

A Work Project, presented as part of the requirements for the Award of a Master's degree in  
Management from the Nova School of Business and Economics.

MERCURY:  
A DYNAMIC APPROACH TO THE FAST-EVOLVING AUTOMOTIVE INDUSTRY

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**Abstract:**

The present report aims to provide the reader with an insight into the Business in Practice project. Thus, it is divided into two major parts: a personal reflection where I describe and analyze two critical incidents related to the team dynamics and reflect on the lessons learned, and a sectoral analysis where I perform a deeper analysis of three of Mercury's departments, Strategy, Operations, and Finance. Mercury is a purpose-driven virtual automotive manufacturer set to disrupt the market with its sustainable operational approach. Students oversaw a particular function where communication between them revealed to be critical through this six-year journey.

**Keywords:** Operations Management; Corporate Finance; Conflict; Energy Efficiency; Automotive Industry; Sustainability Strategy; Smart Sustainable Mobility; Team Dynamics

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## **Personal Reflection**

Business in practice (BiP) is a highly intensive program that provides students with a fast-paced experiment that is intended to replicate real-life events either through the actual simulation but also with the role-plays while still having the academic theory background as a basis for the decision-making process.

Having participated in these BiP eventful three weeks, there were definitely two events that are worth reflecting on once it led me to have a different approach and an insightful view on both the dynamics and personal role in a team.

Events themselves that arise from the shared leadership model put into practice during BiP. Having no CEO, decisions had to be made on a consensus basis across all functions the most frequently as possible. According to Berg, Foege, and Nuesch (Berg, Foege and Nuesch 2022), a type of leadership that distributes responsibility across more than one member has a positive connection with the team's performance. This occurs once the team starts to take advantage of its heterogeneity, i.e., different cultures, levels of experience, values, among others. However, critical incidents happen precisely due to the possibility for the team to become less coordinated and less effective portrayed in frustration, duplication of work, delays, etc (Nordbäck and Espinosa 2019). Thus, according to the previous authors, only with the correct balance of shared-based decisions, enhanced team performance is possibly achieved.

In the next few pages, I will describe what those events meant from a personal standpoint at first but mainly will deconstruct each one to a point where, using appropriate bibliographic references, I am able to reason what happened and take that experience for my future self.

### **First incident: strategy from concept to practice**

#### ***Description:***

My first critical incident is linked with the development of both the simulation and the academic sessions. The first key moment was right at the beginning of the program when setting the strategic approach where the team decided to start the fleet decarbonization by designing two hybrid cars.

Although it ended up not being tremendously successful in terms of revenue and value-added growth, this was the first time that we took our purpose, vision, and core values seriously and developed the first two hybrid cars on the market. This was a decision that perfectly met:

1. our purpose to be a “sustainability-focused company in a (financially) sustainable way”;
2. our vision to design practical and affordable eco-friendly cars;
3. and our main core values of sustainability, community, and integrity.

Following the market positioning mentioned in our vision, apart from the yellow convertible, from Q9 onwards, we have started to develop affordable electric vehicles that could not only be sold to a vast differentiated audience but, at the same time, could provide customers with a fair price for the amount of technology incorporated.

However, the critical incident didn't represent a clash between team members while settling these company cornerstones but instead, on the fact that those exact foundations are essential for a company to be successful in the long run (Ebener and Smith, *Strategic Planning : An Interactive Process for Leaders* 2015).

Actually, during my previous work experience as an audit analyst, I would request my clients supporting information about their core values and company policies due to their compulsory

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nature in accordance with ISO (International Organization for Standardization) 9001:2015. Indeed, this directive imposes companies to disclose their vision from where they are to where they intend to go in the long-term, their mission where they state what the company does and whom they are doing it for, and the shared values among the company employees (Cianfrani, West and Tsiakals 2015). Regardless of that, neither I nor even the most senior members of my team seemed to give much thought to these documents as they seem to represent a mere formality where the team only ensured that there was an updated version were there any changes and whether it was signed by the people in charge.

However, I can now see that these are essential for the good functioning of an organization once critical decisions such as those I will mention below were always focused on these guiding principles.

### *Analysis:*

At the beginning of the program, I had a narrow perspective of the great importance of designing a durable and forward-looking strategy. Consequently, as a predominantly fiery red person (The Insights Group Ltd 2021), I tend to hasten to decisions that were not scaffolded enough, though it led me to feel anxious, apprehensive, and worried with the detailed-focused predominantly blue-colored team-mates once it could lead to time being wasted during the simulation. Yet, in retrospect, I realized how distant from reality and the progress I have made once I realized that if, as Smith and Ebener mention (Ebener and Smith, Strategic Planning: An Interactive Process for Leaders 2015), we consider an organization as a living organism that is in the process of dying, strategic planning will trigger the internal response to the constant external change.

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Furthermore, being involved in an auto-manufacturer experiment context, it is curious that Osterwalder et al. (Osterwalder, The invincible company: How to constantly reinvent your organization with inspiration from the world's best business models 2020) does an analogy between the elevated complexity of an organization as a social system with the production of a car, taking into consideration the large number of different parts it includes. On top of that, the authors were able to map the culture of an organization where they divide it into three areas: enablers or blockers (1) in the form of company policies, standardized routines or compensation systems that will be the drivers of behaviors (2) where the way employees act and interact in the professional context will ultimately lead to certain outcomes (3), either positive or negative.

Applying these concepts to Mercury, we had enablers translated into our guiding principles in the HR department where, for example, we aimed for paying above the market and for providing sustainable training, or in the Marketing department where we set for affordable cars. On the contrary, we also had some blockers where I could have performed in a different way such as:

1. The decision not to engage in print campaigns in which, together with two other team members, I was quite vocal in favor about. This option relied on the fact that such a campaign could be contradictory to our sustainable purpose since we could be increasing the amount of paper being produced. Eventually, a few quarters after, we were informed that the environmental impact of these campaigns would be irrelevant realizing I had made wrong assumptions while not having perfect information.
2. Adding to that, I pressured the innovation department during Q11 to find a solution for the immense days of inventory in the American market for it to result in the development of a car that didn't meet our purpose. The chosen alternative was the electric Luxury red car which clearly not only didn't apply to the strategic approach of the team but also compromised the

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long-term focus of the company due to its €710M cost of development. Moreover, after the first business quarter that the car was allocated to a factory for production, the number of days of inventory quickly ramped up to 120 causing the exact same problem this solution was meant to solve.

Nevertheless, those enablers were the grindstones for the behaviors adopted by the team that, with great employee motivation, long-term perspective, and a customer focus, led our team to grow in all major metrics throughout the simulation and to overcome the aforementioned blockers.

### ***Reflections and learnings:***

For the previously mentioned reasons, I am thankful I have participated in this project once it highly contributed for me to have a broader perspective of the importance of having a guiding line and a support basis for future critical decisions I am involved in.

Thus, I strongly believe that this “light-bulb” event will provide me with a deeper critical thinking mindset, a truly important asset, especially in an audit career. Moreover, it will also serve as a basis to have a better-informed conversation when questioning clients about certain decisions that, although they might meet the compliance standards, might also contradict the company’s purpose and its core values, a critical matter shareholders might want to be aware of.

Additionally, it gave me a chance to understand that, quoting Larry Fink, Founder, CEO, and Chairman of BlackRock, in his letter to CEOs for the year 2022, “it is more important than ever that your company and its management be guided by its purpose” (Fink 2022), and as long as you hold on to it while accommodating changes in the present fast-moving and fast-evolving economy, the company will thrive and will create value in the long-term.

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On top of that, I was able to recognize that not only there were frameworks in place to define such a broad concept as company culture but that there is a true ongoing concern with it, but bearing this in mind, it is expected that the relationships with stakeholders keep getting stronger assuring sustainable long-term success. (Fink 2022)

Finally, building a bridge from the sentence above, I also realized the true importance of long-term thinking and how decision-makers need hindsight into the past to understand where and why they currently find themselves and better forecast and plan ahead (Ebener and Smith, Strategic Planning: An Interactive Process for Leaders 2015).

### **Second incident: the need for empowering people**

#### ***Description:***

As per what Patrick Lencioni (Lencioni 2002) stated, although the lack of conflict apparently leads to a harmonious team environment, it might not be as positive when it regards productivity.

Conflict occurs whenever there is a disagreement between two or more team members through the expression of different opinions on how to perform a particular activity (Giebels, et al. 2016). Moreover, as mentioned above, the organizational conflict topic has been growingly debated due to the increase in collaborative working and shared leadership models (De Dreu and Weingart 2003). In fact, conflict can be positive in a way that promotes a critical thinking mindset through the use of debate and also prevents teams to hasten to decisions.

However, research also states that when conflict deviates from that optimal level, it can neglect a team's performance. On one hand, if there is a high level of conflict, the group performance tends to be harmed once efforts are directed to defend each one's stance instead of being directed to help the team. On the other hand, the lack of conflict can also be prejudicial to the team's performance



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once it can lead to individuals accommodating and being less motivated to present alternatives (Jehn 1995).

This being said, my first critical incident focus precisely on this apparently contradictory statement once, in the last quarter of the simulation there was a disagreement between myself and my peers relating to a decision I intended to make in the department I was responsible for.

The disagreement occurred in the last quarter (Q28) due to a change in production lines. However, I had stated two quarters before (Q26) that we needed to make a decision that allowed me, as COO, not to make any further changes in the cars being or not being produced in each line. This way, I would make sure the factory utilization never fell short of the 100% mark and, therefore, would maximize efficiency.

Facing this issue, and even though the main responsibility of operations was mine, I ultimately gave in and proceeded with their recommendations.

### *Analysis:*

Personally, when this theme started to arise, I felt unauthorized not being able to make a decision in a department I was in charge of. However, it went even deeper than that, I was endowed with a feeling of both incapacitation and frustration due to my inability to express my rationale and support it with facts that could lead my group to the same conclusion as mine. In the end, their collective effort to support their stance was better, and overcame the possible lack of effort on my part to create a framework that would leave no margin to doubt what I believed the best path to follow was.

As of today, working in teams toward a profit-generation objective of a company seems to be the norm contrarily to the out fashioned single-minded decision approach (Johnson, Heimann and

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O'Neill 2000). As this method is broadly used, new challenges such as the existence of conflict arise mainly due to different lines of thought and modus operandi from the team members. However, conflict is not always bad and does not always harm productivity and delays innovation. Conflict can also be healthy for organizations as it incentivizes debate and is supposed to lead to consensual solutions (Toegel 2016).

As a predominantly fiery red individual (The Insights Group Ltd 2021), I tend to look for efficiency and to get upset by losing time with decisions that had supposedly been agreed upon. Along the same line of thought, this lack of commitment to pre-established decisions will even ignite the fiery red personality traits in an individual once it will lead to time being wasted and rethinking the previously adopted strategy (Lencioni 2002). Adding up to this, the lack of commitment in the Mercury team at that moment revealed how hard it is to have a consensus in a team that is not able to cope with the possibility that decisions might not always be 100% certain. Moreover, having not one, a CEO, but six decision-makers, makes the fear of failure greater as every member of the team will be partially accountable for the outcomes of a particular decision.

According to Pierce and Conger (Pearce and Conger 2003), shared leadership rarely functions however, it can only do so if all members share the same vision, something the author finds hard to happen. The authors proceed by saying that regardless of who produces the input for making decisions, there must be one person alone that has the final say. To some degree, we could have developed a similar strategy to what the author claims to be a winning strategy by allowing each department responsible to have the aforementioned last say. Thus, we would supposedly have increased the decision-making efficiency whenever there were disagreements. However, that could create both a breach in the harmonious working environment built up until that moment and could also lead to a "blame game" where even more time is wasted trying to figure out who caused that

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outcome. Adding to that, on a personal stance, being perceived as a good contributor to the team (see appendix 3), I felt that going against the rest of the people due to the apparent efficiency gain could harm this perception and lead to a change in the team dynamics.

In fact, if we take the peer assessment results as an example, this good working flow was translated into almost 90% of responses within the team were either 4 or 5 on a scale ranging from 0 to 5 for the statement to interact with teammates (see appendix 1).

However, having good team dynamics together with a great flow of communication, this shared leadership model was actually revealed to be beneficial. Additionally, with 83,3% of the responses to the peer assessment survey regarding the question of having the relevant knowledge skills to be rated either 4 or 5 (see appendix 2), it evidences the benefit of empowering each member by taking advantage of their human capital (Goldsmith, Harvard Business Review 2010). Actually, the previous author provides the example of a tech company where having solely one decision-maker could not be optimal due to the elevated set of skills that that person would have to possess. In the Mercury case, it was similar as each director chose the department where they were the most comfortable which, together with the role-specific training each person was provided, created a scenario where a greater performance would be attained by taking advantage of the complementary knowledge of all group members.

### ***Reflections and learning:***

Although a good conflict management strategy relies on minimizing the dysfunctions within a team (Mayer 2009), offering passive resistance and accepting your peers' opinions with little or no opposition having the sole objective of avoiding conflict in mind will cause the distancing from the conflicting parts in the long run strategy (Kolb and Bartunek 1992). This diversion from healthy

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conflict is definitely something I have realized I mustn't perpetuate. Furthermore, according to the peer assessment, I was perceived within my group as a person that has relevant knowledge, skills, and abilities, and that expects an elevated level of quality from others (see appendix 3), meaning that my team also intended that I would express my stance on major decisions that could impact the company's future. Actually, my ability to contribute to the team was also highly rated, reinforcing the need to speak up. Thus, from now on, I will make sure to force myself to get my opinion heard by the team I am involved in for it to have a wider range of information and personal opinions. Consequently, it should lead to an optimization of the decision-making process.

Additionally, as the fiery red person that I am, I realize that this critical incident also derives from my competitiveness side once it became more critical as soon as we were told in the awards ceremony that we didn't win the Operations prize (highest factory utilization) by 0,03%, something that would probably not happen had I not changed the lines of production as my team intended to. In the end, not only, it didn't pay off in terms of factory utilization, but we also saw a decrease in revenue in the last quarter.

### **Sector analysis**

In this section, I intend to provide the reader with an insight into three departments that revealed to be, in my opinion, the most relevant ones as the simulation developed: Strategy, Operations and Finance.

Mercury is an automotive company that laid its activity in Europe, China, and the United States. At the moment the company changed leadership, its production lines were comprised solely of conventional vehicles, either with ICE (Internal combustion engines) or with hybrid systems.

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From that moment on, we did a reset in our purpose statement where we wanted reflected our top three core values: Sustainability, community, and learning. Thus, we decided the company should aim to achieve sustainability in a sustainable way, i.e., to go fully electric but doing so while not compromising the financial aspect of the company. This purpose made clear our vision to be not only the number one company in the automotive industry, but to have a major emphasis on sustainability through the development of the most desired, practical, and eco-friendly vehicles.

### Strategy function analysis

Strategy itself can be considered a very broad concept as there is not a consensual definition of it, however, there are some scholars that provide opinions that could complement each other. Chandler, for example, (Chandler 1962) claimed that a good strategy relied on the ability of a company to determine its long-term goals making sure its decision-makers act accordingly and allocate resources properly in order to comply with them. Additionally, Porter (Gartner 1985) states that strategy is about finding a match between the company and the environment it is included and that a company can only be competitive if it delivers value based on differentiation (Porter and E. 1996). This area revealed to be fundamental as we had to make sure that all decisions were according to our long-term purpose while using a Blue Ocean Strategy framework (Kim and Mauborgne 2015) as demonstrated below:

Blue Ocean Strategy Principles	Keyword	Simulation decisions
Create uncontested market space	Juanito	Introduction of the 2 micro cars (Juanito and Juanito SB) in the market. There was demand for a car with these characteristics that was not being fulfilled.
Make the competition irrelevant	Innovation	Mercury found that investing early in innovation for it to be included in the new EVs (Electric vehicles) would lead competitors to be irrelevant. Although rivals can quickly copy any market positioning (M. E. Porter, Competitive advantage creating and sustaining superior performance

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		1985), having this timing created a competitive advantage in that time being.
Create and capture new demand	Electric	Development of 9 EV. Mercury not only developed cars that didn't exist in the market but it also provided customers with an electric alternative for every model.
Differentiation by perceived quality and by cost	Scalability	<p>Adding to what was mentioned above by the early investment in innovation, there was a constant focus to produce our cars in the greater number of factories possible. Thus, we would not only increase value creation by increasing the benefit but also by reducing costs through the increase in efficiency.</p> <p>This would happen through both economies of scale (Stigler 1958), by spreading overhead costs (R&amp;D and Marketing), lowering input costs (purchase raw materials in bulk), and economies of learning since the labor force would become more specialized and possess greater knowledge that would jointly lead to an increase in productivity and consequent decrease in unit costs.</p>

Table 1: Using a Blue Ocean strategy framework in decision making

### ***Environment analysis:***

Mercury, as an automotive company, was embedded in a fast-adapting and dynamic environment. In order to better characterize it, I will make use of the PESTLE analysis (M. E. Porter, Competitive Strategy: Techniques for Analyzing Industries and Competitors. 1980) (see appendix 4). Starting from the political standpoint, when the board of directors changed, Mercury primarily developed its activity in the ICE vehicles and in three regions of the globe (Europe, USA, and China), something always present in the decision-making was the trade tensions between the US and China once it caused tariffs on importation to be close to 20% alongside each region tax policies on vehicles. From the economical perspective, the development of the banking system together with the increase in the overall standards of living (Statista 2022) were positive aspects that contrasted with the expectation of fuel prices to increase (due to tax policies) and the projected shortage of supply of ICE components (McKinsey&Company 2018). The main social component can be described as a general increase in urbanization and in the population (See appendix 5). Then, in the technological sector, we must highlight the overall advancement ongoing contrasting

with the current shortage of infrastructures to match the production of EVs (PWC 2018). Legally, regulation either on labor or production across regions is strict. Finally, the main issue with the environment relies on the lack of solutions for lithium batteries contrasting with great incentives for electrification such as the Paris Agreement and possible future bans on ICE vehicle production.

### ***Resources and capabilities as a mean to sustain a competitive advantage:***

Mercury has made great efforts to increase its resources and capabilities which, according to the VARS framework (Osterwalder and Pigneur, Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers 2010), allows a company to have superior performance in activities that will lead to superior value creation per se.

This approach was made possible through great investment efforts in technology across all departments: innovation (connectivity, autonomous driving, and electrification); operations (maxed out investment opportunities to reduce all CO2 scopes emissions); and reasonable investment in both marketing and Human resources. Thus, it allowed the company to develop a highly knowledgeable management team complemented by an also knowledgeable BoD.

### **Operations function analysis**

The operations department is, as mentioned above, a crucial sector for the success of a company as it is the one that actually deals with manufacturing the goods that will generate future revenue. On top of that, it functions as a connecting link between all areas throughout the organization since it incorporates a number of resources from the remaining areas and every decision made by the COO will impact those (Hausman, Montgomery and Roth 2002).

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In this analysis I will firstly perform a characterization of Mercury's operations, following with an overlook on the performance of the aforementioned sector by assessing whether Mercury did meet the function goals wrapping it up with an efficiency analysis.

### ***Making use of the four V's to characterize Mercury:***

In order to provide a characterization of the operations department, I will make use of the 4V's framework (Slack, Brandon-Jones and Johnston 2013) (see appendix 6). Firstly, it aims for a high volume of production that intends to take advantage of economies of scale and specialization. Then, it presents a medium to high variety of products once, although it provides a wide set of products, its focus and best sellers were always urban cars like the compact and the micro cars. Thirdly, there has also been a medium to high variation in demand with frequent quarterly market trend changes. This led to a constant need to anticipate these changes and to be able to quickly adapt to new circumstances. Finally, visibility-wise, it is hard to characterize Mercury once there is no data in the simulation. Despite that, the intended model was to provide a realistic expected time of arrival of the vehicle alongside a track-and-trace app for it.

### ***Evaluating Mercury's performance:***

This evaluation will rely on seven major core competencies which, together, are expected to endow Mercury with a competitive advantage (BarCharts, Inc 2014): deliver high-quality products, maintain a low cost of production structure, be as fast as one can to develop and sell products to the market, adjust to customer demand (flexibility), be punctual when delivering vehicles (dependability), be innovative by constantly developing new models and finally, be socially and environmentally friendly in a financially viable way.



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Objective	Mercury's performance
Quality	Mercury was, in most times, the first mover when it comes to elevate the quality standards by providing options with more and more complex technology than its competitors. Additionally, the company also invested in the luxury segment by providing an all-electric red sports car with a high level of technology embedded.
Cost	In the beginning of the simulation, Mercury had a fairly low-cost structure, however, as it started to incorporate more technology in vehicles, the cost of production has consequently increased.
Speed	Through an intensive investment policy, the company has developed and implemented eleven new vehicles in the market throughout a six-year span.
Flexibility	The Mercury team implemented a quarterly internal procedure in which the marketing department was in charge of registering in a white board the top three demand trends in all locations. This made sure operations could swiftly prepare and adapt for future changes. In addition, Mercury has also developed an electric option for each segment, some with different technologies so that we could adjust to these changing trends.
Dependability	In order to have enough vehicles to meet demand, the operations department had to carefully manage the days of inventory making sure it wouldn't get close to 30. However, we had two situations where it didn't happen: the first one was when it stopped the production of the red Lux car and, after running out of stock, the margin went negative due to the fixed costs directly associated with it and the loss from unsatisfying purchase order from clients; the second one was that, in the last quarter, all vehicles apart from the all-level-four compact car sold out completely.
Innovation	Not only the innovation department has developed eleven new vehicles, but also the HR department has committed from very early to provide a high volume of sustainable training that allowed the operation department to design a greener more responsible production process with spendings amounting to over 1.5-billion-dollars.
Sustainability	Besides all investments mentioned above from the operations department, the focus on the Mercury team was always to have a fully electric fleet. However, to ensure that this was financially viable, it opted for a slower transition which went through the development of two hybrid vehicles. Although it was not a success, making such a radical change was out of the scope of the team's purpose and could cause trust issues between the company shareholders. On top of that, the HR department was key in reflecting the core value of integrity in its hiring policy where diversity stands clear on its agenda.

Table 2: Evaluating Mercury's performance

***Efficiency as key to a good operations functioning:***

Productivity is defined as a ratio of the resources we use to attain a particular output however, the concept of efficiency will not only make use of this metric but also will compare it to the best practice in the market providing a basis for assessing a company's performance (Bitzan, Peoples and Wilson 2016). There is a number of efficiency drivers, however, I will focus on two that are the most closely knit with the performance of the company and data available in the simulation.

Firstly, capacity utilization evidence how much of the company's resources are actually being used to their full potential. Thus, the highest it is, the lower the unit fixed costs will be. According to Statista (Statista 2013), the average worldwide capacity utilization has been close to the 80% (see appendix 7) value, something that Mercury failed to achieve in eleven out of the twenty-three quarters with new governance (see appendix 8). Most of the time, this was caused either by the constant launch of new models or the excessive days of inventory. On the contrary, through aggressive marketing campaigns and the full optimization of new production lines, the company managed to be close to this benchmark for seven quarters and even exceeded it for six quarters obtaining a ratio of 88% in the final one.

Secondly, regarding the existing stocks, Mercury opted for a constant production rate strategy instead of a make-to-stock one since, although the second can allow more flexibility when dealing with increased demand, this would allow it to manage the number of employees for each factory better and to prevent excess stock levels (Grant 2016). Furthermore, it can be clearly seen that these two metrics are highly connected once, whenever there is an increase in the days of inventory, due to an increasing lead time, factory utilization spikes down. As per appendixes 8 and 9 (days of inventory and Utilization), there was a clear trend where in peak days of inventory like in Q10, Q13, or Q22, the factory utilization went bottom low either in the same or the following quarter.

### **Finance function analysis:**

The finance department claims great responsibility within any company. Its main goal is to maximize firm and, ultimately, shareholders' value (Berk and DeMarzo 2019). This optimization process relies on a set of decisions related to the means a company funds itself by finding the best ratio between debt and equity and then, with those resources, investing in projects that offer the highest return with the lowest opportunity cost of capital.

### **Liquidity Analysis:**

In order to assess the ability of Mercury to meet its short-term obligations, the liquidity ratios were computed (appendix 10). These metrics represent the relationship between the amount of company-owned resources that can quickly be transformed into cash, i.e., current assets and liabilities ( BarCharts, Inc 2016).

From the analysis of Mercury's liquidity ratios, it can be noted that the company has had very good liquidity in the time span between 2020 and 2026 clearly evidenced by its positive net working capital. The current ratio reveals the ability to comply with short-term obligations ( BarCharts, Inc 2016). However, this might be caused by the need for high inventory levels characteristic of automotive manufacturing. Thus, as these might not be completely liquid, even when removing the weight of inventories, the company remained in such a liquid position year-on-year that it could support its short-term debt with cash only. Yet, the reasoning behind these values stands in the constant refinancing of short-term debt by new long-term debt as the finance department either issued green bonds or borrowed funds through long-term bank loans. Furthermore, Robinson et al (Robinson, et al. 2012) mentions that having a great amount of excess cash is not optimal once the return on it is always lower than the return if it is invested. Nevertheless, this would only be a

concern regarding the company's usage of resources wouldn't it be justified by the constant need for large sums of capital to meet Mercury's strategy to constantly innovate.

In fact, despite Mercury having good liquidity, the negative free cash flows in the first four years evidence the above-mentioned innovative mindset. Its main driver was the elevated amount of capital expenditures (CapEx) between investments in factories, technology, and energy-efficient infrastructures that, together, summed up to more than four billion euros in the first two years only. Additionally, as seen from appendix 11, as soon as the company slowed the pace of CapEx and started to collect the benefits from its early investments, the free cash flows started to grow steadily from year 4 (Q21) onwards.

### ***Capital Structure and cost of capital:***

In the context of the simulation, the role of finance relied mostly on maximizing the economic value added. This would be attained by having both a good investment budget management and the most suitable capital structure for an automotive company while taking into consideration its type of debt together with the maintenance of a low cost of capital (WACC) which would allow the company to optimally fund and execute its strategy (Berk and DeMarzo 2019).

According to Basdekis et al. (Basdekis, et al. 2020), the search for the correct balance between debt and equity is crucial as it prevents companies from vulnerability in case they are highly indebted. Intuitively, the lower the amount of debt a company has, the better, however, it depends on various factors. Making a link with Mercury, it is expected that its debt ratio to be moderately high once not only is in its growth stage fueled by a vast need for funding but also given that is a company that operates in a sector that has an optimal debt-on-assets ratio of 47,3% (Basdekis, et al. 2020), a ratio which is consistent with the worldwide average of 52,07% (Damodaran 2022).

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Considering the previous benchmark, from appendix 12, we can see that Mercury hasn't diverted much more than a reasonable 5% from the 50% debt ratio mark until Q25. However, from that point onwards, it plummeted to near 30%, something not optimal once it could lead the company not to make use of tax benefits through tax shields (Berk and DeMarzo 2019).

Actually, there were a number of motives that ultimately led Mercury to this "inefficient" situation. Firstly, from Q23 onwards, the company started to present quarterly operational cash flows of over 1B Euros. Additionally, in those late stages, and following Mercury's strategy to invest early, there were no more technology or green projects to invest in in the context of the simulation. Therefore, as developing a new car in the time frame available in the simulation wouldn't present a positive NPV, the company was able to finance previous debt close to maturity with both the quarterly investment budget available and the reserve cash accumulated.

Although it might come to mind that the most obvious way to lower the WACC is to further increase the debt ratio as it has a lower cost than the cost of equity. This cause-effect relationship didn't even come through until Q21 as the WACC presented a steady decrease quarter on quarter while the leverage ratio kept stable (appendix 13). Additionally, by continuously increasing debt, the risk (of default) increases, eventually leading to lower the credit rating and consequently increasing both the bank spread and the premium required by equity holders (Berk and DeMarzo 2019). Thus, instead of bearing high-interest rates on traditional bank loans, Mercury prioritized financing from green bonds, financial instruments in form of cheaper debt (3% interest at maturity) available for the company to issue depending on the amount invested in sustainable projects or Capex. Therefore, in the end, Mercury was just adjusting the type of debt. In fact, the company managed to attain a 97,36% Green capital ratio (appendix 14), i.e., the share of green bonds relative to all borrowed funds.

***Having Corporate Social Responsibility as a major concern:***

The finance department focused on complying with mainly three Sustainable Development Goals (SDGs) (Department of Economic and Social Affairs United Nations 2022):

SGD	Mercury's actions
Decent work and economic growth (SGD 8)	Promoting inclusive and sustainable economic growth mainly through the HR policies like sustainability training and search for diversity and equality.
Climate Action (SGD 13)	Alongside the major effort to fund the company through green capital mentioned above, the company focused solely on EV production, investments in all scopes were made by operations to cut these emissions to close to zero tons (see appendix 18) and green financing was also made available allowing customers to replace their ICE vehicles while benefiting from special credit conditions.
Partnerships for the Goals (SGD 17)	Supply chain investments where partnerships with suppliers were settled cutting scope 3 emissions to zero (see appendix 18).

Table 3: Mercury's application of ESG measures into every decision

By developing these activities and having made all green investments possible by Q17, not only Mercury was on track to comply with its mission, but it also started to benefit from its reduction of emissions (appendix 15) through a revenue bonus earned by selling its CO2 allowance to competitors (appendix 16).

***Positioning Mercury amongst its peers:***

The companies chosen for comparison with Mercury were Tesla Motors and BYD Auto (Building your Dreams Automotive) due to their global positioning as market leaders and disruptors in the EV manufacturing sector. Both Tesla and BYD have collected aspects from the BOS. The core business of these two companies is EV manufacturing, however, the creation of new market space was made in a different manner. On one hand, Tesla opted for a high-end market starting with the electric Roadster launch in 2008 competing with established luxury brands in key attributes such as acceleration, something inexistent at the time (Thomas and Maine 2019). On the other hand,

## Conclusions and Peer comparison

BYD pursued a low-cost high-value strategy where the development of plug-in hybrid vehicles was the starting point for going fully electric (BYD Europe B.V. 2022). Thus, Mercury had a more similar approach to BYD's strategy due to both its product affordability positioning choice and, mainly, the financially sustainable path to electrification that it had.

Having described Mercury-s operations making use of the 4Vs, I will proceed to situate it among the peers chosen to be compared (See appendix 6).

4 Vs	Peer Comparison
Volume	All three companies aim to lower unit costs through economies of scale through the production of vehicles in large facilities namely Tesla's Gigafactory across the globe, BYD Global Bases, and Mercury in the production of both the compact and micro cars in four lines in Europe and China respectively.
Variety	Tesla and BYD have four and five models available to the public respectively while Mercury had 9 vehicles in the last quarter of the simulation, one electric alternative for each market segment in the simulation. In this case, it could be deduced that having this much variety would increase unit costs, however, as mentioned above, at the end of the simulation we were focusing more on mass production of compact and micro cars and constantly adapting according to market needs provided by the marketing department.
Variation	For all three companies, despite having major growth perspectives, market trends are dynamic year-on-year. Regardless of that, considering how Tesla has settled in the automotive market and having the brand equity it has, it could be the case that there is slightly less variation in the quantity demanded. However, BYD is currently facing an exponential increase in demand once, according to the company's website (BYD Europe B.V. 2022), in June 2022, it had more units sold (over 640 000) than in the entire year of 2021 (593 745) (Mehta and Senn-Kalb 2022). Thus, it might be the year that BYD surpasses Tesla in the number of vehicles sold.
Visibility	Hard to compare Mercury with its peers, however, the intended model would be based on Tesla's by providing its customers a realistic expected time of arrival of the vehicle together with track-and-trace functionality intended to increase customer satisfaction.

Table 4: Using the 4V's to characterize Mercury and its peers

Across the automotive sector, different financing structures and the rationale behind appear. Alike Mercury, Tesla's debt ratio is in accordance with what is considered optimal and with the worldwide average standing with a debt-on-assets ratio of 52,07% as of the 31st of December

2021. On the contrary, BYD presented a much different ratio of 64,76% as of the same date. For any company in the automotive sector, a debt burden that large could be the reflection of a major risk of default. However, being a Chinese-based and Hong-Kong listed company, this ratio is the reflection of the \$586 Billion stimulus package provided by the Chinese Government in the aftermath of the 2008-09 financial crisis. As there was a massive availability of credit, firms started to invest heavily and inefficiently in assets which led them to get more indebted (Chan 2018). Additionally, as the author predicted in this article dated 2018, the debt ratio was expected to remain high as the banking system kept providing funds through alternative channels.

### **Conclusions**

From a personal perspective, in the last few years, the automotive sector had been becoming growingly monotonous. Although this might be a bold statement, the fact is that every major player in the market was competing mainly in two dimensions, design and speed. With this paper, and as a car enthusiast, I am happy to conclude that Mercury represents the change and most importantly, that are many "Mercurys" out there. Similarly to the automotive sector, BiP also means change and breaking through with conventions, something that was clearly evidenced by the shared leadership model and the consequent importance of communication between functions.

In the company analysis though, there was no other way than to start with strategy once, as mentioned in the personal reflection part, this must be the guiding principle across all functions. Making a connection with the remaining sectors, finance was crucial in making sure the company would get funded through green debt whilst complying with the objective to be profitable without disregarding sustainability, Operations was key in maximizing factory utilization and reducing CO2 emissions, HR in providing sustainability training, Innovation in designing fully equipped zero-emission vehicles and Marketing promoting the vision and building the Mercury brand.



## Conclusions and Peer comparison

Likewise, the role of operations implied constant communication in each decision it made. Apart from following the strategic blueprint mentioned above, the impact of Marketing was critical for reaching operational efficiency once it would take into consideration consumers' preferences and then inform the COO of the need to revise production amounts. Additionally, it also had an impact both on the days of inventory and on the factory utilization ratio depending on the Marketing mix used (4Ps: Product, Price, Promotion, and Place). Also, Innovation had to be in close contact with operations once not only did it develop new models but also had to coordinate the timing for them to be allocated to a factory. Finally, HR responsible of making sure that there was an appropriate and motivated workforce.

In recent years, the finance function has developed deeper links with the operational aspects of the company (Nielsen and Kristensen 2020). Aside from the interdependencies with the strategy and operations departments, finance was in charge of managing the expenses and the financial viability of proposals made by the remaining.

Moreover, despite not having a sustainable practices department, throughout this working project it was clear that the concern with the environment around you has now a symbiotic relationship with the success of any company. In addition to the heavy investment in green projects, Mercury was able to achieve close to 100% personnel satisfaction and an elevated diversity level.

Concluding, I strongly believe Mercury's great performance in the simulation is due to both the good flow of information between all departments and mainly, due to the engagement of the team with the strategic approach by being aware and embracing current and future trends for the automotive sector. In fact, the performance of Mercury describes its purpose word for word since it has accomplished both a fully electric fleet and residual CO2 emissions together with the lowest cost of capital amongst competing teams (appendix 17).

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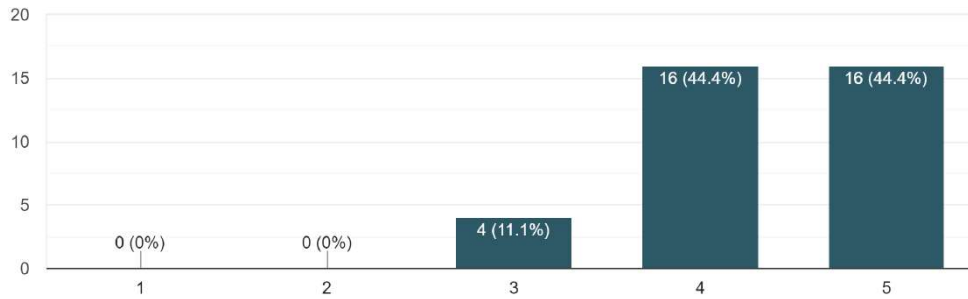
# Appendix

## Appendix

### Appendix 1: Peer assessment- Interacting with teammate's question

#### Q2. INTERACTING WITH TEAMMATES

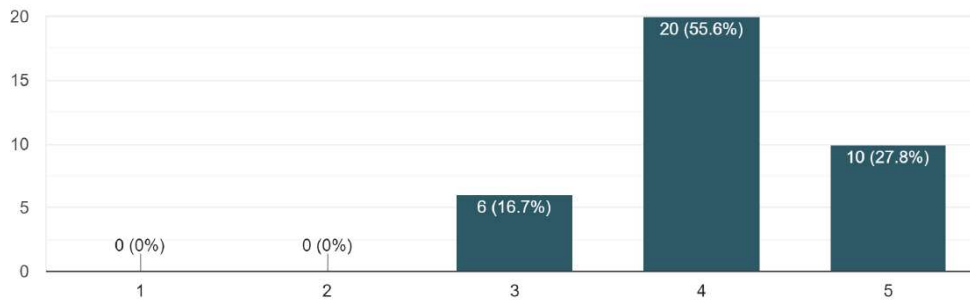
36 responses



### Appendix 2: Peer assessment- Having relevant, knowledge, skills, and abilities

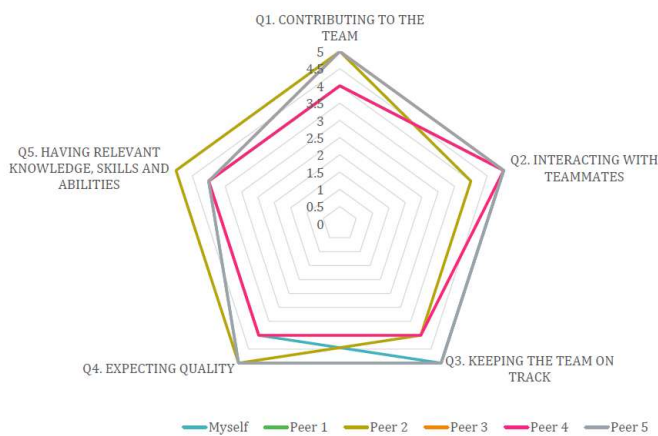
#### Q5. HAVING RELEVANT KNOWLEDGE, SKILLS AND ABILITIES

36 responses



### Appendix 3: Peer assessment- Group assessment

48919 \_ José Diogo Segundo Dias



## Appendix

### Appendix 4: Environmental analysis- PESTLE

PESTLE	Description
Political	<ul style="list-style-type: none"> <li>- Trade tensions between the US and China (tariffs going up to 20%)</li> <li>- Tax policies for conventional cars</li> <li>- Political stability across all the regions it is produced</li> </ul>
Economical	<ul style="list-style-type: none"> <li>- Worldwide increase in standards of living (early real wage growth close to 2% from 2006 to 2019)</li> <li>- Development of the banking system (Credit to consumers is common)</li> <li>- Fuel prices expected to increase in the long run</li> <li>- Shortage of ICE components is anticipated</li> </ul>
Social	<ul style="list-style-type: none"> <li>- Customers expect companies to embrace in a diversity policy</li> <li>- Rise in urbanization</li> <li>- Increase in population</li> <li>- Increased demand for automatic transmission cars in China</li> </ul>
Technological	<ul style="list-style-type: none"> <li>- Overall technological advancement               <ul style="list-style-type: none"> <li>. Autonomous driving features: AI preventing collisions, auto parking</li> <li>. 3D printing as a possibility for producing new parts: Liux- printable chassis</li> </ul> </li> <li>- Paris agreement for having at least 20% of all road transport vehicles globally to electrically driven by 2030</li> <li>- Younger tech-savvy generations</li> <li>- Lack of infrastructures for charging cars</li> <li>- Improved efficiency of charging stations- fast-charging stations that power the car in 15 minutes</li> <li>- Expected that 40% of mileage in Europe in 2030 is made through autonomous driving</li> </ul>
Legal	<ul style="list-style-type: none"> <li>- Strong union power in the US</li> <li>- Strict labour laws in Europe</li> <li>- Stricter regulation for cars in Europe</li> <li>- Autonomous driving is still highly debated</li> <li>- Fines on surpassing the CO<sub>2</sub>g/vehicle limit</li> </ul>

## Appendix

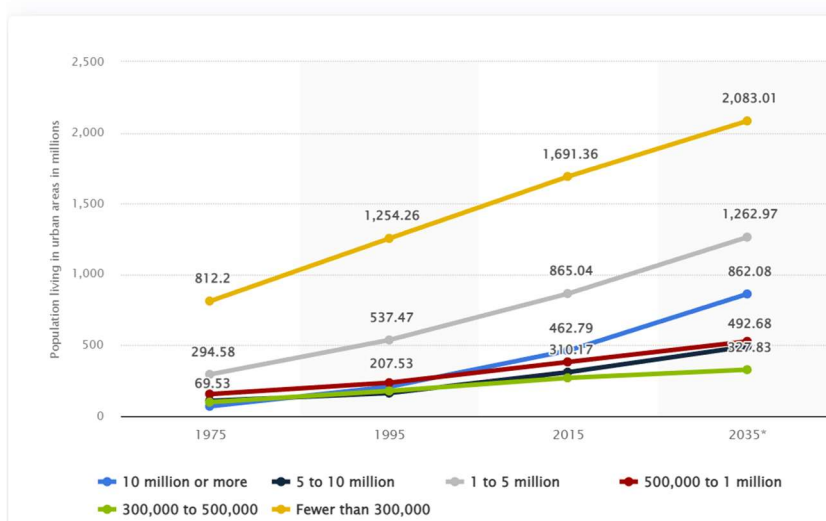
- 
- Environmental
- There is still no solution for the used lithium batteries
  - Ban on ICE car production by some governments
  - Paris agreement
  - Sustainable alternatives for the production process start to arise- Liux from the academic session with a plant-based chassis
- 

Sources: mentioned in the report

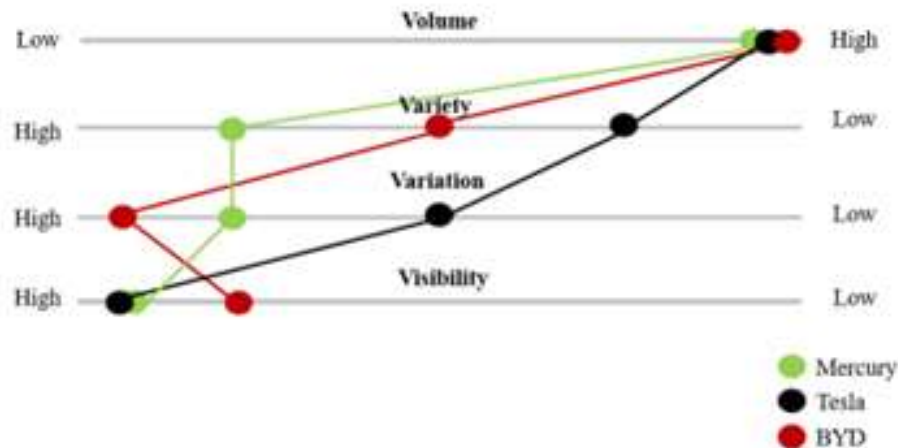
### Appendix 5: Population living in urban areas worldwide from 1970 to 2035, by urban area size

Source: Statista

(in millions)



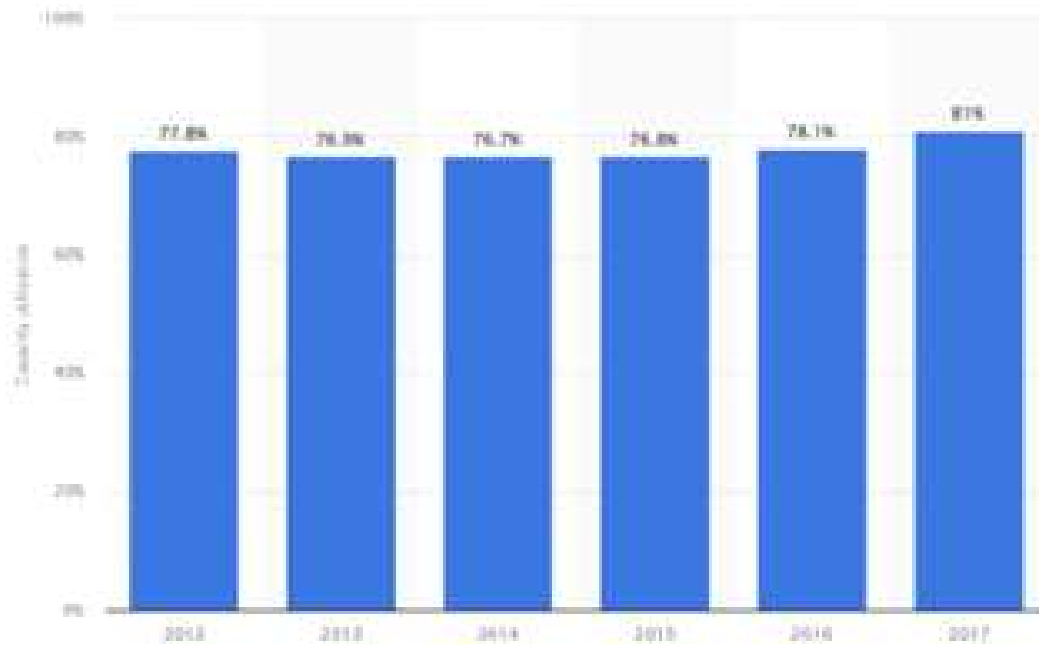
### Appendix 6: Using the 4V's to characterize Mercury and its peers



## Appendix

### Appendix 7: Global automotive assembly capacity utilization from 2012 to 2017

Source: Statista



### Appendix 8: Mercury's Factory Utilization

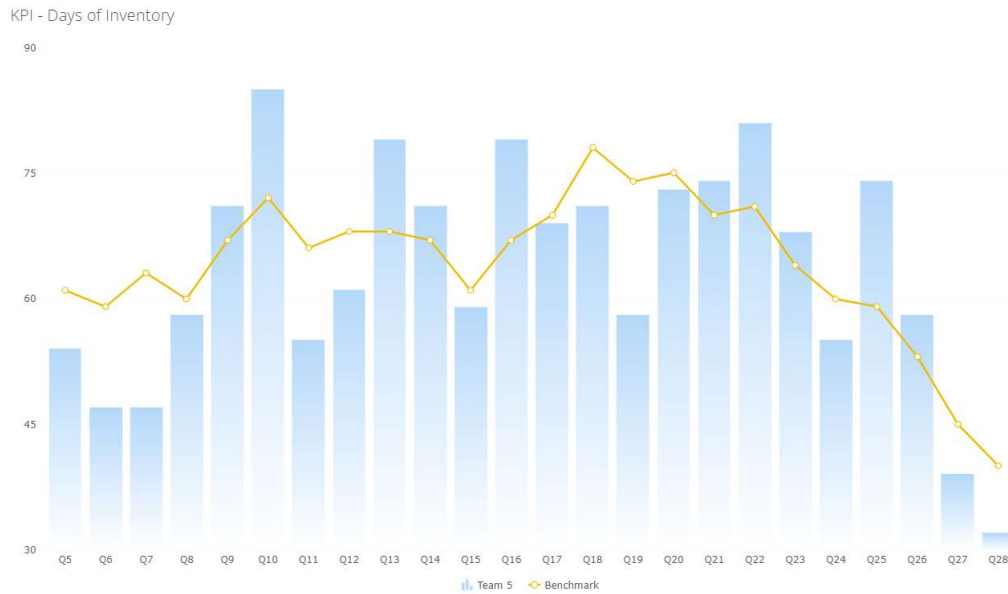
KPI - Factory Utilization



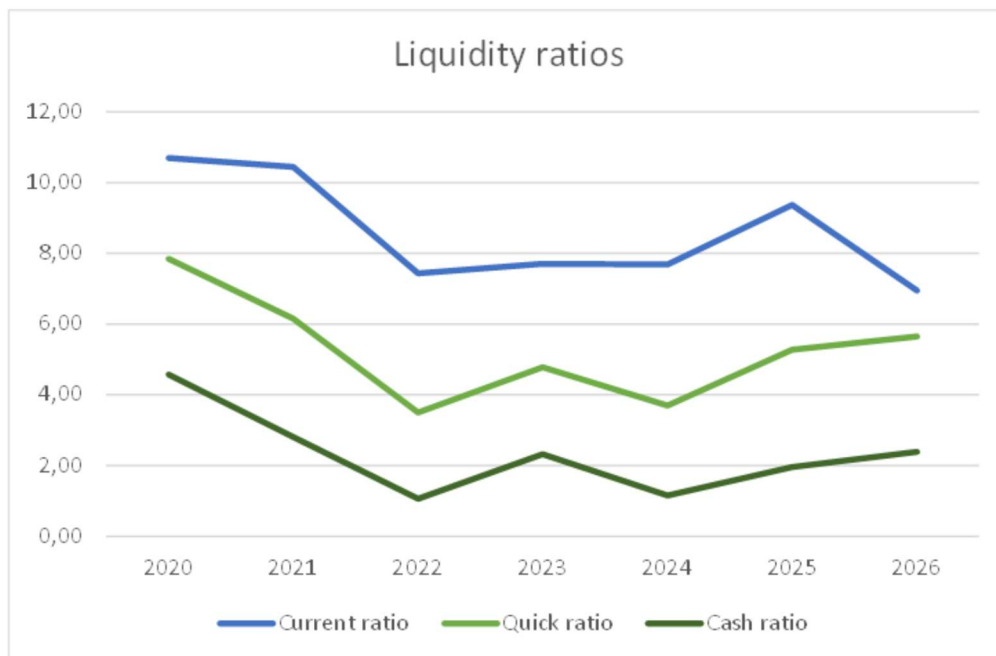


## Appendix

### Appendix 9: Mercury's Days of Inventory

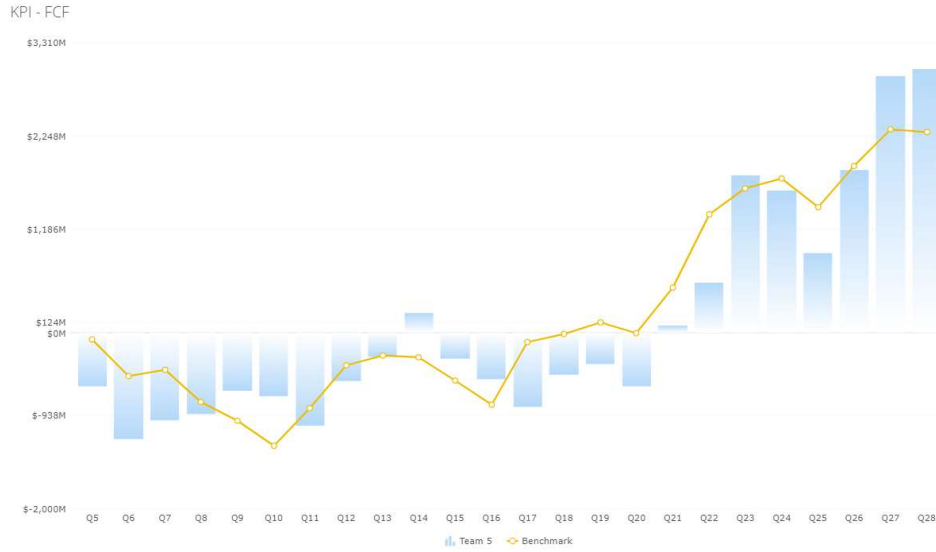


### Appendix 10: Mercury's Liquidity ratios

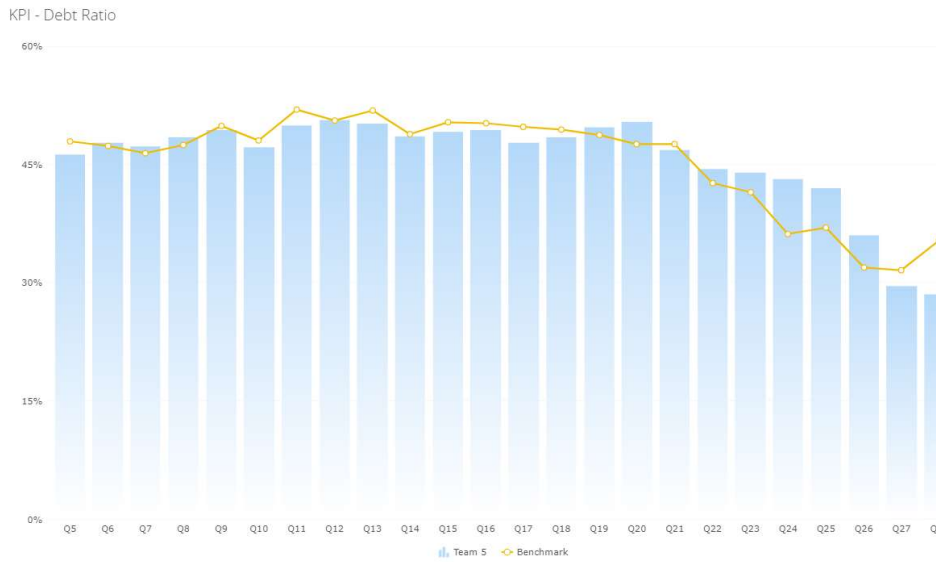


# Appendix

## Appendix 11: Mercury's Free Cash Flows

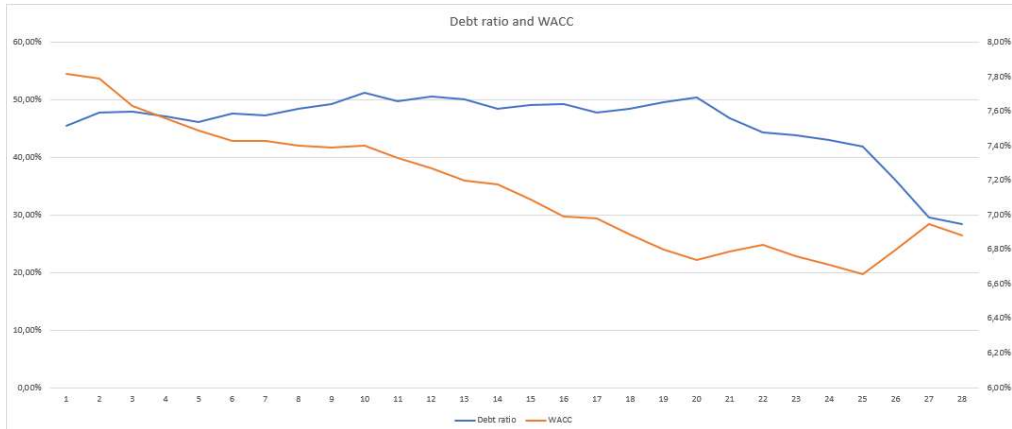


## Appendix 12: Mercury's Debt ratio

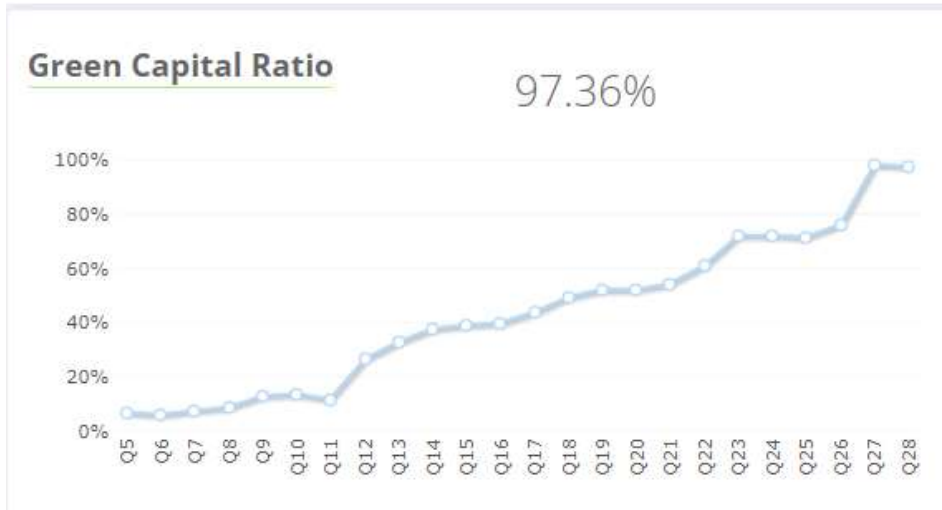


## Appendix

### Appendix 13: Mercury's Debt ratio vs WACC



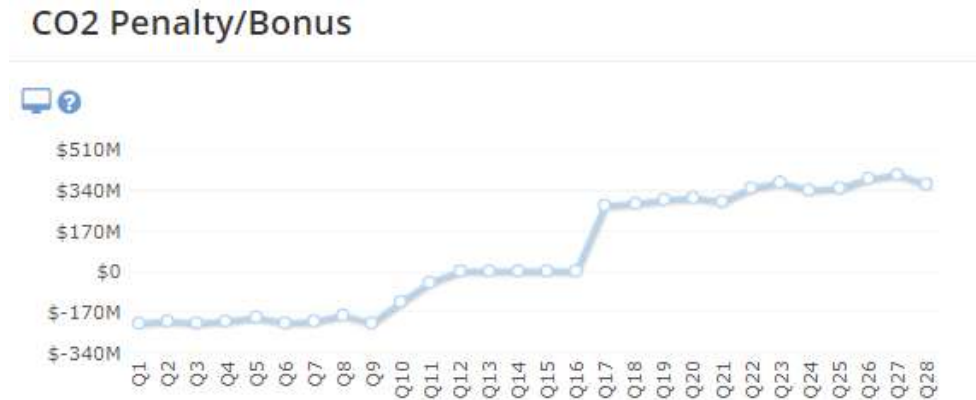
### Appendix 14: Mercury's Green Capital Ratio



### Appendix 15: Mercury's CO2 Fleet emissions



Appendix 16: Mercury's CO2 penalty/bonus



Appendix 17: Mercury's Finance Prize

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## Business in Practice 2022

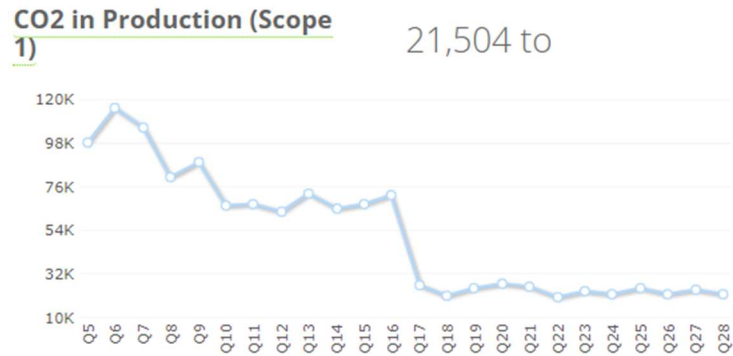
# Team MERCURY

**FINANCE PRIZE**  
 LOWEST COST OF CAPITAL: 6.79%

**TEAM MEMBERS:**

- CLAUDIA ZAMUDIO, DIRECTOR OF FINANCE
- RUDOLFO PEIXOTO, DIRECTOR OF HR
- JUAN CORZO, DIRECTOR OF INNOVATION
- JOSE LOPES, DIRECTOR OF INNOVATION
- INSSAF MAJID, DIRECTOR OF MARKETING
- JOSE DIAS, DIRECTOR OF OPERATIONS

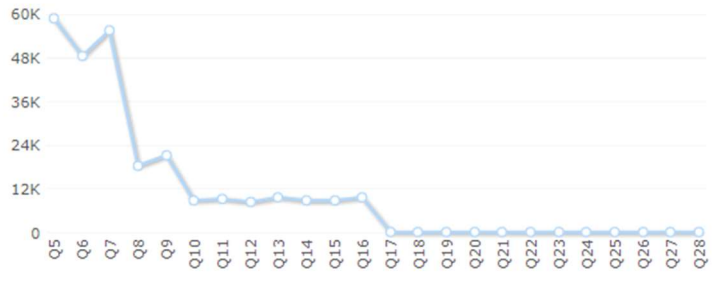
Appendix 18: Scopes 1,2 and 3 CO2 emissions



# Appendix

## CO2 in Energy (Scope 2)

0 to



## CO2 in Supply Chain (Scope 3)

0 to

