was still gradually connecting.

Another first impression was that we had somewhat contrasting personalities: Personally, I was feeling a bit shy for the first day. Then, there was a girl, (throughout this section we are going to address her as Individual A), who seemed extra shy directing Human Resources, who immediately stated to the team that her English was not very good. On the other hand, there was a guy (let's address him as Individual B) with a very strong personality, seemingly very confident, who always took the lead in conversations directing Operations. For me, this confident personality felt great to have in the team since I am not very keen on starting discussions and prefer to add information when I feel like I have something useful to add. However, even though this dynamic works for me, it is important to mention that this kind of extrovert personality could also cast a shadow on people who are quieter and who have trouble sharing their opinions.

Overall, our dynamic was working with just one issue. Individual B was taking the lead, followed by the remaining team members sharing their views and opinions on matters except for Individual A, it seemed like she was never comfortable. This behaviour went on for some years in the simulation, and despite being a little frustrating for some, we managed to become quite comfortable with what we were doing in every quarter: the finance directors would update us on the company position; everyone would collect new data regarding their corresponding roles; operations directors would start the discussion, making the relevant adjustments with marketing to optimize sales and warehouse efficiency; we would check what innovations were available, from new vehicles to R&D, investing in what we had budget for and made sense; and

then Human Resources was missing, and since Individual A was not very communicative we ended up almost taking the majority of the decisions for her.

One day, we managed to have lunch all together and Individual B pulled Individual A aside and talked to her, explaining that we understood she had troubles with the language but if she ever needed assistance, she could ask for it and the rest of the team would be there to help.

After this moment, I noticed a change in her behaviour. She became more engaged and communicative with the rest of the team mainly by asking for opinions regarding her decisions.

After all this, we had the self and peer evaluation and team clinics, in which we decided to be fully honest. The reflected grades probably were not what Individual A was expecting.

For reasons bigger than the simulation, Individual A was not able to attend the team clinics where we properly discussed the situation. The professor recommended us to talk to her, but this time, from a different perspective. Since the simulation was almost ending, we decided to, instead, be more active with her and ask further for her opinions and engage more, ending the simulation with this dynamic.

For the first time, since we finished early, as a team, we went out and talked outside of the simulation environment. Individual A opened up and told us her side of the "story" which completely changed my perspective on her position. She did not come from a background in Management or Finance like the rest of the group members. She previously studied Chinese studies and had a huge shift in her education. In more or less a year she learnt English and came to Lisbon, explaining why she did not feel as comfortable as the rest of the team with the topics discussed and even with the language. Having this information beforehand would not necessarily change our dynamic. However, despite probably still needing to assist her in her tasks, it could have prevented conflicts and frustrations.

2.1.1. Analysis and Learnings – Critical Incident One

We were part of a very international and diverse team: One German; one Ukrainian; one Chinese; one Italian; and three Portuguese. Cultural differences were to be expected but we still did not know exactly in what situations these would translate into.

During the "Leading Yourself Workshop" we were able to evaluate our personalities using a framework from the "Insights Group", Discovery Insights which categorizes people into one of four different colors (Cool Blue; Fiery Red; Sunshine Yellow; Earth Green). Surprisingly, our team was split into two between Cool Blue (such as myself), representing personalities that are characterized by their analytical, logical and detail-oriented nature, and Earth Green, representing personalities that are typically introverted feelers, focusing on harmony, relationships, and values ("Insights Discovery® | Official Flagship Product | Insights," n.d.).

Through this framework we were already able to find some synergies and gaps in our team dynamic, for example, the complementarity of strengths: while Cool Blue personalities are highly analytical and logical, Earth Green are empathetic and supportive, co-creating a balanced approach to problem-solving considering not only data-driven insights but also the human element. However, conflicts may arise from differences in pace and flexibility, while Cool Blue personalities thrive in environments where there is time to analyse and ensure accuracy, Earth Green, despite being patient, can become frustrated if this process delays the decision-making.

Another approach to building a more productive and effective team could be through the Belbin Team Roles Theory (Belbin 2010), which has proven to create more dynamic and balanced teams, boosting positive interdependence and individual accountability within the teams aiming at an environment that promotes personal development (Aranzabal, Epelde, and Artetxe 2022). By following this theory, roles such as "Co-Ordinator" and "Monitor Evaluator" would be beneficial to have a more efficient team. The Co-Ordinator would be able to clarify goals, delegate responsibilities and ensure everyone is contributing appropriately. In our situation, this

person would not have let Individual A struggles be overlooked for so long. The Monitor Evaluator would be a critical thinker who would be able to analyse options objectively, which in this situation would have prevented everyone from jumping to conclusions or overlooking potential issues.

Usually in our personal, business, or academic context, the conventional approach to resolving team conflict is to solve it as conflict arises, however, this behaviour might allow frustrations to build for too long and other approaches have proven to be more effective (TOEGEL and BARSOUX 2016).

After a careful analysis of the incident, we are now going to analyse possible solutions that could have been implemented to prevent this situation. First, would be earlier team-building activities to enhance communication between the members and to build trust to ease the process of sharing ideas and feedback (Klein et al. 2009). Secondly, clearly establishing early-on more robust communication channels, other than just a group chat, to promote spontaneous communication, contributing to a stronger shared team identity and overall achieving better results (Hinds and Mortensen 2005). And finally, establishing mechanisms for continuous feedback loops and conflict resolution as a way to construct team psychological safety and better performance overall (Edmondson 1999) (Figure 4).

As for my position in the incident, I should have played a more active part in solving the problem. My first behavior was to avoid conflict instead of trying to solve it and a more active approach by me and the team could have been the key to solving this issue earlier and probably would result in better team dynamics and better results in the simulation.

2.2. Critical Incident Two

The second incident that I am going to analyse took place during the Client Roleplay, involving my performance and my team's response to it.

Throughout my academic journey, I have noticed that I do not feel comfortable in situations where I have to publicly express my opinions or present something to an audience, it does not come out naturally for me. To "combat" this issue I have gotten used to preparing my presentations or even interventions thoroughly so that the ideas that I want to express are clear and come out naturally. This is a process that may take a couple of days for me to feel comfortable and have a successful presentation.

However, during the three intense weeks of simulation, there wasn't much time to prepare for the roleplays and presentations as it may happen in business or personal situations in real life. This was a strong divergence from what I was used to and led me to be very evasive when the time to make presentations arrived. Both in the first Sales Roleplay and at the presentation of our work at Galp's Innovation session I managed to explain to my team that I did not feel very comfortable presenting with so little preparation and since there were people who felt more at ease, they ended up volunteering to present.

This "escape" from presenting did not last long, as the roleplays in the simulation were made so that everyone was required to participate at least one time. I ended up taking part in the Client Roleplay which, after introduction, felt ambivalent. There was not much preparation necessary: there was a client who was having issues with our company, and we had no information about what these were. Our main objective was to uncover these problems and come up with solutions.

On one hand, it was daunting that we could not prepare our presentation. On the other hand, it was relieving for the exact same reason as there was nothing I could do except read the room and adapt my participation to what the conversation was asking for.

Despite this partly soothing characteristic of the role play, I was still a little nervous before entering the room, and my performance felt quite underwhelming. Between the four people from our team present in the room, two took the lead comfortably, while I participated just a

couple of times, briefly supporting some answers early on, and at the end, summarizing the main issues and proposed solutions identified during the meeting.

After the roleplay, our team gathered to discuss how it went, and despite the overall picture feeling very positive for the team, I still made my feelings regarding my performance clear. The response I got from the remaining members felt unexpected. Both the members who took the lead in the conversation agreed that it was not my fault that I did not participate as much because the issues brought up were more focused on their departments (Marketing and Finance) and not so much on mine (Innovation), leading me to re-think the whole situation. Maybe I was too focused on my own behaviour to realize that the reason they were more comfortable discussing the issues that were brought up was not solely because they felt more comfortable in these situations, but also because these issues felt closer to their departments than to mine.

At this point of the incident, I was feeling comfortable with the team. I was ready to take the blame if necessary for my nevertheless underwhelming performance, and even then, my team made me re-evaluate the situation that was bothering me from a completely different perspective. Maybe in this particular situation, I was being too critical of myself, but it is still an issue that I need to work on for the future, as communication is one of the most important soft skills, that is not only useful in my academic journey, but will also be in my career, and my life at a personal and social level. (Adhvaryu, Kala, and Nyshadham 2023)

2.2.1. Analysis and learnings – Critical Incident Two

To further understand this incident, how it impacted my experience with the simulation and what learnings I took from it, we are going to thoroughly analyse it through the lenses of the Gibbs' Reflective Cycle so that we can properly structure it and reflect upon the experience. To do so, this framework goes through 6 different stages: The description of the incident, the feelings that arose from it, an evaluation, an analysis, a conclusion, and an action plan (Gibbs 1988).

In the previous section, we have already undergone the description, and the feelings involved during the whole situation. As a summary: I participated in a roleplay activity without much preparation involved. My perception of my performance was rather underwhelming but after a conversation with my teammates, I realized that maybe the topics discussed were more directed towards their roles.

The experience itself had its positives and negatives. On one hand, there is the fact that I was not able to perform at the standards I set for myself, which made me feel like I was not being a good team member, negatively impacting the incident. On the other hand, there is the fact that when sharing feedback and expressing this concern to the rest of the team, instead of blaming me they reassured me that it was not my fault for not participating as much as they did, shifting my perspective on the whole incident as the topics discussed were indeed outside of my "expertise" area within the company. This had a positive impact on the incident as it increased my level of trust and safety within the team.

Finally, to complete Gibbs' reflective cycle, an action plan needs to be drafted for future similar situations.

Looking at the whole experience, made me realize the urgency to make improvements in my ability to publicly speak or express my opinions as, in the future, it could happen that I don't have my team supporting me. The first step towards this objective would be to create a clearer path regarding preparation techniques and practice them frequently (Covey 2013). These could include exercises such as simulated practices to build up my confidence not just in public speaking but also in unfamiliar circumstances as the one described.

Finally, to improve my performance in such scenarios I must start practicing going into these kinds of situations with a higher cross-functional knowledge about every department in the company. Even though I was fully engaged in the conversation through the use of my active listening skills by listening, making use of non-verbal cues such as nodding, making eye contact

and also making use of facial expressions to express empathy, fully understanding the conversation and at the end summarizing everything that had been said, I was still lacking by not being verbally active and responding, which is a crucial aspect of active listening (Law, Turner, and Brewer 2024). To prevent this situation from happening again, having higher cross-functional knowledge from every department in the company is essential. This would not only have helped me to feel more confident and at ease to participate in the discussion but, having a clearer overview of the different roles in the business would also have been a powerful tool for the decision-making processes when running the simulation, improving the quality of inputs and opinions expressed by me and potentially improving the overall results. (De Luca and Atuahene-Gima 2007)

2.3. Conclusion

Despite some stressful situations, the overall outcome of the simulation was very rewarding. By looking at my performance in a team for three weeks and analysing some of the most impactful incidents in the previous section, I was able to understand what skills I need to develop and work on.

In the first incident, I realized that my first instinct was to avoid conflict as it arose. We assessed how a more active approach would have been beneficial to avoid frustrations building up, through earlier team-building activities, more robust communication channels and establishing mechanisms for continuous feedback loops and conflict resolution.

In the second incident, we analysed the different perceptions of my performance, between me and my team, in a sales roleplay exercise. After the analysis, we concluded that despite there probably being a mismatch between perceptions of my performance in the roleplay, I still need to work on my communication skills and build a roadmap to improve my capabilities to avoid similar situations from happening in the future. Starting with preparation techniques, frequent practice, and building cross-functional knowledge before entering similar situations.

The mismatch between perceptions of my performance was also a subject of self-reflection during the simulation. Halfway through the simulation, there was a self and peer assessment (Figure 5). At the moment of self-evaluation, I was being genuine and, after seeing the peer feedback, I was positively surprised. The biggest surprises were regarding "B – INTERACTING WITH TEAMMATES" and "E – HAVING RELEVANT KNOWLEDGE, SKILLS AND ABILITIES". My self-evaluation in these parameters reflected a point in the simulation where I was feeling a bit lost compared to my team, and attributed that to a lack of knowledge, and felt that I was not participating as much as I should have. However, to my surprise, my team's feedback on "D – EXPECTING QUALITY" was the lowest I got, while also being the one I self-evaluated the highest. My conclusion from these mismatches led me to conclude that, at that point in time, I was not performing at my full potential, however, the reasons for that attributed by myself and my team's view differed. I was probably being less communicative than usual and while I attributed this to a lack of industry and simulation mechanics knowledge, my team may have attributed it to lower quality standards.

To conclude, the key takeaway I took from this experience is that I still have a lot to work on and grow. It helped me understand myself better, and map points of improvement that were not my previous priority.

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APPENDIX

Figures

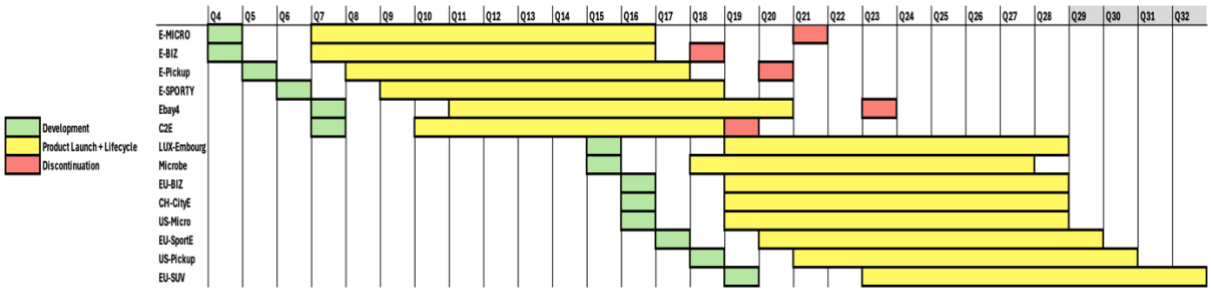


Figure 1: Value Drive Motors Vehicle Lifecycle from Q4 to Q32.
Source: Own Illustration.

Strengths	Weaknesses
• Leader in Innovation • R&D Capabilities • Advanced Battery Technology • Advanced Features • Green Brand Reputation • Financial Stability	• 100% electric • EV transition at Early Stages • Limited Charging Infrastructure
Opportunities	**Threats**
• Growing EV Market • Government Incentives	• Fierce Competition • Industry Vulnerability to Macro Factors • Not following a Clear Market Segment

Figure 2: Value Drive Motors SWOT Analysis.
Source: Own Illustration.

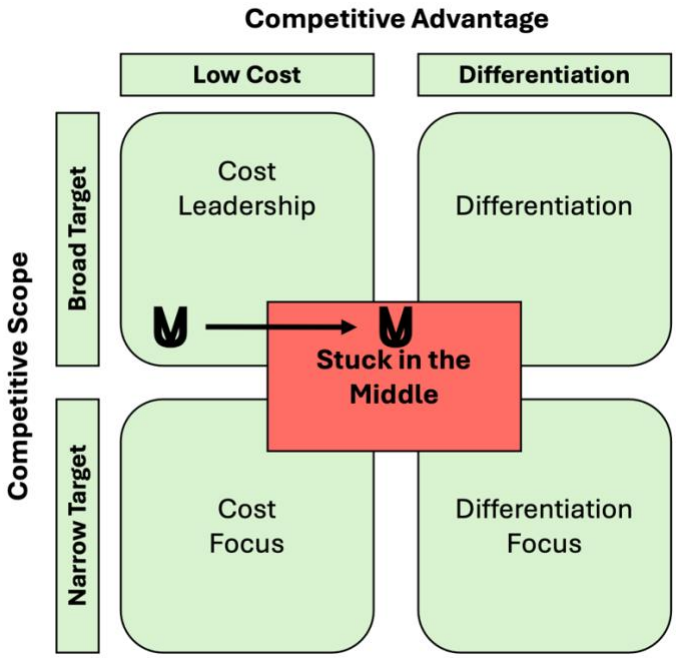


Figure 3: Value Drive Motors shift within Porter's Generic Strategies.
Source: Own Illustration.

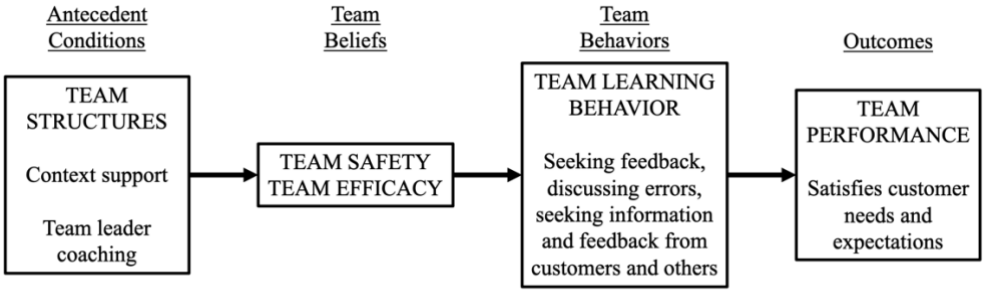


Figure 4: "A model of work-team learning".
Source: (Edmondson 1999)

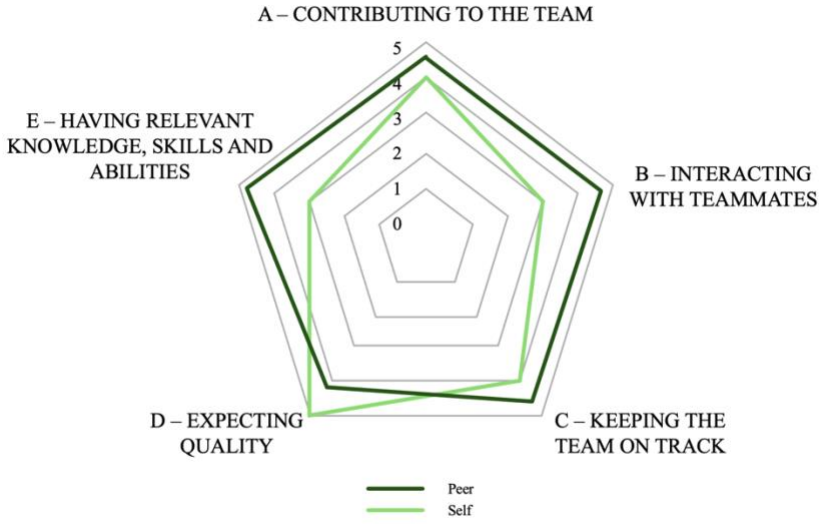


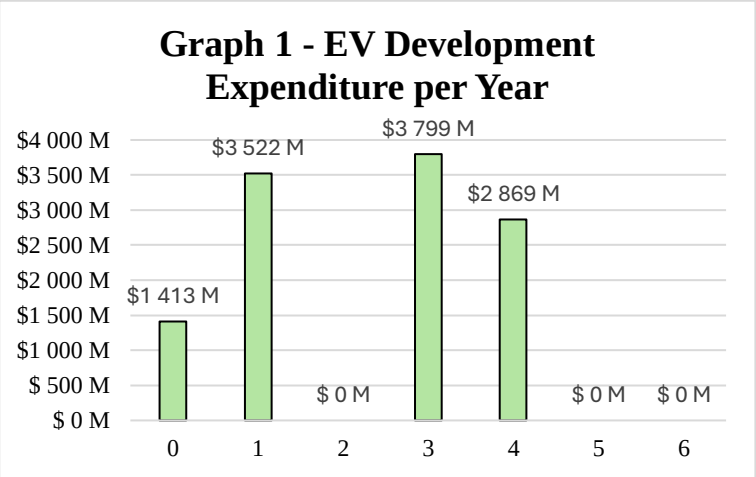
Figure 5: Self and Peer-evaluation.
Source: BiP Simulation 2024

Tables

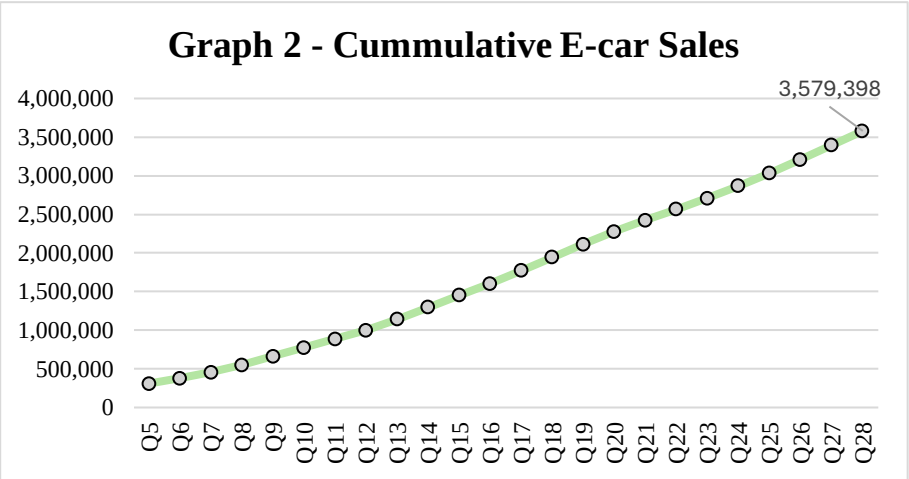
	Value	Rarity	Imitability	Organization	Result
Advanced Battery Technology	High	Moderate	High Difficulty	Well Organized	Sustained Competitive Advantage
R&D Capabilities	High	Moderate	High Difficulty	Well Organized	Sustained Competitive Advantage
Brand Reputation	High	High	High Difficulty	Well Organized	Sustained Competitive Advantage
Financial Strength	High	Moderate	Moderate	Well Organized	Not a Sustained Competitive Advantage

Table 1: Value Drive Motors VRIO Analysis.
Source: Own Illustration.

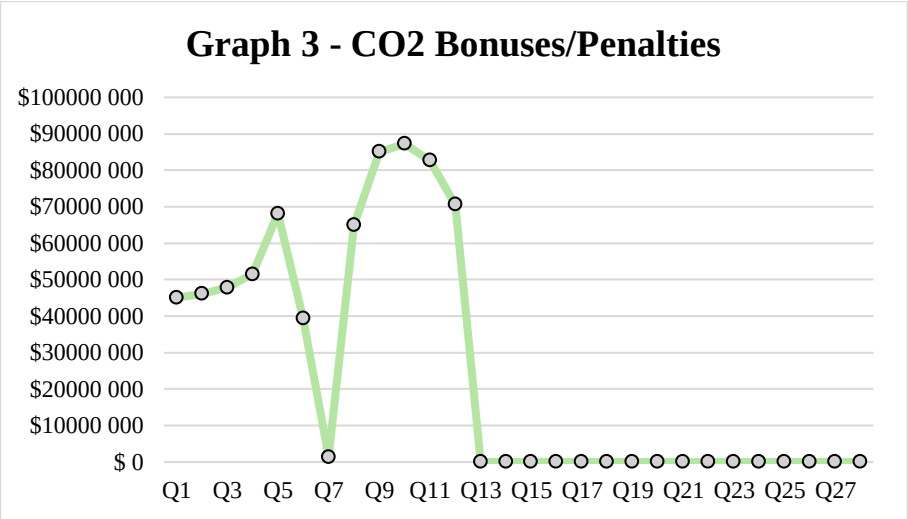
Graphs



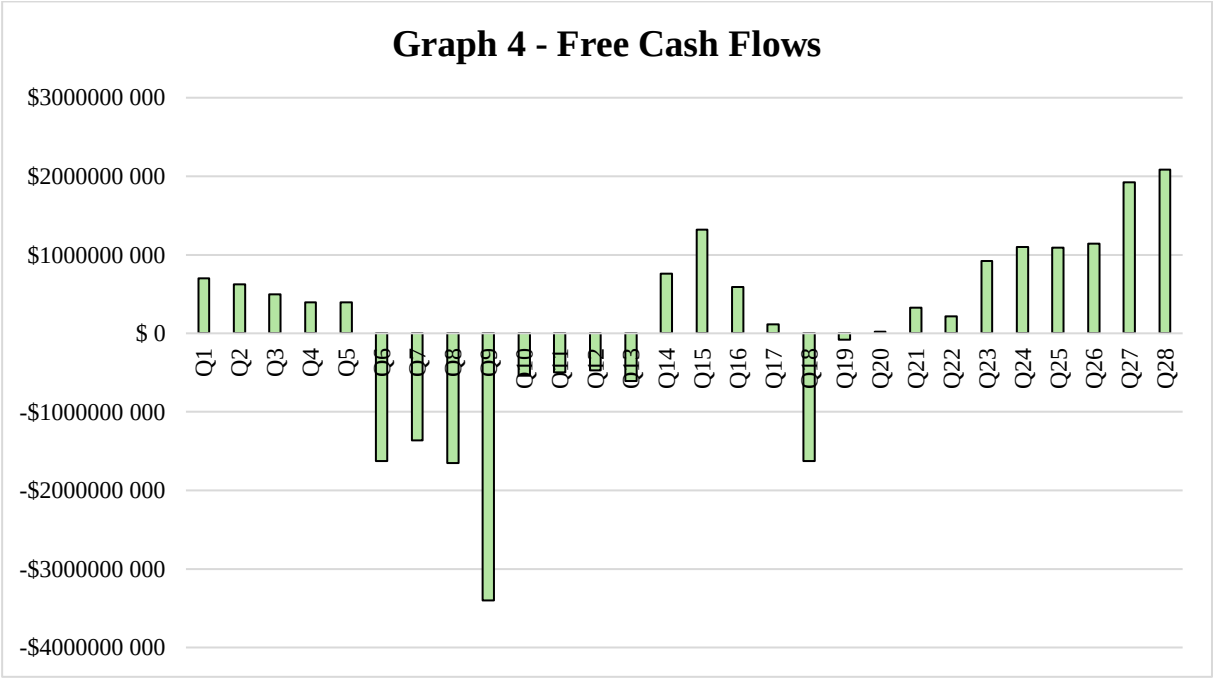
Graph 1: Value Drive Motors Electric Vehicle Development Expenditure per Year.
Source: BiP Industry Master's Simulation 2024.



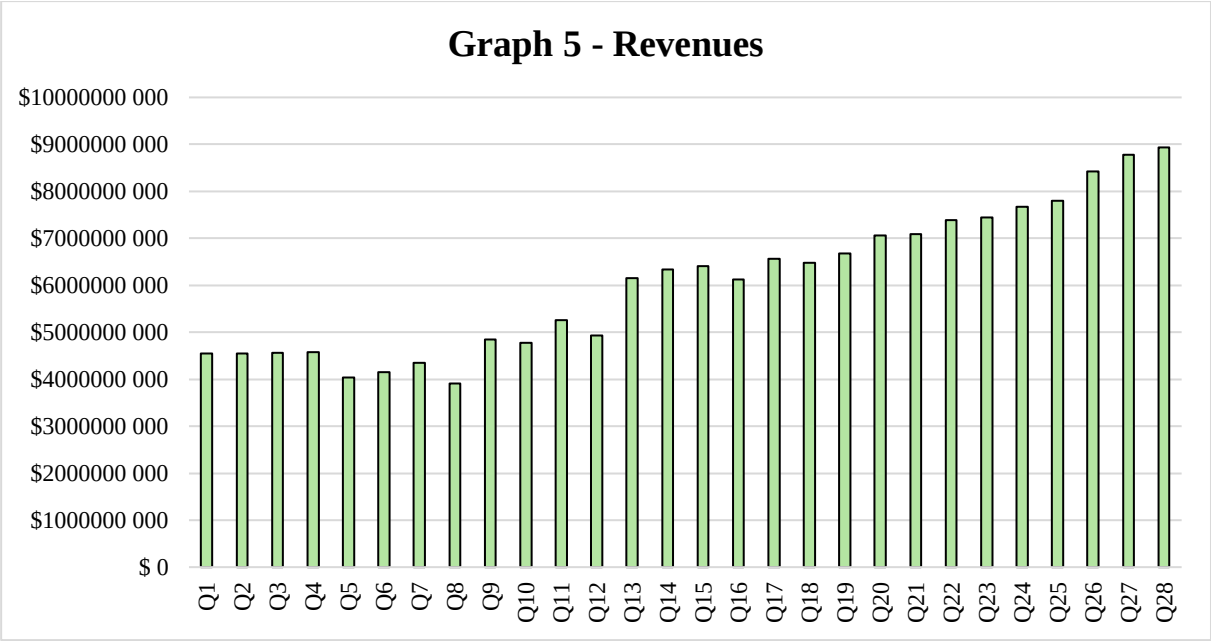
Graph 2: Value Drive Motors Cumulative E-Cars Sales.
Source: BiP Industry Master's Simulation 2024.



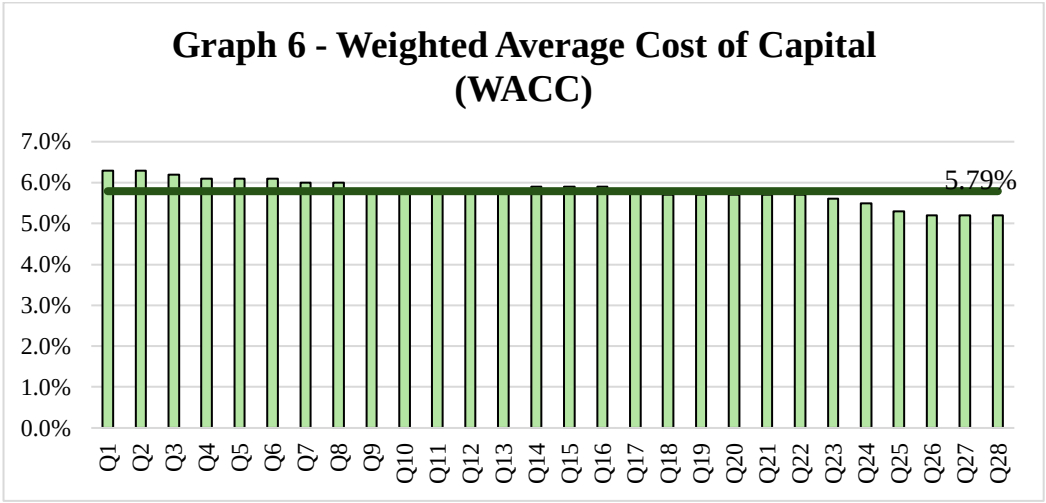
Graph 3: Value Drive Motors Bonuses/Penalties for CO2 Emissions.
Source: BiP Industry Master's Simulation 2024.



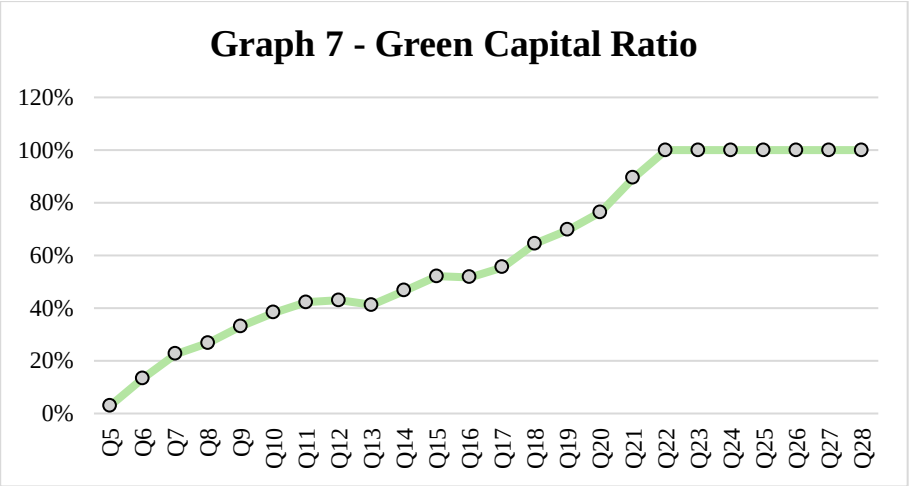
Graph 4: Value Drive Motors Free Cash Flows.
Source: BiP Industry Master's Simulation 2024.



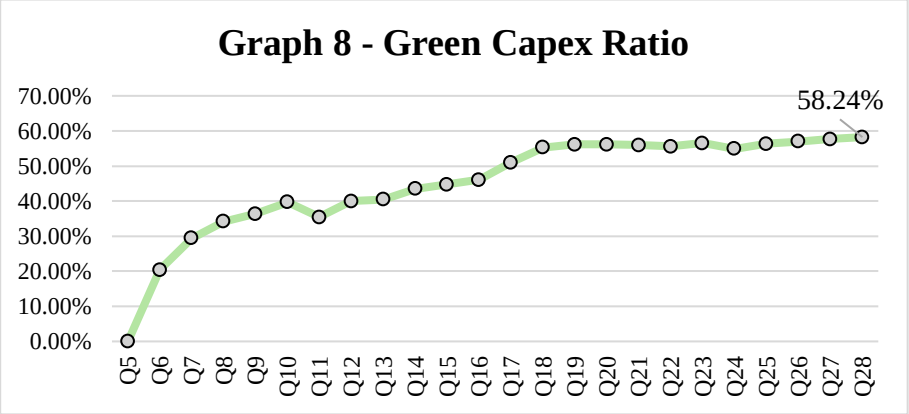
Graph 5: Value Drive Motors Revenues.
Source: BiP Industry Master's Simulation 2024.



Graph 6: Value Drive Motors Weighted Average Cost of Capital.
Source: BiP Industry Master's Simulation 2024.



Graph 7: Value Drive Motors Green Capital Ratio.
Source: BiP Industry Master's Simulation 2024.



Graph 8: Value Drive Motors Green Capex Ratio.
Source: BiP Industry Master's Simulation 2024.

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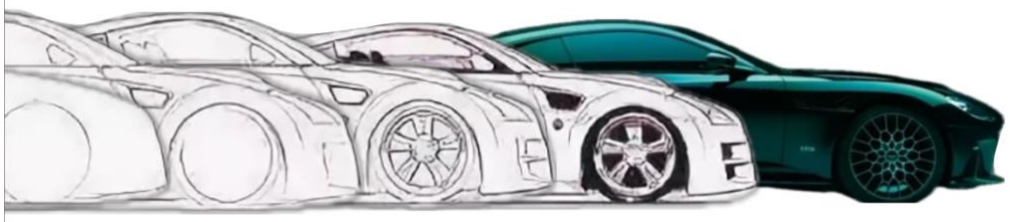
VALUE DRIVE

Environmental, Social and Corporate Governance (ESG) Report 2024

Investor Presentation | June 2024



The iconic car manufacturer brand driven by its electrification, pioneering spirit and uncompromising approach to technical innovation for drivers, investors and the world:

Company profile

- **Leading sustainable automobile manufacture** located in **the USA, Europe and Asia** with **indirect online distribution** via its **digital platform** and **sales partners worldwide**
- Maintaining the clear ***vision*** **to revolutionize mobility** with **sustainable innovation,** making electric vehicles **accessible to all,** thereby **fostering a greener,** and more **socially responsible world**
- Our ***mission*** is **to lead** in creating **sustainable electric vehicles** that excel in **performance, safety, and environmental impact,** while upholding the **highest standards of corporate responsibility.**
- We ***value*** the **Social, Environmental & Financial Sustainability, Innovation, Customer Experience & Performance, Safety, Excellence** and **Affordability**

Product overview*

Sales split

Experienced management team of **five departments** united by **global sustainable development vision** in each step of the process

OPERATIONS
Optimizing business processes and investing in sustainable practices.

HUMAN RESOURCES
Providing training and ensuring employee wellbeing by managing motivation and workload.

FINANCE
Financing sustainable investments by issuing green debt.

INNOVATION
Developing EV's and investing in new sustainable technologies, from batteries, autonomous driving, and charging infrastructure. Always one step ahead.

MARKETING
Promoting sustainability, inclusion and diversity, these being our core values.

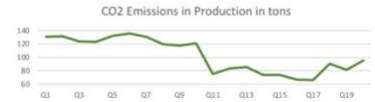
Maintaining and expanding the sustainable position of the most desirable company for drivers and investors, developing its electric cars range, engines, vehicle parts and technical products worldwide — *Long term perspective*

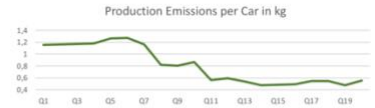
*Notes: Split of vehicles sold in percentage
Source: Industry Masters, Value Drives Annual Report, 17 SDG of the United Nations

Driving Sustainability in Production Operations: Reducing Emissions and Resource Consumption

Resource Management (Scope 1)

1. Since the recent Management Change, Value Drive has constantly been putting efforts into **reducing emissions and pollution in production.**
2. Chart 1 shows that total production **emissions have been decreased rapidly**, especially in Q11.
3. The increase in Q18 can be tracked back to an increase of production volume, **as production emissions per car have been staying at 500 grams per car since Q13** (see Chart 2).



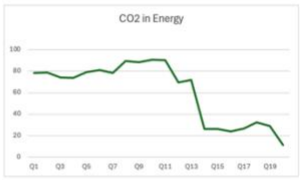


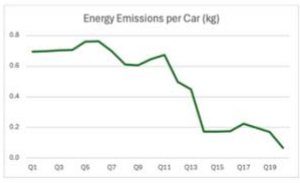
Not only has Value Drive **heavily decreased emissions and effectively contributed to the fight against climate change,** but also invested $200 Million into Water Consumption Reduction and $400M into Waste Reduction.

Transforming Energy Use: Innovations in Efficiency and Renewable Energy Integration

Resource Management (Scope 2)

1. One major investment that has highly affected the amount of emissions in the production line was to have **energy efficiency policies in place across all business units**
2. The most noticeable difference in CO2 emissions reduction, where **CO2 in energy generation reduced from 80,000 tons to 11,424 tons over 20 quarters**, was with the installation of a large Solar pannel plant.
3. In the future, Value Drive's investment in an Energy Management System (EMS), will integrate the energy production grid to **optimise the performance of the generation and transmission system. Lowering GHG and pollutant emissions.**

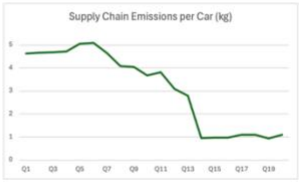


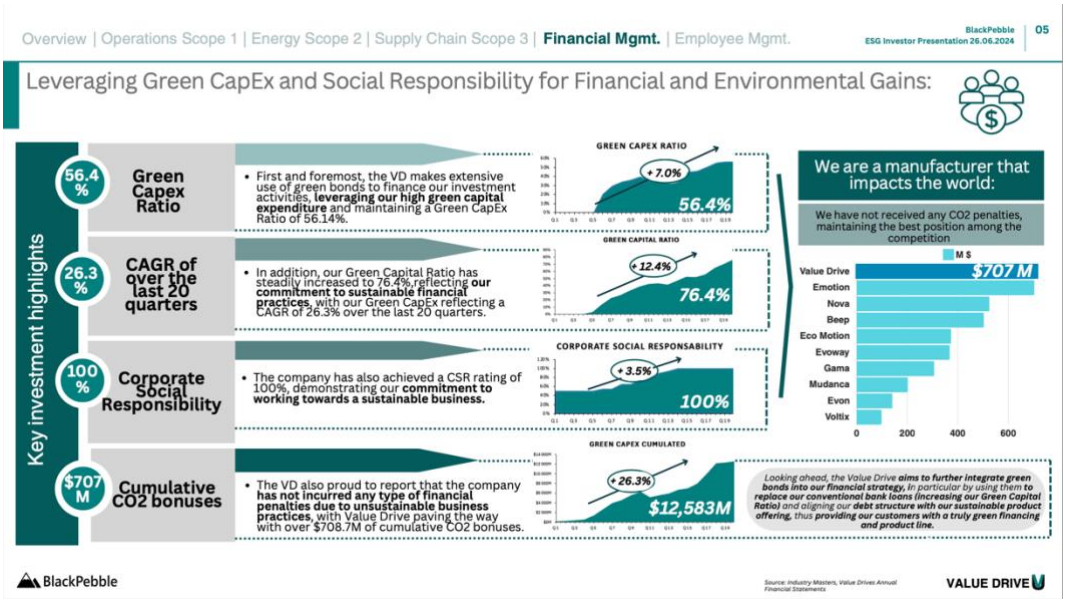


Enhancing Supply Chain Sustainability: Reducing Carbon Emissions and Resource Consumption

Resource Management (Scope 3)

1. **Since Q6 Value Drive** has managed **to reduce its Carbon Emissions** per **Car by 78%**
2. Since new management has taken over**, Value Drive invested a total amount of $313.76M** to **improve supply chain sustainability.**
3. Besides favoring sustainable Suppliers and offsetting Suppliers' Emissions, Value Drive **introduced an External Battery Recycling Program, which not only contributes to reducing the consumption of valuable resources, but also reduces pollution.**





Value Drive Motors (VDM) ESG Report for the first 20 Quarters of Operation
Source: BiP ESG Roleplay 2024