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Business in Practice: The transition of Curro Cars to the mobility of the future and personal insights.

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Abstract

The car industry is facing a period of considerable changes, due to the shift towards electrification and digitalization. It is therefore critical that carmakers react to these changes swiftly. The aim of this thesis is to present the efforts of a fictional company, Curro Cars, to navigate such transitional period in a simulated environment. The content is divided into two parts, firstly the business performance will be presented, focusing on strategy, innovation and finance. Secondly the focus will be on team dynamics, presenting two critical incidents that provided personal reflection points on the author's role in a team.

Keywords

Business simulation; Change management; Automotive industry; Electrification; Digitalization; Strategy; Innovation; Finance; Team dynamics; Interdependence; Authority balance; Decision making process.

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Firm analysis, Curro Cars striving for innovative and green vehicles.

The automotive industry is facing several changes in recent years which are likely to continue in the future. Of these, two are the more noticeable and relevant, first of all there is the digital transformation which is posing critical questions to car manufacturers of not only what kind of products they want to sell, but also what type of company they desire to be (Graf et al. 2023). The other trend is electrification. Due to the increase in environmental concerns, the market for electric vehicles (EVs) has been on the rise as EVs contribute to lower CO2 emissions. The order of this reduction is between 17 and 30%, when comparing traditional combustion engine vehicles and EVs (European Environment Agency 2023). Therefore, car manufacturers must update their offering to match these changes in demand.

At Curro Cars we tried to do exactly that. Being a company with a global presence we had to take actions immediately. That is why we decided to focus heavily on these two aspects, in order to offer products with the latest technological features and powered by an electric engine. A SWOT analysis was performed to assess the validity of such strategy (Figure 1) and the possible positive outcomes outweighed the downsides, therefore we went through it.

To present the performance of our company towards such goal, three functions will be analyzed in depth. The choice fell on strategy, innovation and finance. The rationale behind these roles is found by looking at the company's goal. In fact, a clear strategy was needed to effectively transition from conventional vehicles to technologically advanced EVs. However, to do so, the innovation department had to be extremely efficient in deploying capital towards R&D projects which would allow the release of new car models. Lastly, the finance department played the crucial role of ensuring that enough cash was available, together with evaluating the different projects, to determine which one would bring the most value to the company.

This will be the order that this paper follows in presenting the selected business functions, as they build on each other towards the realization of the company's vision.

Strategy, a clear path towards success

At the beginning of the simulation our team gained control of an already existing company, therefore some product lines were already present. Thus, it was crucial that the first step moving forward was to evaluate the current product offering and decide how to alter it to match our desired strategy (Kotter 2007). More specifically, the existing fleet was composed of 5 vehicles: four with an Internal Combustion Engine (ICE) and only one hybrid product. In addition, three cars were in the maturity stage while the remaining two were in the growth stage.

Therefore, the concepts of Product Life Cycle (PLC) were adopted. The terms refer to the study of how the demand of a product will change with time from the moment it is released until its retirement. At introduction, it will be hard to gain traction as customers will be skeptical about it, but later the sales volume will increase rapidly since the public recognizes its validity, the so-called growth stage. Which will be followed by the maturity stage when the product has reached its highest potential before going in decline when its demand will decrease (Polli and Cook 1969).

It is crucial to have a clear understating of the stage of the product lines in the portfolio, mainly to plan ahead in the future to determine which products should be replaced sooner, after reaching the decline stage (Scott Zimmer 2021). The implementation of Product Life Cycle management strategies is fundamental when several lines of products are offered, and it will have a positive impact on the product quality (Tipu, Haider, and Imran 2022).

The starting situation required some considerable changes to match our desired strategy. In fact, in one of the first sessions we had together as a team, we decided what will be the strategy we wanted to embrace. We opted for a two-pronged approach that will target a young audience, and to do so, our main product offering will include cars with advanced technological features powered by sustainable engines. With more emphasis placed on the technological innovation than on sustainability. To do so, considerable investments were made early on, since

only that way it would have been possible to have the latest features available for product launches. These are aspects of strategic management, and more specifically having a clear goal and a plan to reach the objective is extremely powerful and plays a critical role in granting a competitive advantage to the firm (MOHAMED and BAŞAR 2023).

At first, to make the green transition possible, we relied on issuing hybrid cars, since Electric Vehicles (EV) were not ready yet. However, we soon realized that the market was moving much quicker towards electrification than anticipated, therefore we had to swiftly change our short-term strategy, abandon hybrid products, and focus on launching EVs. In fact, we launched our first car with the new electric technology at the beginning of year two, while in year one two hybrid cars were introduced to market, and no more vehicles with such configuration were ever launched again, preferring EVs, since the former were showing poor sales figures. In fact, after the first one a total of eight more electric cars were launched ranging across all the different archetypes, with a new launch happening almost every other quarter.

For what regards the strategy for the innovation department, more will be said in the chapter focused on that section, but considerable efforts were made to unlock the new technologies as soon as possible in order to launch innovative products sooner than the competition, to offer a clear differentiating factor. In fact, most investments in innovation were completed by the third year, with the only one left which terminated in year four. Figure 2 in fact shows the amount of investements committed by quarter and it is a confirmation of the efforts to complete all the possible innovation investments as soon as possible. In fact it is easy to spot that in the last two years no furhter investments were made since all the available ones were already completed.

To implement the most advanced innovation in our products, a range of "*plus*" models was envisioned, which differentiated themselves from the standard models for having the most advanced technologies possible at the moment. In that way a wider market reach would be

achieved, since the base models will attract more cost-conscious customers, while the plus line will be targeted to clients who are looking for the best vehicle possible.

Our decision to focus on this strategy was based on the realization that the automotive industry is experiencing radical changes right now, and a lot of innovation is being pursued in the sector. In fact, there are several trends which will radically transform the market in the following decades. According to McKinsey (Gao et al. 2016), four will be the trends shaping the automotive industry: diverse mobility, autonomous driving, electrification, and connectivity. And they will work in a way that the development in one will accelerate the others, resulting in a much faster rate of change and innovation. In particular, the green transition will play a big role in the change. Not only because of the increase in awareness from customers, but also regulators are influencing the development by determining the speed of the transition, more specifically accelerating the process. To give a sense of the rapidity of the shift, in a period of 7 years, precisely from 2015 to 2022, the number of EVs sold in the EU went from 150 thousand to 2 million (Celasun et al. 2023). That is evidence in favor of our decision to follow this strategy in order to be on top of these trends and avoid the risk of becoming irrelevant as a car company.

Innovation, the differentiating factor

As mentioned in the chapter about strategy, the path we envisioned for Curro Cars relied heavily on the technological advancements made possible by large investments from the innovation department early on in the life of the company, in order to make possible launching innovative models later in the life of the firm.

This vision is in line with the growing importance that technology has in almost all sectors of the economy. And in certain cases, the success of businesses depends on their ability to implement these technologies in their offerings. That is why the term “technopreneurship” was created (Jablonski 2017), since to be a successful entrepreneur, innovative technologies

must be deployed in an effective manner. For that reason, we decided to embrace such trend and be as innovative as possible from the beginning. Evidence in favor of that statement is the highest level of features present in the cars we launched, compared to the competition. In fact, the best-selling cars in the market were all cars we introduced which had much longer range, together with autonomous driving and connectivity at levels unmatched by the competition.

This is a signal that technological innovation can be a source of competitive advantage. According to research, the positive impact of innovation can be broken down into several components, for example the improvements in sustainability, connectivity and integration, to mention a few which will contribute towards the achievement of an economic moat (Saura, Skare, and Riberio-Navarrete 2022). These were similar to the aspects that the simulation allowed to invest in, more precisely: electrification, connectivity and autonomous driving.

Therefore, the innovation department played a critical role, especially because to progress down the possible investment paths, gradual steps were needed. Meaning that investments in the most advanced technologies were available only after the least complex ones were already developed. For that reason, we are in the case of incremental innovation, because there were no radical changes, but smaller improvements were achieved over time. However, when several incremental innovations are combined, as in the case of a car launch with the new features developed in the different innovation branches, the result will be a disruptive innovation (Hacklin, Raurich, and Marxt 2004). This process is called technology convergence.

I already introduced the shift in regulation aimed at incentivizing the electrification process, which is an argument in favor of making considerable investments in innovation since one of the three possible branches of investments is exactly the one of electrification. Therefore, with the government issuing new and more stringent policies on CO2 emissions, as it was the case in the simulation, making investments towards electrification is a priority to avoid paying large penalties for fleet emissions. Moreover, in the last years of the simulation, a bonus was

given to companies with emissions below a certain threshold, thus increasing even more the benefits of electrification. For that reason, we tried to accelerate the transition towards electric vehicles, resulting in zero penalties by quarter 12, and a zero-emission fleet by quarter 22. Figure 3 and Figure 4 show the evolution of these two metrics over time.

The relation between technological development and market demand is a two-way street. The two possible dynamics are named technological push, in the case when a development in technology allows for the launch of a new product or service. On the other hand, demand pull is when there is a market demand that motivates R&D efforts (Hötte 2023). In our case both strategies were adopted, because before launching a new car, the marketing department was always consulted in order to identify which cars were demanded the most and therefore match our offering to what customers desired. But at the same time, we adopted the technology push process since we launched car models with very advanced features with the aim of generating new demand by offering innovative products. We also did the same when we were the first among our competitors to bring to market an electric micro-car, without any data on the demand for that specific model. Hötte (2023) argues that technological push has a much greater impact on market growth and innovation compared to demand pull. Therefore, one might be tempted to state that the former is a better dynamic, however the latter plays an important part in spreading the technology to a wider audience and fostering incremental innovation. In the simulation when we pushed innovative products that were not in demand yet, the results were positive, however the importance of matching our offering with the demand in other moments cannot be understated.

In the first stages of the transition, in fact, according to the market research we had available in the marketing department, it seemed like the market was still demanding conventional cars (Figure 5), therefore we decided to take the risk and launch two hybrid cars to start shifting towards more sustainable options more gradually. However, the market reaction

was much quicker than anticipated, and our brand-new hybrid cars were selling poorly. But to achieve success in an environment of high innovation, it is important to take risks. As stated by Marico's chairman, a leading consumer good company in India, facing risks and overcoming challenges is a crucial step in the path towards success, without it the business would not be able to break past certain barriers and reach higher levels of value (Mariwala 2023).

In order to provide a more comprehensive view of our investment strategy by the innovation department, Table 1 and Table 2 summarize all the investments made and the launches of new models over the different quarters. Once again, I want to emphasize that our strategy is clearly presented by the data since no more investments were possible past year 4, while the launch of new cars continued in year 5, in order to deploy the new technologies we just developed, presenting to the market extremely innovative models.

To conclude this section on innovation and create a link to the next one, where the finance function will be presented, a reflection on value added is appropriate. In fact, the large investments in innovation had a negative impact on such metric, since the value of net assets increased drastically. At the same time, they allowed the launch of extremely innovative products that were met with high demand, and which carried the economic value to much higher levels at later stages. The research of Agnelli, Costa and Dussaux (2023), supports the hypothesis that early investments in green technology have a considerable positive impact on the market share of the company and therefore its value added. This metric has in fact the characteristic of incentivizing selecting highly profitable projects like the ones we pursued.

Finance, ensuring that the company is on track

For the final section of the firm analysis the focus will be on the work of the financial department. It is best to leave this section last because it will borrow from the other two already discussed and will tie everything together properly. In fact, in the simulation the role of the finance directors was mainly to monitor that the company was making progress towards the

desired direction by analyzing the financial performance of the firm, while managing the budget and the capital structure not only to have enough resources to fuel the growth of the company, but also to ensure that the maximum value added would be reached.

Any course on finance would emphasize the importance of Free Cash Flow (FCF) as a metric to keep an eye on, both internally when deciding for a new project, and even when valuing another company. Taking a step back, free cash flow is the amount of cash that is available to repay debtors or shareholders, after all the other operating needs of cash have been fulfilled and investments have been made (Petty and Rose 2009). Theoretically, a low value should be avoided, since it would signal poor financial health, however in our specific situation, the negative figure early on was due to the large investments which were necessary for the transition in place. It is the case in fact that during the final quarters the large cash commitments made early in the simulation paid out, since the FCF in the final quarters was positive by a large amount. Figure 6 shows graphically how this metric evolved over the quarters. This way, the two different stages of the business are even clearer to distinguish: high investments at the beginning with low to negative FCF: which was always below $400M; zero investments and high profits from the innovation done in the past, resulting in high FCF in the final quarters. The cash flows went from $360M in quarter 22 to $2.2B in quarter 28 (Figure 6).

Together with the FCF, another measure that should be closely monitored is the Weighted Average Cost of Capital (WACC). This is a rate that should be used to discount the future cash flows when a company is financed both by debt and equity, as it was the case for Curro Cars. A tab was kept on this ratio also because it is a determinant of the value added, therefore it would impact the final score of the simulation. Ideally, a lower value should be preferred. To reduce it, the capital structure should be modified accordingly. Following Modigliani Miller proposition 2, the highest the leverage is, the lower the cost of capital will be, because debt is cheaper than equity and thanks to the effect of the interest tax shield (Berk

and DeMarzo 2019). However, this is not a holistic view, since with increasing level of debt, financial distress costs would also increase, thus increasing the cost of capital. The conclusion is that there is an ideal capital structure for which the debt level is high enough to have a considerable tax shield without incurring in unbearable financial distress costs.

For these reasons, during the simulation when a cash need emerged, debt was preferred to the issue of new shares. Except when, in quarter 16, there was a cash shortage and the issuance of further debt would have caused a downgrade in the credit rating leading to a BBB, which would have made further debt issuance more expensive. In that case, the decision was to issue new shares since the stock price had been going up for the last quarters, therefore we would get all the cash needed. In fact, from quarter 11 the price has been increasing on average 6% yearly, going from $269 to $363 in quarter 15. Ideally this process should have been matched by a repurchase of shares in the last quarters, when there was an excess of cash not being used for any more investments. In this way it would have been possible to shift the capital structure towards a more leveraged split, benefiting the WACC. However, in the heat of the moment we missed this opportunity which would have been beneficial in granting a lower WACC and as a consequence a higher value added in the ending quarters.

In the simulation two were the options available when new debt had to be issued. On one hand we had traditional loans with an interest rate of around 4%, which changed on the basis of the credit rating, while the other option was to issue green bonds. The difference between the latter and traditional debt instrument is that they are focused on financing project that will have a green impact, therefore are not harmful for the environment. Since the publishing of the “Green Bonds Principles” in 2014, the interest of the market for these instruments has been increasing (Hammoudeh, Ajmi, and Mokni 2020). Normally green bonds can be issued only when the cash they will generate is used to finance sustainability related projects, while in the simulation they worked the other way around: to issue more green bonds

the company had first to invest in green projects, which will qualify them for more of these debt instruments. In real life, the contribution of green bonds towards green causes is noticeable: with a reduction in coal consumption, the portion of non-fossil electricity will increase from 42% to 46% globally and the CO2 emissions worldwide will decrease by an amount comparable to the emission of all European countries and Japan together (Glomsrød and Wei 2018).

Another feature of green bonds is that they normally offer lower interest rates, as they did in the simulation: they had a fixed 3% rate, much lower than the 4% of conventional debt. Therefore, they should have been the preferred source of debt. In our case almost $6B of these instruments were used, while another $7B were available. It was an error on our part not to rely more on green bonds since they were more affordable, but we decided to leave the financing decisions at the end of each quarter, therefore the time constraint was pressing and didn't allow to calmly analyze the situation to find the best choice possible. The reason why green bonds are issued at lower rates is linked to the green factor, which will play to their advantage in two ways. Directly, by reducing the spread of these bonds, and indirectly by granting them a higher credit rating which will in turn improve even more the interest rate (Xu, Li, and Yin 2023).

To conclude, it is ideal to look back at the evolution in value added, which ultimately was the main KPI. Figure 7 depicts its development over the simulation's period, where an expected J curve is present, since the large investments depressed the value, which later recovered in the final quarters. The final amount could have been higher if not only we reduced the customer credit term, but also increased the suppliers' payment terms, that way net assets would have increased more. Another possibility to better the score could have been the already mentioned share repurchase, which would have induced a higher leverage, therefore lowering the WACC. And finally, a higher NOPLAT, which was curated by trying to select the most profitable projects possible throughout the life of the company. It is in fact one of the advantages of focusing on value added to concentrate investments on project which would have high

returns. As it was the experience of CocaCola (Chen and Dodd 1997), who after introducing as a KPI value added, focused more on the soft drinks segment which would yield higher returns together with adopting a higher leverage, resulting in a lower WACC. Measures similar to the ones we tried to adopt.

Comparison with real companies

Despite BIP being a simulation, several similarities are present with real life companies operating in the automotive sector exactly as it was the case for Curro Cars.

A big part of our strategy was to focus heavily on innovation, as our goal was to create cars with advanced technical features, while being powered by a green engine. Most car companies are adopting a similar strategy, by focusing their efforts to match the trends of electrification, connectivity and autonomous driving. Forecast set the total amount that will be invested worldwide by car manufacturers for EV to $1.2T by 2030 (Lienert 2022), thus highlighting the desire to transition as quickly as possible towards electrification. The commitments of single companies vary across firms, where the highest spending being of Tesla with $100B invested in EV and $400B in batteries. However, those are the figures of an outlier. Since the majority of the largest carmakers will be investing around $50B, like Ford committing $43B, the VW group $55B and Toyota $56B. In our case the total amount we invested in R&D towards EVs was of $3.2B in a period of 6 years, which were all the possible investments we could have made, therefore positioning ourselves below some of the other companies presented. Even taking scale into consideration, our commitments are inferior compared to the competition, as can be seen in Figure 8. However, if more investments were available, they would have been pursued undoubtedly, since in the final quarters there was an excess of cash which could have been used to further invest in R&D.

Another interesting aspect of comparison is the capital structure. For our company, the ratio of long-term debt over equity was on average of 0.78. Figure 9 shows how it changed over

time and the just mentioned average. A group of 15 selected car companies in 2022 had on average a ratio of 1.3 (Statista 2022), which is significantly higher than the one we chose. However, some companies, like Mitsubishi had a value closer to the one we adopted. Figure 10 shows a detailed view of the ratio across the different companies. These statistics indicate that a much larger leverage could have been adopted in our case, especially because a one-to-one rate was never achieved, which could have resulted in a more favorable WACC.

Integrated view across functions

The three functions presented are interconnected with each other in a deep way that might have transpired from their respective sections. However, a more detailed analysis of the relation between them is appropriate since some aspects were not mentioned before.

The firm analysis started by presenting the strategy function because it is the one that generates the goal of the firm and dictates the necessary intermediate steps. However, on its own, strategy is pointless since more concrete actions are needed to deploy it. For our vision, innovation was key, because we wanted our products to have the latest technological features together with a green engine. Thus, the innovation department had a crucial role in achieving the goal of an extremely innovative product due to the several available investments.

However, to make all these commitments in R&D, launch new car models and have the capacity in our factories to produce our offering at a consistent scale, the finance department had to make sure that at each round there were enough funds available to deploy towards the realization of the strategy. In addition, it had to ensure that the best capital structure was present to make the newly issued resources as affordable as possible. And at the same time ensure that finance metrics like profitability, liquidity and solvency were sound. Lastly a crucial part was evaluating the innovation and operations projects that were proposed to determine whether their Net Present Value (NPV), was greater than zero, therefore they would contribute positively to the value added. If they presented a negative figure, the finance department advised against it.

Conclusion

As already mentioned, the automotive industry has been under considerable turmoil recently, due to the alteration of what customers are demanding from a car. Which is required to not only be a mean of transport, but it must be a real piece of technology, presenting the latest features in matters of connectivity and artificial intelligence applied to autonomous driving. Moreover, the requirements on the type of engine have become more stringent. Not only customers, but also regulators have been demanding for greener vehicles, due to increasing concerns for cars' emissions and the role they are playing in aggravating the climate change crisis. An example was the proposal of a ban by the European parliament on the sale of new vehicles powered by diesel or petrol in 2035. Of all the carbon dioxide (CO2) emissions, the transportation sector is responsible for 20% of the total, while more specifically road transport has the lion share of that percentage (Albuquerque et al. 2020).

For these reasons at Curro Cars we believed it was essential to transition from conventional ICE towards electrification and more technologically advanced vehicles as soon as possible. We in fact made that statement the core of our strategy, otherwise it would have been impossible to achieve such high results without a clear view of our values and what we wanted to be. For that reason, we decided to be extremely innovative right from the beginning, that way we would differentiate ourselves from the competition by offering products which were more technologically advanced in order to attract younger customers who might be more interested in having such type of cars. This strategy came with a considerable level of risk since large capital commitments were necessary at the beginning of the simulation, without the certainty that in the future there would be enough demand for more technologically advanced products to repay the initial investments. However, taking risks is part of running a company, and our team was convinced of the potential of such strategy. This experience made me realize

that having a clear destination and an objective to strive towards is extremely motivating and helpful, not only in the private life, but also for a company.

To turn this strategy into reality the innovation department had a critical role. In fact, they were responsible for timing investments and product launches. Three were the main branches on which the director had to focus: electrification, connectivity and autonomous driving. All of them were extremely important for our strategy and had to be developed because they represent the trends that are transforming the automotive industry. However, at Curro Cars we wanted to take a proactive stance and not simply follow the existing demand, but by launching innovative models generate new demand for products that were not possible before, following the strategy of technology push, which is capable of generating more innovation compared to the counterpart of demand pull. At the same time, extreme attention was paid to the timing of investments, in order to ensure that the newly developed technologies would be ready to be incorporated in new product launches. The result was that customers started demanding EVs much sooner than anticipated, and despite the higher price point of the more innovative products with much higher features compared to the competition, they were performing better than more affordable options even when scale was taken into consideration.

In conclusion, the last player that made the realization of the envisioned strategy possible was the finance department. Because it was responsible of ensuring that enough resources were available to make the required investments, in addition it had to select the best source of these funds in order to guarantee a lower cost of capital, via an appropriate capital structure. To do so, the best source of financing were green bonds, since they offered lower interest rates, and thanks to all our investments they were largely available. However due to pressure and time constraints, we did not use them as much as we should have. Finally, their last responsibility was to ensure that metrics of financial health and performance were met, to ensure that the strategy was being advantageous for the company.

Personal reflection, BIP as a team dynamics workshop

One of the key reasons that attracted me to Business in Practice was the emphasis of the program on teamwork. Not only because the simulation is experienced in groups, but also for the sessions we had on team dynamics, and self-leadership. This focus was intriguing since teams will be a characteristic of the work environment, and for someone without prior working experience, BIP allowed for a first glimpse on what extensive teamwork would imply and how to best navigate such setting. In that sense, extremely helpful were the sessions we had with Professor Miguel Pinto Fernandes, since he presented some techniques and processes to ensure that the team would work as efficiently as possible. Concepts that were later solidified by applying them in practice during the different years of decisions in the simulation.

Of the three weeks of BIP, I have selected two moments that were the most significant and at the same time forming for my teamwork skills. The order by which I will be presenting them follows the chronological order of events. The first one happened after the second year of decisions and is linked to my desire for control and the low reliance on the other team members. In fact, when working on a group I tend to actively engage with the decisions of the team, to the point that my commitment is excessive, resulting in a desire to take over other roles. In the setting of BIP, the division in departments limited my oversight on the other functions, creating a misalignment between the degree of control I was expecting to have and the actual amount. It was therefore essential to adjust my expectations and rely more on my colleagues.

The second event happened after the third year of decisions and involves the creation of a process to handle important choices. That was necessary because when a crucial opportunity was being discussed, I participated in a way that was perceived as too dominant by some more reserved team members who rarely spoke up during discussions. It was therefore important for me and the team in general to stop the discussion when it was too heated to allow for inputs from everybody, otherwise the debate would take too long, and some important insights might

get lost. It is in fact crucial that all the members speak up and interact with each other as much as possible to have an effective teamwork.

Incident 1: Desire for control and lack of interdependence.

The first year went without any issue, since we practiced it several times, so we knew what to expect and how to best navigate it. It was different when we had to face the second year of decisions, since it was uncharted territory. In fact, issues did not wait to present themselves.

Several decisions were not optimal during that round, however for the sake of this chapter it is best to focus on my particular behavior, since it made possible several insights in my interpersonal skills.-In fact, I noticed a trait in my personality that tends to be more harmful than advantageous. I am referring to the desire for having things done my way, and controlling the process to make sure that it happens. Such behavior is especially harmful in a team environment where you need to rely on other members as it was for Business in Practice.

To start the analysis of this incident, the work of Mathiasen and Hackman (1991) is an excellent fit. They grouped possible team issues into several “trip wires”, and in the context of the incident mentioned, the second one titled “Fall off the authority balance beam” is the best one. In fact, it describes a setting when the members have control over their portion of the work, but not on the one of others, and this generates concerns. The similarities with the situation I experienced are clear. The authors suggest that the general strategy should be determined by the top managers, in our case the team as a whole, while leaving freedom to the different directors on how to adopt strategies in their own department. It was a realization that became clear to me just after the second year, since I concluded that it was impossible to be on top of everything, the simulation was not designed that way. Therefore, I had to step back and focus primarily on my part, trusting that the other teammates would take care of their share.

My behavior can be interpreted as a clear signal that the group was lacking a shared mindset thus causing the team not to act as a single unit, but everyone was pursuing their own

interests. Haas and Mortensen (2016) argue that this issue has become more common in recent years when the team have grown to be more diverse. Resulting in a mindset of "us versus them", which was present at the beginning also in my case. However, this feat was to be expected as the teams were created in order to guarantee as much diversity as possible, and also because our group did not have enough time yet to really get to know each other and understand how to work together. In particular, three members were of the same nationality and had worked together in the past, thus in the setting of BIP they tended to side together, often in contrast with me or other members of the team. Such behavior increased my desire for controlling the decisions of the other functions, because I felt there were two subgroups present and clashing, therefore I had the feeling I could not really trust the decisions of those teammates. After the year of decisions ended, I realized that this pattern of two subgroups should be avoided, that is why I decided to voice the issue, emphasizing the need to work together as a team and not as two smaller factions fighting over the control of the decisions. The difference afterwards was noticeable. For the next rounds I tried to detach from the other roles and make comments only when they involved some financial aspects or when it was a big decision that needed everyone's attention. Together with avoiding being too confrontational towards the others. And the team in general was more open and inclusive, actually working together and not against each other.

In addition, the situation described was not allowing the team to have one of its key characteristics, interdependence. Which according to Smith(1996) is one of the key aspects for a successful teamwork. In fact, in a group with positive interdependence, the final result of the team is considerably greater than the single contributions of the members. However, the concept of positive interdependence relies on co-workers recognizing the importance of each other's work and not desiring to take over tasks that were not their original responsibility. Therefore, my desire to influence the decision of others was in clear contrast to this notion. The consequences were two-fold: there was a direct negative impact on the outcome of the team,

since I was trying to keep up with all the decisions of the other functions, I was not able to fully dedicate to my assigned role. In fact, it happened that I forgot to adjust the credit terms for example, which in the first years would have been extremely beneficial as more cash was needed to finance the large investments. On the other hand, the indirect hinderance to the team progress was that it caused frustration in me and an unnecessary expenditure of energy that in turn had a negative impact on my performance. More reliance of team members would have avoided these harmful effects, an important learning point from the simulation.

This critical incident can be boiled down to a mismatch between the degree of control I desired to have and the actual amount I was given. As mentioned at the beginning of the chapter I prefer to have a high degree of control. However, in the setting of the simulation the amount of influence I had was limited, even though, being the director of finance, I was allowed to have ownership over a wider set of choices. That is because ultimately every investment decision had to pass through the finance department to be approved, as it was the division responsible for managing the budget. This way it was possible for me to steer the team towards decisions that I deemed better, even if they were not directly my responsibility. However, very important choices for the future of the company were outside my reach, marketing strategy or factory allocation, to mention a few. I was aware that I would not be able to have full control over them, but due to the aspects mentioned in the previous two paragraphs, my desires were to at least be informed of what decision was taken and what was the reasoning behind it.

The negative effect of this situation has been confirmed in the literature. In fact, according to the research of West and Rushton (1989), when an individual with a high desire for control enters a setting where his degree of jurisdiction is lower, the results are two sided, on the one hand he will experience a higher degree of personal development, but the reverse of the medal is that it will cause annoyance and emotional struggles. I can clearly relate to these results, the stress and frustration experienced after the decision round being evidence for this

statement. However, also the positive effect was present, in fact it gave me some extremely helpful insights on my relationship with control and on how I should adjust my desires for it to the current setting I am in. This way it will be possible to avoid all the frustration and emotional distress which will negatively impact the work and the team dynamics.

Particularly interesting were the results of the study conducted by Ramsey and Etcheverry (2013) who concluded that the negative effects will be present not only when a high desire of control is met with a low agency environment, but also when the opposite setting (low desire in high control position) manifested. In addition, even if some exogenous small changes were made, they were not effective in avoiding the negative consequences of the imbalance. Therefore, the only way to possibly solve the issue would be to ensure the match between the desired control level and the actual one, by altering the individual's expectations. Thus, my decision to re-evaluate the amount of control I was expecting to have and give some of it up, was the best choice possible to avoid a persistent decrease in productivity from the situation.

To conclude the analysis of this first incident, it will be adequate to borrow a similitude with the animal world, as was done by Johnson, Heimann and O'Neil (2000), who compared good team dynamics to the ones of a wolfpack, arguing that there are several similarities between the two groups. In the context of this incident, the aspect of uniqueness is especially relevant, since my desire to influence the decision of others would imply that their role and contribution is not fundamental. It is instead one of the key tenets of a wolfpack that each wolf is playing a crucial role for the collective, therefore everyone is accountable for his portion of the work. This once again implies that no member is trying to take over others, since each one will deploy their best skills where they are needed therefore any influence from different members would be harmful. A stark contrast to my behavior of overstepping into other roles.

However, it is difficult to create an efficient team, which behaves as a wolfpack, in a short period of time, thus incidents are likely to happen. The one described had taught me vital

lessons on delegation and control and lastly respecting the role of different team members. Since it will be important that I limit my influence on my role, and let the other do theirs, because if they are part of the team there is a reason, and their function should be respected.

Incident 2: Decision rounds, getting everyone on board.

By nature, I tend to be a more reserved and reflective person, in fact the Insights' personality test we did as part of a leadership session positioned me as part of the Cool Blue group, which is in line with the brief description of myself I have just given. However, when working on a project, especially when there is a competitive twist to it, I have the tendency to shift more towards a Fiery Red personality. Which is characterized by being more competitive, determined and strong-willed. This side of me is present especially when there is a debate, in fact I tend to get carried away and engage vehemently in the discussion to defend my point.

When working in a team on a tight schedule, this characteristic becomes an hinderance, especially when there are other Fiery Red personalities in the team, as debates could last longer than needed. In addition, being this active in the discussion, I might have the tendency to take over more reserved personalities who are less likely to speak up to voice their ideas.

That is exactly what happened in my case. Since in the team there were two other Fiery Red personalities I tended to actively engage with when an important decision had to be taken. However, there was the tendency that I would monopolize the discussion, while the less proactive team members, would not actively participate, especially two of them. But in a team of seven students where almost each one of us had different roles, all the feedback was essential.

When the third year of decisions was finished, we assessed our performance since we reached the halfway mark of the simulation. Some teammate decided to present this issue. Which can be broken down into an excessive dominance during discussions on my part, which was causing the more reserved individuals not feeling safe enough to express their opinions. The solution we identified was the introduction of the so called "decision rounds", which

implied that after an initial discussion, the arguing would pause, everyone would have a chance to calmly express their perspective in an orderly manner and then a majority vote was taken to decide. In this way the more dominant people, like me, would not monopolize discussions while everyone's feedback would be heard and lastly the decision process would become much faster.

The stage of team development when new rules and strategies are introduced is called "*norming*" (Tuckman 1965), and it is the third step after the storming stage. It is characterized by the resolution of the conflicts which were present in earlier stages. The introduction of decision rounds clearly signals our entering in the "*norming*" phase because processes to regulate the team's behavior were introduced, resulting in an increase in efficiency. The reason behind such improvement is due to the different members' higher commitment and the fact that since feedback was feely given, the strengths of each teammate could properly shine. In fact, in future occasions when I was being too loud the others didn't hesitate to let me know and I reacted accordingly. Learning once again how important it is that all members actively participate in the team in an appropriate way, to balance out all the different personalities. Otherwise, some of the strengths of the group members would get lost if they do not find space to showcase them in a manner they deem appropriate.

Despite this methodology made me realize the importance of how my approach to discussions would impact the other team members, and the increase in participation it allowed for, it should not be applied to all types of decisions, since it requires a considerable amount of time. There are in fact different types of decisions. In an article by McKinsey (De Smet A, Jost G, and Weiss L 2019) three categories are presented, and a different approach is required for each type to tackle it in the most efficient way possible. More specifically the three groups are: delegated decisions, cross-cutting and big-bet. The one for which the "decision rounds" should have been applied are the latter, since they are infrequent, but the risk involved is high. Thus, it

is crucial that all the possible inputs are given in order to make the most comprehensive decision possible without forgetting anything, otherwise the consequences would be disastrous.

There would be a negative effect even in the situation when the process of "decision rounds" is applied to other types of decisions. This is highlighted by the research conducted by Drucker (2020), who, more precisely, argues that the main mistake by decision maker is to adopt a lengthy decision-making process to generic situations, which normally should be resolved in a standard way. If that is the case there would be not only a waste of time, but also frustration, since the members would realize that all the time spent to choose a solution was not worth it. In fact, for generic situation, or delegated decision according to the terminology of the article by McKinsey (De Smet A, Jost G, and Weiss L 2019), it is best to have in place another faster process that will allow for a decision in a short period of time. That is why my team agreed on adopting the process of "decision rounds" not to decisions that we would have to make each quarter, but to unique challenges and investment decisions, which were unlikely to be repeated in the future. While for the rest we developed an efficient workflow which would take care of the reoccurring tasks. And I had to pay attention not to engage too much in discussions when the decision at hand was not part of the big-bet category, otherwise it would result in an excessively long and unnecessary debate.

This is another learning point made possible by this critical incident, in fact before joining BIP, I did not realize the importance of differentiating the decision process on the type of issue at hand, and how to properly classify problems to find the best procedure to solve them. Thus, resulting in me spending too much time on decisions which didn't require it while not thinking enough about crucial choices, since the time would be limited due to previous problems which should have been solved much quicker.

Moreover, this critical incident can be analyzed through a different lens. That is from a team dynamic perspective, more specifically determining how to value all the different

personalities inside the team. In fact, as mentioned when introducing this chapter, one of the goals of "decision rounds" was exactly to ensure that everyone would feel safe to express their ideas and insights. According to West (1994), only if team-members perceive the group as a secure environment, it will be possible to have higher commitment and engagement. In addition, researchers at Google (Duhigg 2016), found out that one of the best predictors for success in teams were the group dynamics, in particular the presence of "psychological safety", which is exactly the feeling of security that will allow people to freely express their ideas. The knowledge and ability of the team members is of secondary importance compared to psychological safety as factors for the success of the team.

In our setting the high diversity in personalities might have caused the more sensitive and reserved individuals not to freely express their ideas when debating, because they might have preferred not to face the louder people, like me. This event can be interpreted as a lack of safety, that is the reason why "decision rounds" were introduced. By forcing louder people to step back and give space to everyone, even the more reserved teammates would be incentivized to present their opinions, since the tone of the discussion would be much lower. It was indeed what happened, some members started speaking up more, presenting very helpful comments which would have been lost otherwise. Therefore, it made me realize, once again, that sometimes my active participation in the discussion process might be perceived as too aggressive by more sensitive individuals, therefore moving forward I tried to avoid getting carried away and ensure that everyone felt safe, and not to sound too antagonistic.

Therefore, the newly built safety contributed to a higher engagement by the members, resulting in more interactions. Which, according to Holloman and Hendrick (1972), is in direct relations to the quality of the decisions. That is why it was so important that all the members engaged in the discussions, and debates were not dominated by just a few colleagues.

To conclude, the introduction of decision rounds made me realize that more importance should be given to the way other people in the team are reacting to the current way processes are handled, because they might have different sensibilities and might not feel safe if the environment is too confrontational. In addition, I noticed that getting carried away in a discussion has several downsides, namely time expenditure and alienation of some individuals who are by nature less incline to voice their ideas in a debate with the presence of louder voices which might feel threatening. Lastly, that there are different types of decisions which cannot be handled all in the same way if efficiency is to be maximized.

Conclusion

These two critical incidents gave me important insights on my role in a team. First of all, that I should avoid exerting too much influence when it is not needed, since the different roles are there for a reason and their function should be respected. Overstepping will only be harmful for the team, since I will not be able to fulfill my role and it will cause frustration in teammates Secondly that when engaging in a discussion it is important to make sure that everyone is participating and gives their feedback, since a higher number of interactions will be a predictor of success in the team, therefore I need to pay attention to how my behavior is perceived by others, to avoid being too dominant. In fact, an appropriate engagement level during discussions would ensure the presence of psychological safety, which will in turn incentivize everyone to participate in the arguing. With the final result being a better decision.

In fact, the most out of balance aspect of the peer evaluation for me was interacting with teammates. The reason behind it can be explained by the two incidents I presented, since both are related to how I cooperated with my colleagues. Because my excessive desire for control would lead to frustration because I was trying to step into decisions that were outside my reach. While my excessive participation in discussions was not allowing for the presence of psychological safety for some members, which is extremely important for a good teamwork.

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Appendix

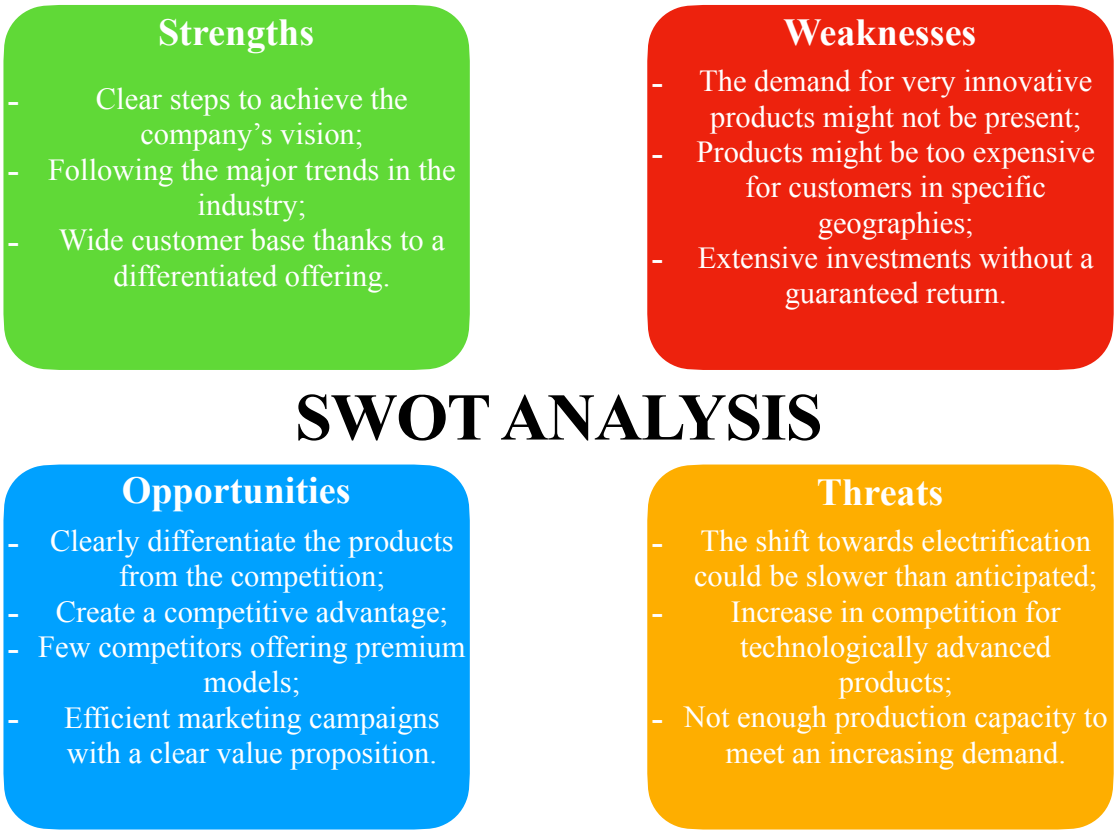


Figure 1: SWOT analysis [source: own elaboration]

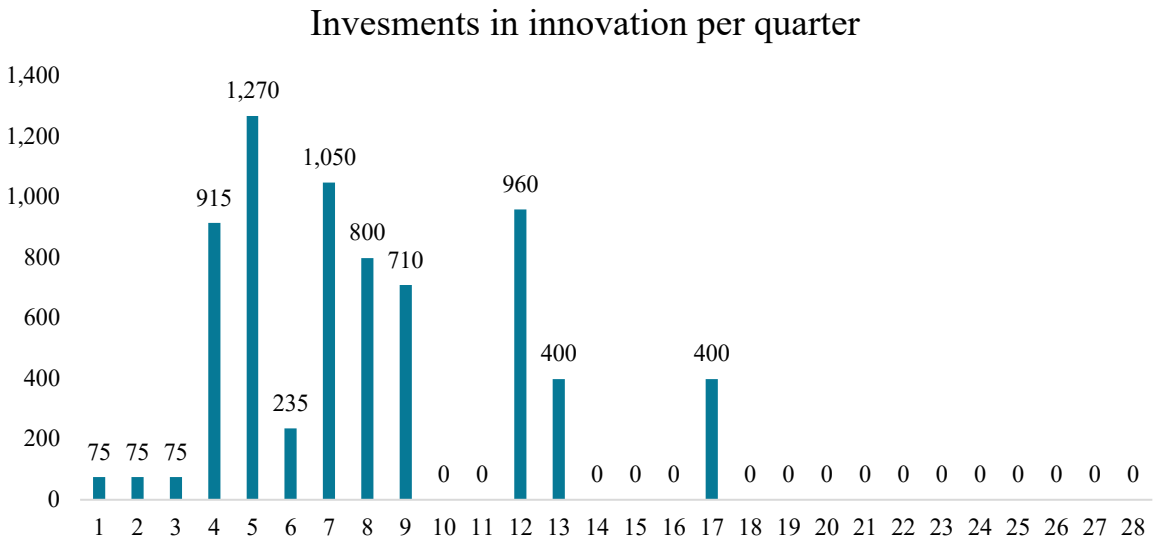


Figure 2: Investments in innovation by quarter expressed in millions of dollars [source: own calculations]

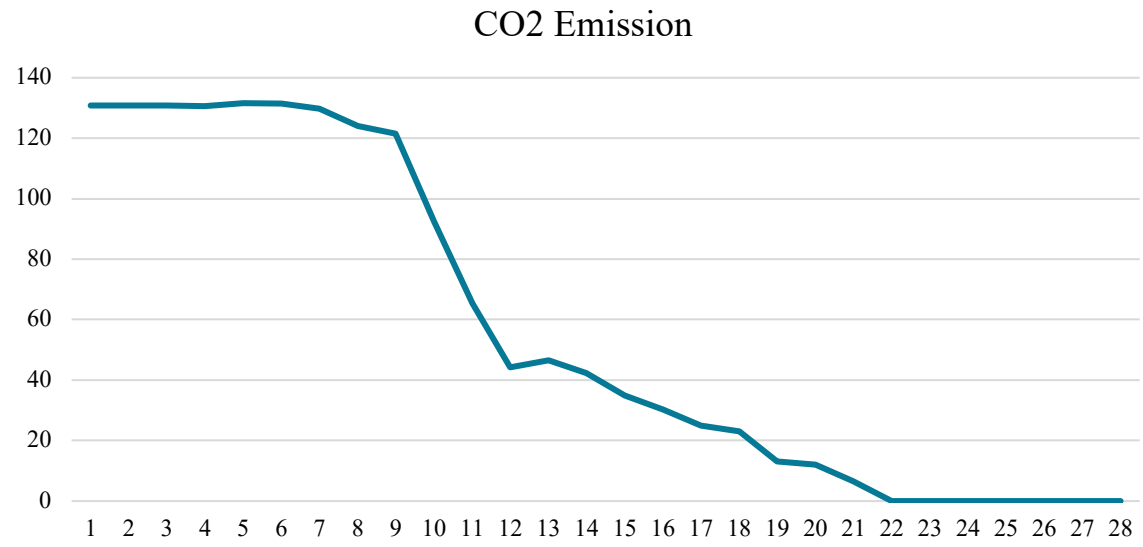


Figure 3: Fleet CO2 emissions by quarter, expressed in g/mile [source: own calculations]

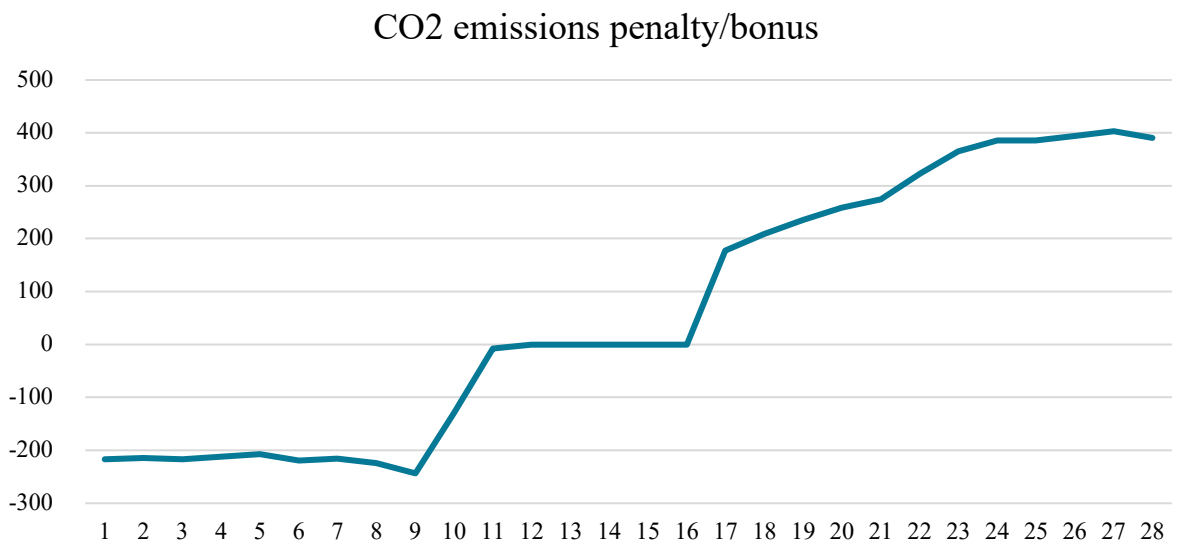
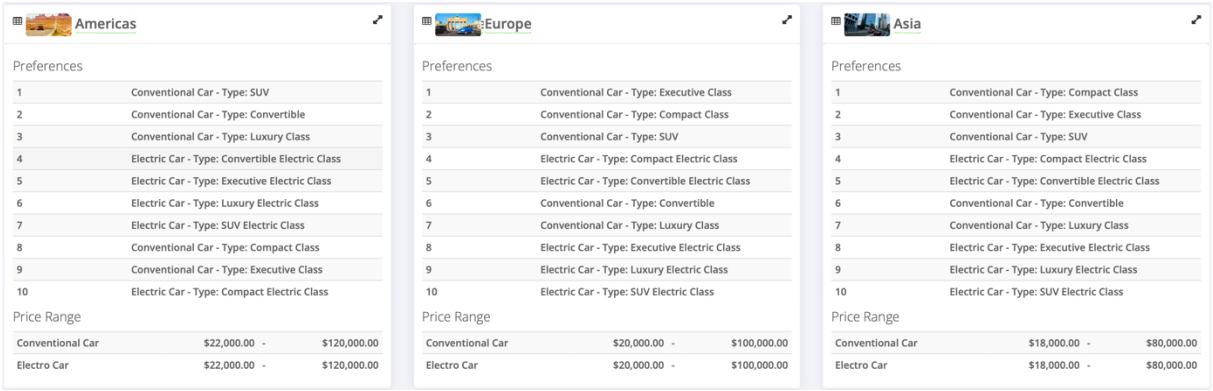


Figure 4: CO2 emissions penalty/bonus by quarter, expressed in millions of dollars [source: own calculations]



Americas

Preferences

1	Conventional Car - Type: SUV
2	Conventional Car - Type: Convertible
3	Conventional Car - Type: Luxury Class
4	Electric Car - Type: Convertible Electric Class
5	Electric Car - Type: Executive Electric Class
6	Electric Car - Type: Luxury Electric Class
7	Electric Car - Type: SUV Electric Class
8	Conventional Car - Type: Compact Class
9	Conventional Car - Type: Executive Class
10	Electric Car - Type: Compact Electric Class

Price Range

Conventional Car	$22,000.00	-	$120,000.00
Electro Car	$22,000.00	-	$120,000.00

Europe

Preferences

1	Conventional Car - Type: Executive Class
2	Conventional Car - Type: Compact Class
3	Conventional Car - Type: SUV
4	Electric Car - Type: Compact Electric Class
5	Electric Car - Type: Convertible Electric Class
6	Conventional Car - Type: Convertible
7	Conventional Car - Type: Luxury Class
8	Electric Car - Type: Executive Electric Class
9	Electric Car - Type: Luxury Electric Class
10	Electric Car - Type: SUV Electric Class

Price Range

Conventional Car	$20,000.00	-	$100,000.00
Electro Car	$20,000.00	-	$100,000.00

Asia

Preferences

1	Conventional Car - Type: Compact Class
2	Conventional Car - Type: Executive Class
3	Conventional Car - Type: SUV
4	Electric Car - Type: Compact Electric Class
5	Electric Car - Type: Convertible Electric Class
6	Conventional Car - Type: Convertible
7	Conventional Car - Type: Luxury Class
8	Electric Car - Type: Executive Electric Class
9	Electric Car - Type: Luxury Electric Class
10	Electric Car - Type: SUV Electric Class

Price Range

Conventional Car	$18,000.00	-	$80,000.00
Electro Car	$18,000.00	-	$80,000.00

Figure 5: Product rating of the different car models in quarter 4 [source: IndustryMasters]

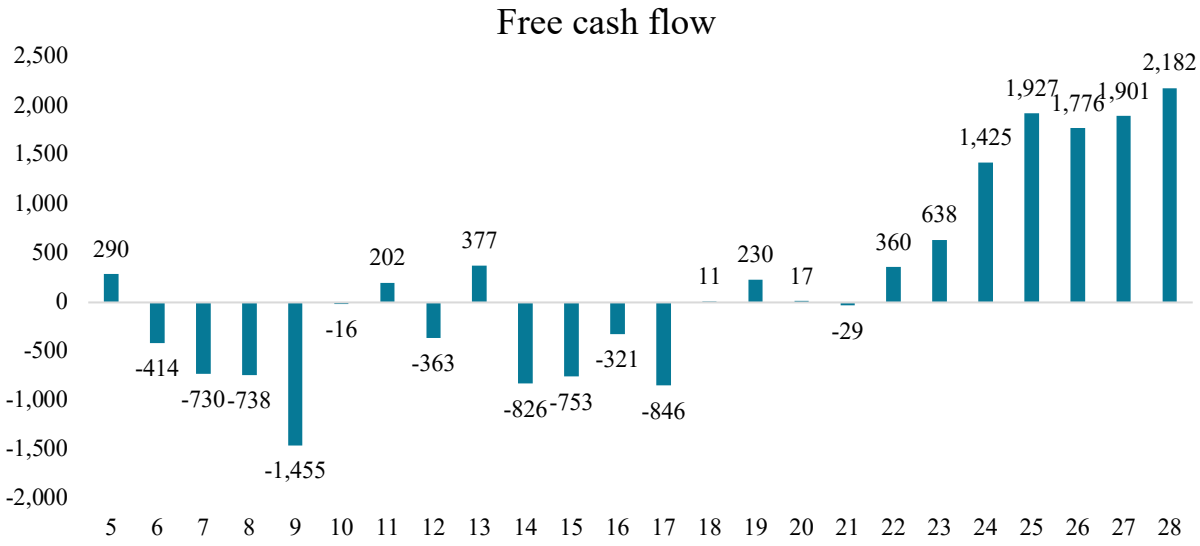


Figure 6: Free Cash Flow by quarter, expressed in millions of dollars [source: own calculations]

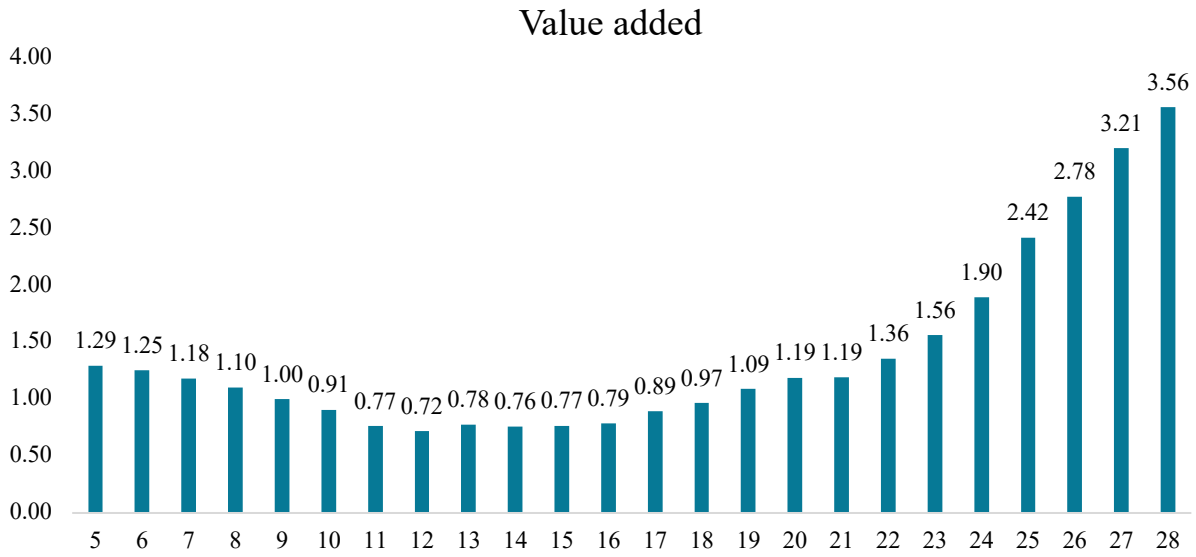


Figure 7: Value added by quarter, expressed in billions of dollars [source: own calculations]

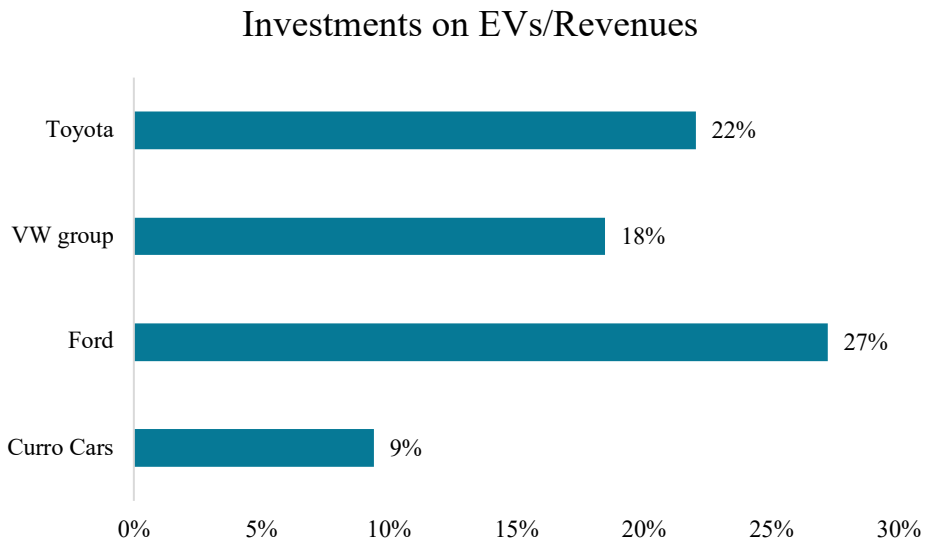


Figure 8: Ratio of capital committed in R&D for EVs over yearly revenues [source: own calculations]

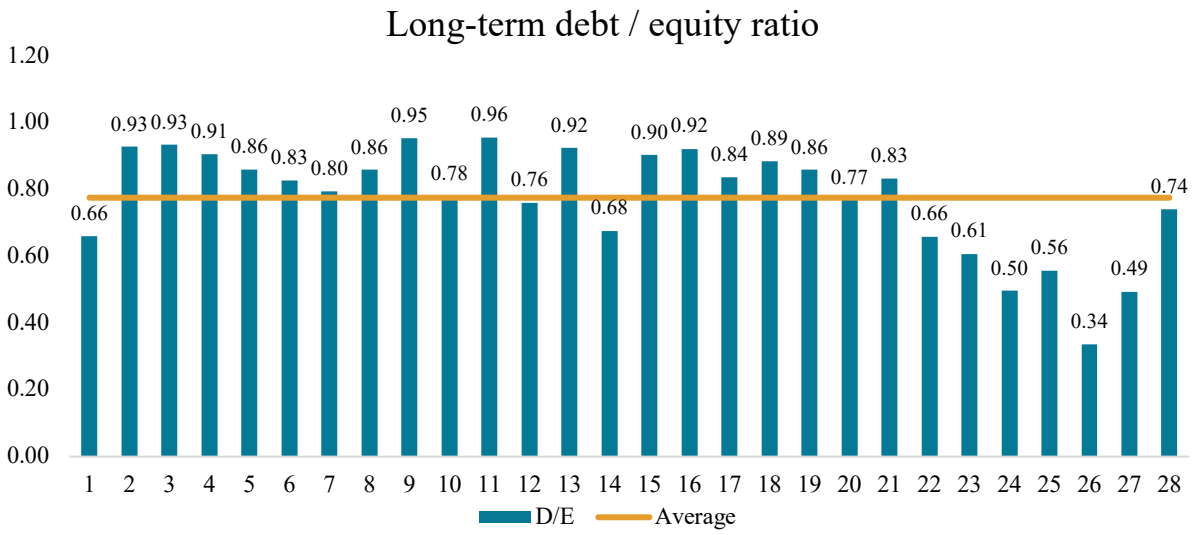


Figure 9: Long-term debt over equity ratio evolution by quarter with all-time average [source: own calculations]

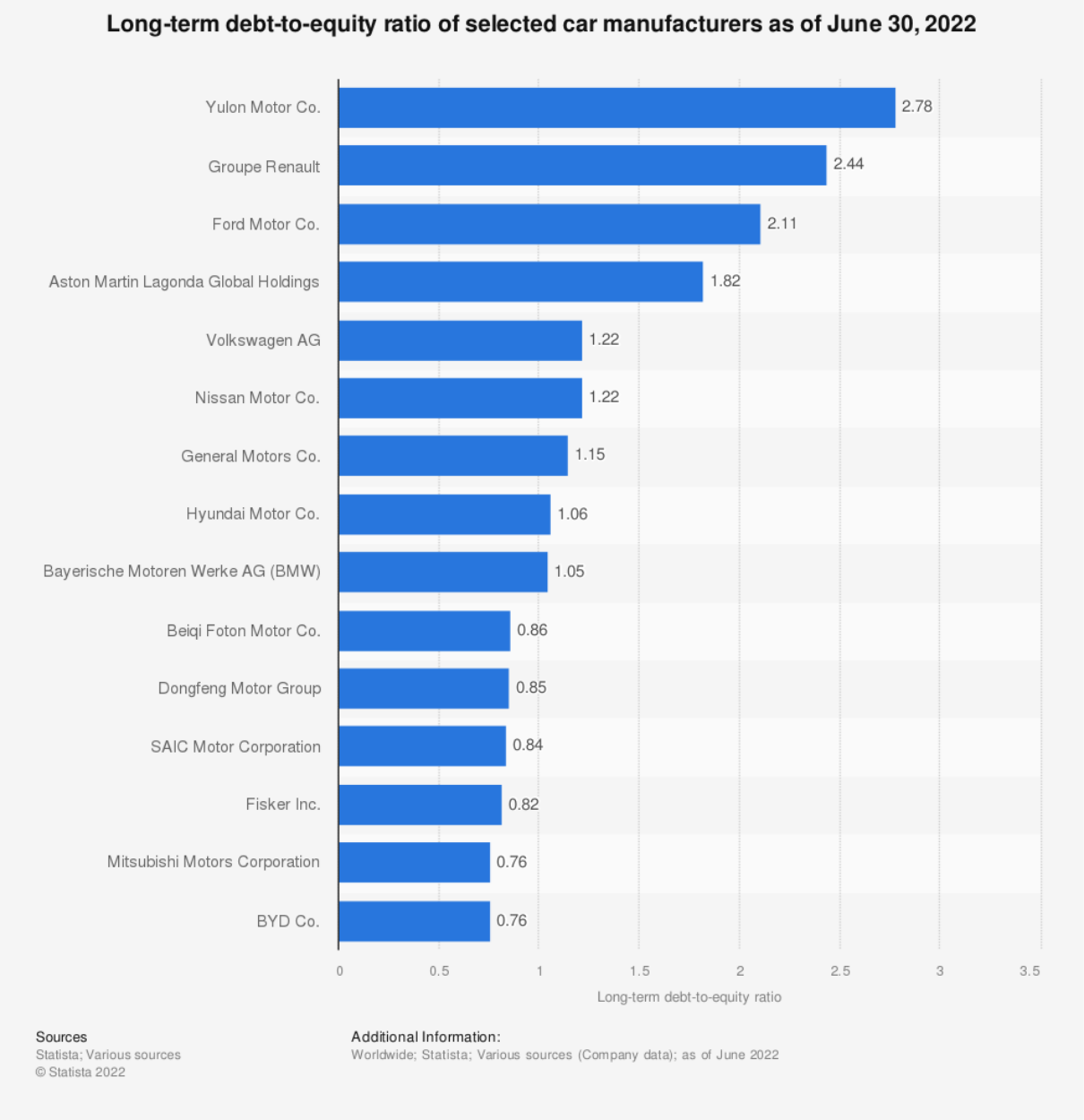


Figure 10: Long-term debt-to-equity ratio of selected car manufacturers as of June 30, 2022 [source: Statista]

Innovation investment timeline

		Electrification			Connectivity				Autonomous Driving			
		E-Drive Modules	*Home Charging Stations*	*High Power Charging*	*Connectivity Technology*	*Infotainment Services*	*Big Data*	*Cross-Platform Technology*	*Automated Parking*	*Driver Assistance*	*Cloud Connection*	*Secure Infrastructure*
Year 0	Q1	75										
	Q2	75										
	Q3	75										
	Q4	75			250							
Year 1	Q5	75			Available				500			
	Q6	75				160			⇩			
	Q7	Available	300			⇩			Available	250		
	Q8		⇩			Available	150			⇩		
Year 2	Q9		Available				⇩			Available		
	Q10						Available					
	Q11											
	Q12										300	
Year 3	Q13			200				200			⇩	
	Q14			⇩				⇩			Available	
	Q15			Available				Available				
	Q16											
Year 4	Q17											400
	Q18											⇩
	Q19											Available
	Q20											
Year 5	Q21											
	Q22											
	Q23											
	Q24											

Table 1: Innovation investment timeline by quarter with amounts committed, expressed in millions of dollars [source: own calculations]

New car launches timeline

		New Car Launches										
		Porto Executive	*Faro Convertible*	*Pico Compact*	*Douro-E SUV*	*Sintra-E Luxury*	*Faro-E Convertible*	*Dao-E Micro*	*Porto-E Plus Executive*	*Douro-E Plus SUV*	*Sintra-E Plus Luxury*	*Pico-E Plus Compact*
Year 0	Q1											
	Q2											
	Q3											
	Q4	590										
Year 1	Q5	⇩	695									
	Q6	⇩	⇩									
	Q7	Available	⇩	500								
	Q8		Available	⇩	650							
Year 2	Q9			Available	⇩	710						
	Q10				Available	⇩						
	Q11					Available						
	Q12						660					
Year 3	Q13						⇩					
	Q14						Available	560				
	Q15							⇩	565			
	Q16							Available	⇩			
Year 4	Q17								⇩	665		
	Q18								Available	⇩		
	Q19									⇩	750	
	Q20									Available	⇩	510
Year 5	Q21										⇩	⇩
	Q22										Available	Available
	Q23											
	Q24											

Table 2: Car launches timeline by quarter with amount invested, expressed in millions of dollars [source: own calculations]