The Imperial Vantage

Volkswagen Board Report

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The CFO 2019 Case Study Competition

Table of Contents

SECTION A: EXECUTIVE SUMMARY

1. Introduction and Background

The Volkswagen Group (VW AG), comprising of 12 brands, is one of the world's leading manufacturers of automobiles and commercial vehicles. Its product portfolio caters to all vehicle platforms, ranging from entry level to high performance and luxury vehicles. In 2015, VW AG was involved in one of the biggest automotive scandals due to irregularities relating to emissions. This incident has been a constant stain on the VW AG reputation, resulting in much of the current strategy being defined by it.

2. Terms of Reference

TOGETHER – Strategy 2025 has been strategically selected as group strategy, with Roadmap E as the key driver to make the group the worlds number one in e-mobility. This strategy is aimed at safeguarding the groups long term future by the creation of sustainable and profitable growth. It consists of four target dimensions: role model for the environment, safety and integrity; excited customers; competitive profitability and excellent employer.

3. Prioritisation and Key Recommendations

After performing an Impact and Urgency Analysis (Appendix 1) the prioritisation and key recommendations are as follows:

RANK	ISSUE	RECOMMENDATION
1.	**E-Mobility Strategy**	A joint venture with Panasonic with strong focus on long term value relationship management.
2.	**Paris Accord and Environmental Legislation**	Design, test and replace engines using MEB platform.
3.	**Strategy, Structure and Cost Optimisation**	Keep Volume range and do not centralize functional units.
4.	**Product Portfolio Rationalisation**	Investigate the drivers of loss making in Volume range.

SECTION B: DETAILED REPORT

4. Detailed Analysis and Recommendations

4.1 e-Mobility Strategy/Roadmap E

ISSUE

The Electric Vehicle Battery (EVB) is seen as the main source of differentiation of e-cars and a critical component of the E-Mobility Strategy. The sourcing of EVBs should be VW AG's main priority as it has the highest impact and urgency. E-Mobility is the key element of TOGETHER – Strategy 2025 and VW AG only have up until the end of this year for the pilot phase before ramping up next year at all geographical regions.

ANALYSIS

Tenders received from four suppliers (Appendix 3) are relatively similar, the differentiating factors are pricing and quality suggesting that Panasonic being the supplier of choice. This option carries the risk of break clauses which would allow Panasonic to end the contract before the 3-years. Given the importance of EVBs, this risk must be managed and avoided.

Panasonic currently has a 5-year fixed contract with VW AG which comes to an end this May. The decision by the group to relegate e-mobility lead to VW AG placing far fewer orders than originally committed to. This, coupled with their reluctance to pay higher prices, partly resulted in Panasonic entering into an agreement to exclusively manufacture batteries for Tesla giving them their biggest competitive edge over VW AG. As Panasonic already manufactures batteries for Tesla, buying EVBs from them would not result in the batteries being the main source of differentiation for Tesla. This empowers VW AG to compete on other aspects of the vehicles such as design, quality and finishes.

The method in which VW AG conducts the supply relationship, is also critical due to the importance EVBs have on the future strategy. The decision matrix analysis (Appendix 4) suggests that the best development alternative is either partnering or setting up a joint venture with Panasonic. Both options eliminate the risk of the break clauses and would allow for the possible creation of a new battery technology.

A strategic partnership involves VW AG working together with Panasonic to enhance their competitive advantage. It would require sharing costs and risks in the production of the EVBs but does not require the creation of a new legal entity. By working together, VW AG may be able to exploit different synergies between the companies and will have the opportunity to gain access to the knowledge and expertise of the partner involved. The limitations of a partnership are that it will not enable VW AG to create new competences. Furthermore, it may fail to achieve the integration or commitment needed to gain any significant competitive advantage due to the partners being separate entities. There is also a risk of possible disputes over control of strategic assets, leading to a breakdown of trust and co-operation amongst the partners.

A joint venture will involve a contractual arrangement with Panasonic which results in the creation of a separate organisation in which each company holds an equity stake and subject to joint control. Joint ventures allow risks and capital commitment to be shared which is particularly useful for expensive technology. By pooling resources and complementary strengths, companies can gain access to each other's competences, increase productivity and competitive standing in ways they could not do by themselves. The major disadvantage is that there can be conflicts of interest. Disagreements may arise over profit shares, amounts invested and management philosophies.

RECOMMENDATIONS

It is recommended that VW AG propose a joint venture with Panasonic. This will allow for the development of battery technology as a new core competency, being an objective of the TOGETHER – Strategy 2025 which assists in generating a new competitive advantage.

In order to maximize the joint venture's potential, VW AG must pay attention to the management of partner relations during the project. VW AG and Panasonic need to build a sustainable organization and with governance structures designed for flexibility and effectiveness. Both need to identify systems and procedures that will ease the day-to-day operations and preserve the strategic intent and balance of power. Furthermore, both parties need to establish at the onset, how to handle disputes and how the venture should end. Exit strategies must be clearly determined in advance. Parties need to agree on the mechanisms to manage a separation the right way or to renegotiate the deal.

4.2 Paris Accord and Environmental Legislation

ISSUE

VW AG's commitment to Paris Accord has resulted in an increased responsibility towards environmental legislation. As part of its movement towards sustainable mobility, Roadmap E is a key element, consisting of plans to offer customers more than 80 new electric models by 2025. However, electric vehicle adjustments are to be urgently sought in order to accommodate the tightening of current and future imposed regulations from 1 January 2019.

ANALYSIS

Meeting the new standards will require a conjunction of R&D and capital outlay, which will mainly be used for the building of a modular electric drive matrix (MEB) – which aids in matters concerning regulation change, manufacturing and modifications to VW AG's vehicles. VW AG has 3 options available to which a quantitative and qualitative analysis is performed to identify the option best suited for progression of its strategy.

Quantitative Analysis:

Based on the discounted cash flows (Appendix 5), ranking of the options are as follows:

Options	Design, test and replace	Modification	No action
Net Present Value	- €2 108bn	€5 744bn	€3 850bn
Ranking	3	1	2

Qualitative Analysis:

- **Option 1: Modification**

Similarly, to option 3, building of the MEB will be a decisive factor in the progression of VW AG's e-mobility strategy. However, with its intended use largely purposed at modifying volume range engines, this leaves the higher-end ranges at risk of triggering the fines. Given this, similar year-on-year net profits to option 3 can be still be attained from increasing sales, achieved by granting trade discounts to several African countries where emission standards still lag behind developed countries. VW AG must consider the effects this has, as a number of African countries already suffer from significant amounts of pollution. CO2 emissions is a global issue and with the

company's recent involvement in the emission scandal, its focus should be towards good business practices and exercising the same policy globally.

- **Option 2: No action**

Following the diesel gate scandal of 2015, VW AG's release of its TOGETHER – Strategy 2025 has laid the cornerstones towards sustainable mobility, aiding its movement for brand repair. Although a course of no action is seen to be financially feasible, it provides no development towards our current strategy for e-mobility, and further tarnishes the reputation VW AG seeks to repair. Furthermore, incurring fines of €600mill (Appendix 5) each year into the foreseeable future is not a sustainable option that should be considered.

- **Option 3: Design, test and replace:**

In order to meet requirements of the Paris Climate Agreement, VW AG will need to drastically reduce CO2 emissions that its vehicles produce. The building of the MEB will be a decisive factor in the progression of the e-mobility strategy as these platforms not only accommodate changes to emissions regulations but also assist in the manufacturing of electric vehicle engines. Although option 3 is not considered financially feasible, maximising use of synergy effects will contribute to e-mobility's further progression, as a shared MEB platform will assist in the reduction of high development costs and increased efficiency levels for electric vehicles. Furthermore, no fines will be incurred under option 3, mitigating any further reputational damage.

VW AG should also consider real options it has available by seeking further value creating opportunities from this initiative. Fundamentally, this will negatively influence the value of VW AG, as we would be running at a loss. However, as seen by both TESLA and AMAZON, similar affects have not altered perception as shareholder's are valuing companies that contribute more to sustainable environmental business models than traditionally profitable business models.

RECOMMENDATION

As per the quantitative and qualitative analysis, option 3 is found to be best suited towards VW AG's strategy. Although option 3 is running at a loss, utilization of the MEB platform is found to best within option 3. Maximizing synergy effects will further contribute towards optimizing expenses with real options providing future investment opportunities to increase cash flows.

4.3 Strategy, Structure and Cost Optimisation

ISSUE

The new CEO Dr. Herbert Diess is questioning the validity of the volume range within the portfolio of the VW AG group. He has also suggested significantly reducing cost of sales, selling and admin costs if certain functional units are centralized under his authority. This issue is a long-term strategic shift focusing on increasing operating margins.

ANALYSIS

The Volume range is the largest segment of the group, with the highest number of unit sales. Although the range has a significantly lower gross margin, it is the most vital segment to the group's strategy. The Volume range is a crucial part of e-Mobility as many of the planned future electric vehicles would be part of this segment. The VW AG brand is currently developing the MEB, as discussed in issue 4.2 this is a vehicle architecture optimised for e-mobility which will serve as the basis for all future electric vehicles in the Volume range. Getting rid of the Volume range not only removes the platform on which VW AG was built but also goes against the future strategy of the group.

The segment has high research and fixed costs due to the large volume of capital expenditure which results in reducing operating profit. These expenses are necessary for future profitability and further development in competitive advantage for the whole group and thus should be considered when criticising operating margins. Based on the 2018 forecast, the operating margin is expected to increase from the current 5.99% to 6.75% which meets the boards target. However, this is attributable to increased sales, and not cost control.

With regards to the reduction of cost of sales, selling and admin costs the expected savings (Appendix 7) are:

- *Cost of sales: 1.5%* 188 140 million = 2 822.1 million (€)*
- *Admin expenses: 2% * 8 254 million = 165.08 million (€)*
- *Selling costs: 2.5% * 22 710 = 567.75 million (€)*

The centralisations of functions would reduce expenses by an estimated 3 554.93 million (€). The expected operating margin would then increase from the forecasted 6.75% to 8.2%. Although the numerical factors favour the centralisation, other qualitative factors should also be considered.

VW AG operates 122 production plants across the world and sells its vehicles in 153 countries. Centralization would be impractical to such a large organization as it would be difficult to communicate managerial decisions to different operating levels in the management hierarchy. There is also the loss in speed to decision making, which is required in the context of the modern, volatile, uncertain, complex and ambiguous ecosystem. Top level managers cannot effectively supervise and control all the activities of the organization. Furthermore, centralization results in loss of autonomy, middle and lower level managers may feel less in control while performing assigned task. They do not have the required authority to deal with problems effectively and any opportunity to show and develop their personality. This possible lack of motivation tends to affect the morale of subordinates which may negativity impact further aspects of the business.

RECOMMENDATION

VW AG should not disregard the Volume range as it plays a significant role in the future strategy of the group. Furthermore, VW AG should not centralize functional units as it is geographically diverse, resulting in loss of autonomy. However, the issue to the Volume range's profitability is further addressed in issue 4.4.

4.4 Product Portfolio Rationalisation

ISSUE

Currently the Volume range is unprofitable. There is an argument that there is value to be unlocked in the group structure by re-evaluating the product portfolio of the VW AG group. The opportunities in this are yet to be fully understood. However, VW AG has developed a set of strategy proposals that aims to further simplify the product portfolio and generate positive returns.

ANALYSIS

The Volume range has a negative gross profit which is a consequence of direct factory overheads relative to the recovery from sales (Appendix 7, cost of direct factory overheads per unit, €1.76 Volume vs €1.16 Premium); the cause of which has already been identified and discussed in issue 4.3.

In reference to the strategy of price reduction to the Volume range in Key Emerging Markets, a price reduction to a segment that is driven by low margins and high volumes, requires careful consideration to its consequence. Such a proposal may be most effective if the price elasticity to demand is elastic and to which most of the direct factory overheads are fixed. An alternative to a price reduction, would be to reduce direct factory overheads. The 4th industrial revolution along with its technologies in artificial intelligence, machine learning and data science provides opportunities for further cost transparency to identify cost optimization opportunities. Capital expenditure may initially be high to implement such systems and bots, however, a manufacturing business where time, precision and accuracy to cost control is critical, will undoubtably benefit from such systems.

The second strategy proposed, identification of models that are loss-making and ceasing production, may at face value seem fitting. However, the reason to the loss-making must be identified and understood to evaluate if it can be addressed before such rationalized decisions are made. The implementation of cost transparency business tools as suggested earlier will assist with this. On a general point, some models may have a high contribution to fixed costs, yet individually may be making a loss. Having to cease production on loss making models may cause fixed costs to be transferred onto other profitable models, thus reducing margins. That been said, models with a low contribution to fixed cost may be beneficial to cease production. Furthermore,

consequence to the product and customer life cycle will have to considered. For example, if entry level models are used to win over brand loyalty during the onset of the customers life, the rationalizing to such models will impact the long-term sales growth in other models.

RECOMMENDATIONS

To address the current loss making of the volume range VW AG must first investigate the drivers of this, both internally and externally, before a final decision is made. Internally, new technologies to cost transparency must be employed to understanding the cost creation and allocation and thus opportunities for cost optimization. Externally, the price to value perceived, that is the price – demand relationship where maximum profit can be realized.

5. Ethical Issues and Recommendations

5.1 Ethical Issue: Strategic Sourcing of Cobalt in Africa

ISSUE

The choice of VW AG to deal with Artisanal miners over mining giants raises an ethical concern due to the nature of the way in which the Artisanal miners conduct their operations.

ANALYSIS

As of 15th of April 2018, Artisanal mining is not illegal in Rwanda or the DRC, although it is illegal in many other countries around the world including South Africa. Artisanal mining is not uncommon in the DRC and significantly boosts the GDP of its own and neighboring countries whilst creating jobs in resource rich east African republics. However, Artisanal mining is governed by very few laws and regulations and seeks to exploit human capital in exchange for highly demanded minerals. With very few regulations in place and little to no health and safety practices, the VW AG group cannot be seen supporting such bad business practice.

While sourcing Cobalt at its cheapest cost may be financially beneficial to VW AG, lack of consideration for other factors could mean that some stakeholders deride what VW AG stands for and who they support. With VW AG stating in their 2017 Financial Reports 'running our business is therefore to pay attention to compliance with legal requirements and ethical principles' means that ultimately VW AG needs to reassess whether supporting Artisanal miners is ethically in line with what they believe and stand for.

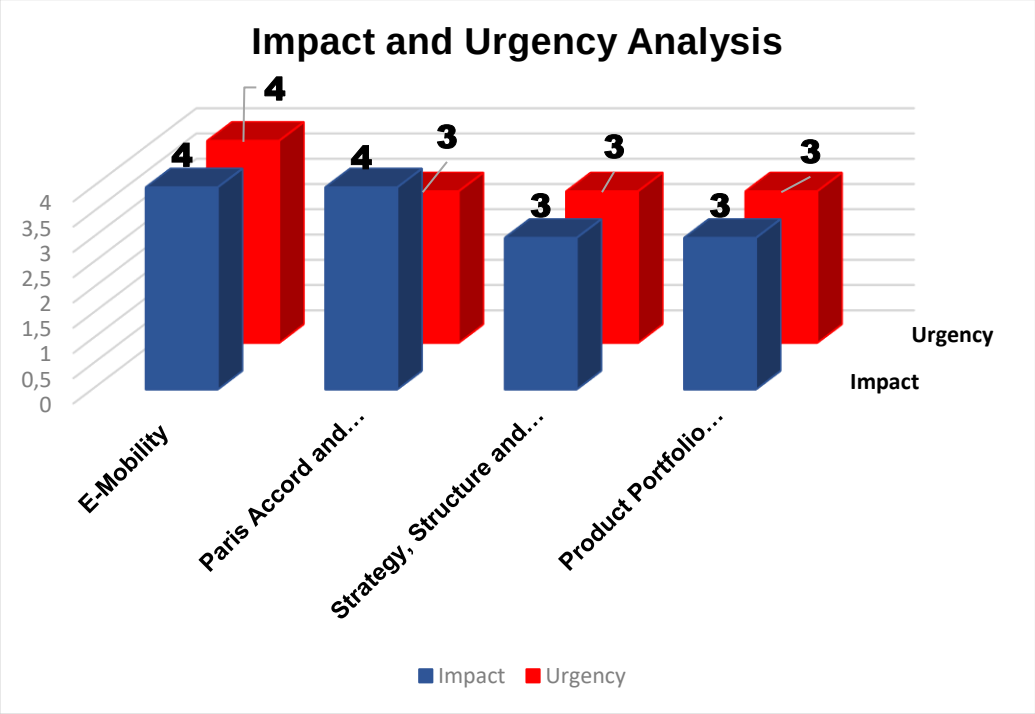
RECOMMENDATIONS

VW AG must withdraw from sourcing Cobalt from Artisanal miners to realign what they believe and stand for with the initiatives and groups they support. VW AG must source Cobalt from a reputable source, in this case established mining operators. Negotiations with mining operatives around maximum price, minimum supply quantity and a 10-year fixed price requirement must be conducted so to allow VW AG to fulfil their Cobalt supply needs in a legal and ethical manner.

SECTION C: APPENDICES

APPENDIX 1: IMPACT AND URGENCY ANALYSIS

Prioritization Based on Impact and Urgency



Urgency: *is a measure of how long it will be until an issue has significant business impact.* ***Impact:*** *is a measure of the effect an issue on business processes. Mostly deals with how many people/systems are affected, potential losses or gains and severity of legal liabilities.*

Strategy, Structure and Cost optimization has the same impact and urgency as product portfolio rationalization. Since decisions on portfolio is dependent on structural strategy it should be dealt with after strategy, structure and cost optimization.

APPENDIX 2: SWOT ANALYSIS

APPENDIX 3: TENDERS FROM SUPPLIERS OF EVBs

	Panasonic	Supplier 2	Supplier 3	Supplier 4
Location of plant	Japan, Germany,USA,China	Germany,USA, China	Germany	China,USA
Length and nature of contract	Was 5 years with no break, now 3 years (6 month rolling) with break clauses and JIT	6 months no contract break	5 years (6 month rolling) with break clauses.	5 years with JIT but no break
Quality	Excellent	Reasonable	Very good	Good
Maximum Capacity (milion units)	Was 25 now 5	15	5	10
Quoted cost per unit in euros	Was 400 now 390 to be invoiced in $	400	450	500
Shipping and transport costs in euros	5	5	5	7.5
Battery range before recharging required	125	110	125	125
Battery lifespan (per km)	160,000	160,000	160,000	160,000
Battery lifespan (years)	8	8	8	8

APPENDIX 4: DECISION MATRIX

		Development Alternatives													
		Make		Acquire		Partner/JV		Outsource		Contract		License		Reference	
Criteria	Weighting	Score	Total	Score	Total	Score	Total	Score	Total	Score	Total	Score	Total	Score	Total
Centrality to the whole product	3	2	6	2	6	2	6	1	3	1	3	0	0	-2	-6
Critical to performance	3	2	6	2	6	1	3	1	3	1	3	2	6	-2	-6
Developent independence	3	-2	-6	-2	-6	1	3	1	3	1	3	1	3	1	3
Complementor availability	2	-2	-4	-1	-2	0	0	2	4	2	4	2	4	2	4
Internal competency	2	2	4	-1	-2	-1	-2	1	2	-1	-2	-1	-2	0	0
3rd party capabilities	2	-2	-4	2	4	2	4	2	4	2	4	-2	-4	2	4
Time to market	2	2	4	1	2	1	2	-1	-2	0	0	-1	-2	0	0
Price sensitivity	1	2	2	2	2	-1	-1	1	1	1	1	0	0	0	0
Customer ownership	1	2	2	2	2	1	1	-2	-2	-2	-2	-1	-1	-2	-2
Confidentiality	1	2	2	-1	-1	1	1	-1	-1	-1	-1	1	1	-1	-1
	TOTAL		12		11		17		15		13		5		-4

APPENDIX 5: DISCOUNTED CASH FLOWS

		2018/Year 0	2019/Year 1	2020/Year 2	2021/Year 3	2022/Year 4	2023/Year 5
Fine value							
Cost of Capital	0,14						
Growth	0,00						
Terminal growth	0,01						
Net Free Cash Flows		0	-600 000 000	-600 000 000	-600 000 000	-600 000 000	-600 000 000
Terminal Value (TV)		-4 661 538 462					
Future Free Cash Flows + TV		0	-600 000 000	-600 000 000	-600 000 000	-600 000 000	-5 261 538 462
NPV		**-4 480 905 586**					
Option 1: Design, test and replace							
Cost of Capital	0,14						
Growth	0,10						
Terminal growth	0,01						
Net Free Cash Flows		-19 500 000 000	1 750 000 000	1 925 000 000	2 117 500 000	2 329 250 000	2 562 175 000
Terminal Value (TV)		19 709 038 469					
Future Free Cash Flows + TV		-19 500 000 000	1 750 000 000	1 925 000 000	2 117 500 000	2 329 250 000	22 271 213 469
NPV		**-2 108 361 724**					
Option 2: Modified							
Cost of Capital	0,14						
Growth	0,10						
Terminal growth	0,01						
Net Free Cash Flows		-11 750 000 000	1 750 000 000	1 925 000 000	2 117 500 000	2 329 250 000	2 562 175 000
Terminal Value (TV)		19 906 128 846					
Future Free Cash Flows + TV		-11 750 000 000	1 750 000 000	1 925 000 000	2 117 500 000	2 329 250 000	22 468 303 846
NPV		**5 744 000 842**					
Option 3: No action							
Cost of Capital	0,14						
Growth	0,01						
Terminal growth	0,01						
Net Free Cash Flows		0	500 000 000	505 100 000	510 252 020	515 456 591	520 714 248
Terminal Value (TV)		4 045 549 156					
Future Free Cash Flows + TV		0	500 000 000	505 100 000	510 252 020	515 456 591	4 566 263 404
NPV		**3 848 425 926**					

APPENDIX 6: ANTICIPATED SAVINGS

	High		Medium		Low		Expected Saving
	Saving	Probability	Saving	Probability	Saving	Probability	
Cost of Sales	4%	0.2	1.50%	0.4	0.25%	0.4	1.50%
Admin Expenses	5%	0.1	3%	0.4	0.60%	0.5	2%
Selling Costs	5%	0.2	4%	0.3	0.60%	0.5	2.50%

APPENDIX 7: PRODUCT PORTFOLIO RATIONALISATION

Brand Categories (Ranges)	**Volume**	**Premium**	**Super-Premium**
Units produced and sold (millions)	2 015	549	186
Sales Value (€ millions)	**23 273**	**16 871**	**20 533**
Cost of Goods Sold (€ millions)	19 782	15 602	11 909
Total Gross Margin (€ millions)	**3 491**	**1 269**	**8 624**
Direct Factory Overheads (€ millions)	3 550	638	891
Gross Profit (€ millions)	**(60)**	**631**	**7 733**
Total Cost = Fixed + Variable	**23 333**	**16 240**	**12 800**

Total Gross Margin (Gross Profit Margin)	15,0%	7,5%	42,0%
Gross Profit Margin (Operating Profit Margin)	-0,3%	3,7%	37,7%
Total cost per unit (€ millions)	11,58	29,58	68,82
Direct Factory Overheads as a percentage of Total Cost	15,2%	3,9%	7,0%
Cost of direct factory overheads per unit (€ millions)	1,76	1,16	4,79