

GSCM 439 - Global Sourcing

Group 7 - Case Study 3

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439 Case Study 3. GM Supplier Selections For Innovation

Executive Summary: The General Motors procurement team has been tasked with finding a long-term supplier partnership for a critical component in the braking system of their new Chevrolet Bolt autonomous vehicle. The vehicle is a high profile step in the journey of autonomous vehicles and is going to be sold through a business partnership and retail channels. The Chief Executive Officer of General Motors has mandated that the organization position itself as a disruptive and innovative leader in the rapidly developing field of vehicle automation. For this request for proposal, there have been four qualified bids of diverse levels of a supplier's experience, geography, intellectual property positioning, innovation and pricing philosophies.

Problem Statement: GM needs to strategically select either a single-source or multi-source a pool of suppliers, balancing important project and supply chain risk factors including intellectual property rights, supplier location, varying degrees of supplier collaboration and levels of previous experience working with GM. Procurement needs to take all these factors into account and present a compelling and granular sourcing decision and strategy based on detailed analysis of the proposals received from the RFP process, for presentation to the sourcing committee.

Industry and Competitor Analysis

It is an industry that has dramatically shifted its manufacturing from manual labor to a high use of robotics. The industry is also one of the biggest users of The Just In Time production philosophy that places a huge importance of an efficient supply chain, sometimes holding only hours worth of a particular stock item before it is used and replenished. Toyota is also seen as best in class for manufacturing with its philosophies not just in car manufacturing but also for production techniques in general.

The car industry is dominated by companies that are a collection of brands in and of themselves. It may be of some surprise or example that Volkswagen as the core brand of its company also owns Bentley and as is very common practice, have used parts that fit all vehicles. Yes, Volkswagen parts can be found in a Bentley! Further that Volkswagen also owns Skoda, Bentley and Skoda owned by the same company!

Nearly 60 of the world's most popular to high-end brands are in fact owned by just a dozen manufacturers. Represented by the following chart (DailyInfographics.Eu):



Stakeholder Analysis

Internal Stakeholders

The GM board of directors and C Suite are hugely invested in the success of this project with autonomous vehicles being mandated as a key initiative for the future prosperity of the organization.

The employees are hugely invested in the organization's success for both their job security and to have a successful environment to work in.

External Stakeholders

Customers both at an individual b2c retail level that are looking to purchase this type of and at a business b2b level for Lyft and its initial fleet of vehicles.

Environmental groups and those passionate about the environment are keenly anticipating a wider industry of all-electric and hybrid vehicles. Watchdog groups, i.e. for road safety are keenly watching the development of autonomous vehicles.

GM's long holders of its common stock and bonds keen for the positioning for future success of the company in this pivotal market.

Government both in terms of at a national level and a local level. National Government in terms of the car industry at a macro level and for funding such as hybrid credits, and local Government who would have to evaluate their local level laws and approaches to almost and full autonomous vehicles.

Parts suppliers to the car industry, particularly those of more conventionally manufactured parts, are keenly interested in the potential for a wide adoption of autonomous vehicles and the new parts that they need for their manufacture.

The other two of the Big Three traditional car companies, Ford and Chrysler are tied to GM's level of success and maturation as an industry from the classic gasoline and muscle cars to autonomous, electric, and hybrid power. At a wider level the spectrum of car companies such as Honda, Mercedes Benz, and Toyota, Toyota has its own hugely successful hybrid model in the Prius. In addition, pure autonomous, electric and hybrid vehicle companies such as Tesla who are keen to see how a traditional car company evolves into being a competitor in the vehicles powered by electric and hybrid industry.

The United Automobile Workers Union are powerful stakeholders in the direction of the auto manufacturing industry and for the interest and welfare of its employees.

External Research: With the challenge of being at the forefront of innovating the automated vehicle, GM is left with a myriad of tough strategic sourcing decisions. The brake systems procurement team has safety and reliability topping the list of requirements, so, surely there will have to be compromises in negotiating costs, intellectual property, or supplier contract flexibility. Here are a few examples of how other companies handle similar challenges of strategic sourcing.

Hewlett-Packard (HP) created a supplier management system called “Social and Environmental Responsibility (SER) Program” (HP Supplier Portal - Home n.d.). The focus of the program is to target HP’s high-risk suppliers and assess them with the four-phase program that includes a risk assessment, self-assessment, on-site audits, and capacity building. While HP uses the SER program primarily to address social and environmental concerns with its suppliers, GM could certainly investigate producing a similar program while getting situated in the emerging automated vehicle industry. For example, R.U.D.I. Brake Systems and Rosie Automotive International were reluctant to share their IP with GM. A potential compromise could be comprised of regular on-site audits in which GM can be assured that the brake systems are operating to the standards required by their engineering team.

Starbucks has a public document called “Supplier Guidance Global Requirements” in which the firm has outlined general requirements in fields such as policies, procedures, and shipping requirements (Supplier Guidance n.d.). The following is a particularly interesting part of the document outlines Starbucks policy regarding subcontracting: “Starbucks prefers to contract with the direct source of its products or services unless outsourcing or subcontracting is approved in writing. This approval does not apply to the purchase of component parts and raw materials, or when the Supplier is a known reseller. Suppliers should discuss individual situations with the Authorized Starbucks Representative to be certain.” While negotiating with R.U.D.I., GM could initiate a similar policy to Starbucks to gain a greater understanding of the outsourcing practices of R.U.D.I. Transparency is a big part of building deep supplier relationships and if GM is to work with R.U.D.I. long-term, they must understand where important components are being sourced from.

Finally, BMW Group outlines their quality management system with suppliers in a document called “Supplied Parts Quality Management” (Supply Chain Management n.d.). In the document, it is acknowledged that supplier contracting covers the following types of agreements: Confidentiality, Development Contract, Warranty Agreement, Supply Contract, Combined Development, Requirements

Specification, Service Level Agreement, and Scope of service and logistics. Additionally, BMW Group recognizes that suppliers “take a great responsibility for the overall quality management and with a nomination, usually a long-term relationship starts that needs to be based on mutual trust, acting as true partners.” Addressing the previously mentioned agreements in their supplier contract, GM can clearly state to the brake system suppliers that they intend to create a long-lasting relationship. Doing so could deescalate some risk factors in structuring such important, long-term contracts with the prospect brake system suppliers.

An additional point of concern is the sheer scale of rampant intellectual property risk in China. A recent poll of North American Corporation CFO’s found that one in five felt that they had their intellectual property stolen by a Chinese company (Rosenbaum) in the last year. Recent US and China trade tensions and tariffs find Intellectual Property Rights a particular point of contention and source of leverage for the US Administration.

A Qualitative Analysis of the Pros and Cons of the Four Suppliers.

Elroy International

Pros

Elroy is willing to share its IP with GM and is an existing supplier to GM albeit for other commodities such as bumpers and side mirrors. Being an existing supplier helps in that the supplier knows how GM works and what the company is looking for in terms of methodology and approaches. While GM has a shorter time frame approach, car manufacturers such as Toyota can work with a supplier for a number of years before bringing them on as an actual customer. An existing relationship is hugely beneficial.

Cons

Located in Silao, Mexico, this is 1,100 miles from the US border and a Northwest border town such as Tucson and 700 miles from a Northeast US location such as San Antonio. To get to a northwestern US geography by road transportation, you would have to drive through classic Cartel regions such as Sinaloa. It would be 2,200 miles if traveling by road from Silao to GM’s manufacturing facility in Orion Charter Township, Michigan. It is estimated to take 7 days in transit by truck which would be plus but the unknowns of country stability connected with that make it a con.

Under the 2019 new USMCA deal championed by the Trump Administration that replaces NAFTA, country of origin rules has increased from 62.5 to 75 percent, the amount that an automobile’s components are to be manufactured in Canada, Mexico, and the US to qualify for zero tariffs (Kirby). The agreement also calls for greater intellectual property protection. While seemingly an incentive to keep

production in the North America region, the NAFTA deal also calls for labor provisions that have the potential to dramatically increase the Mexican cost of production and leverage of the employees. Mexican autoworkers are expected to earn at least \$16 per hour by 2023 and have a greater opportunity to unionize (Kirby).

Lastly, Elroy is a huge specialty risk in that they are new to working with GM on the manufacturing of braking systems. Their recommendation came by virtue of an acquisition of a UK company and also that a significant number of the other parts were going to be supplied by Orbitty.

Orbitty International

Pros

A big plus for Orbitty is its iconic reputation for innovation excellence. We are not so concerned with the perception of a lack of customer service and see it in part as a difference in culture and work practices. The company's willingness to share its innovative IP information is a plus although the premium for that is of some magnitude, and is discussed in the cost analysis.

Cons

Located in Germany, Orbitt's shipping costs and time for delivery are not as seismic as having a supplier in the Far East for delivery to the United States but still longer than a US supplier. Of note, Europe and the shape of its Union is incredibly fragile and it's future somewhat murky with Brexit and the departure of Great Britain. This brings significant currency risk, with volatility in the Euro to the USD exchange rate. Delivery is expected to take 25 days.

An additional concern and risk is that their AV e-boost system features three unique subcomponents that were all manufactured in house and would make GM incredibly reliant and all in on this supplier. Conversely as pro to this approach, the supply chain risk for obtaining these parts is not an issue for Orbitty

Rosie Automotive International

Pros

Rosie is a regular supplier to GM's Chinese operations located in Shanghai, this could be hugely helpful for the North American Operations in establishing a supplier relationship with Rosie.

Cons

Delivery for Rosie is the slowest of the four bids, carries a 3.6% taxes and duties charge and is expected to take 26 days.

Rosie carries significant risk in that while IP was their proprietary information GM would not have access to, or control of, the software and data associated with the braking system. GM would be putting its brand reputation and its consumers at risk, along with liability lawsuits, in the event of accidents proven to be because of a malfunction with the braking system. This is also conducive of a supplier relationship rather than a partnership with a lack of collaboration that is so needed on this type of new technology. Even if Rosie was willing to share the IP information and have some form of joint ownership, there is still the risk of that jointly developed and protected IP being misused by Rosie similar to the disregard of intellectual property rights seen in well publicised cases discussed earlier.

R.U.D.I Braking Systems

Pros

Located in San Diego, United States R.U.D.I has a huge geographical advantage for this project. This location is also the site of a start-of-the art manufacturing site. Delivery is only expected to take 4 days, by far the quickest of the four bids and the only domestic route.

RU.D.I has also been a long-standing supplier of prototypes to GM. This type of previous partnership and especially on prototypes would be invaluable for the forward thinking of the project.

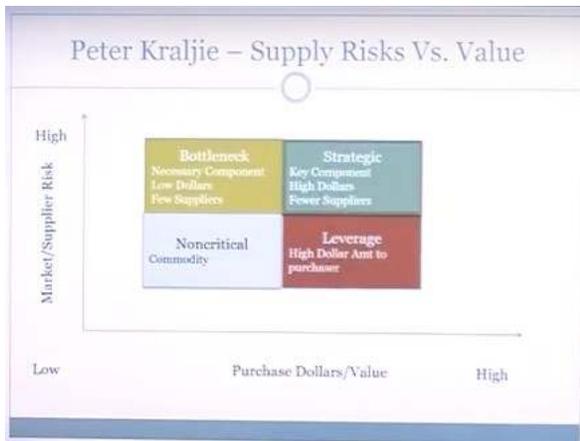
Cons

A major procurement ethical violation is to have suppliers help work on a scope of work or proposal for a multi-sourcing request. The supplier can either write the proposal in such a way that their bid would be the only logical winner or at the very least be seen as manipulating the quotation process by other suppliers looking to bid. In the public sector, this would lead to a disallowing of the procurement and a return of Government funding, to be absorbed by organizational funds. If GM is planning to use Government grants or funds for this project particularly hybrid vehicle credits they run the risk of disallowment.

While willing to share IP rights in the future, for this bid package RU.D.I is looking to retain the IP rights. There would need to strong contract language and a mutual desire to partner closely, surrounding that willingness if this is the preferred winning bid.

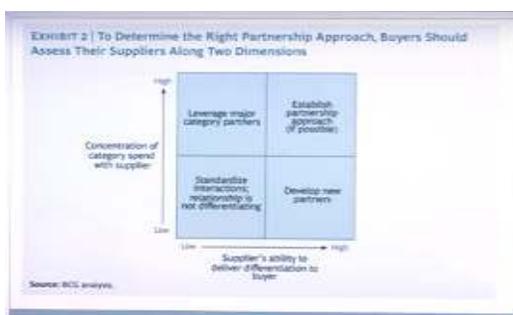
It is a huge risk to have a purchased component of unknown origin in the bid package. The importance of this part and the need for transparency would need to be discussed in detail between GM and R.U.D.I.

Detailed Supplier Cost Analysis: Categorizing the procurement, it is firmly a strategic sourcing decision based on Kraljic's Supply Risks versus Value. The purchase dollars and supplier risk is high, and we are looking to procure a key component from a pool of fewer suppliers that can supply it.



For the strategic sourcing cost analysis there are the intangible hard dollar cost savings and factors such as shipping costs because of geography that are seen in a traditional product production outsourcing exercise, but there also a huge intangible factor; the cost of innovation. With this being an emerging technology it is going to be important to have a strong deep collaborative partnership between GM and the supplier and it could well be that the lowest hard dollar cost is not the chosen bid because it is not in tandem with GM needing to be an equitable and equivocal thought partner in the design and iteration process.

Further, this strategic procurement should be trying to establish a partnership approach if at all possible, with the suppliers ability to deliver a high level of differentiation in the form of innovation:



Total Cost of Ownership - AV

Target Quote Per Unit price \$53 for AV	GM TCO FOR AV PROCUREMENT			
	53,500	Units Over Lifespan of Contract		
	Elroy	Orbitty	Rosie Auto	R.U.D.I
AV Quote Per Unit	\$55.791	\$53.349	\$84.777	\$111.990
Non-Amortized Costs	\$2,000,000.000	\$6,150,000.000	\$500,000.000	\$800,000.000
NAC Per Unit	\$37.38	\$114.95	\$9.35	\$14.95
Packaging Cost per Unit	\$2.81	\$2.81	\$1.55	\$2.81
Shipping Cost Per Unit	\$0.13	\$0.43	\$0.55	\$0.13
Total Cost per Unit	\$96.114	\$171.542	\$96.223	\$129.883
Joint IP	Yes	Yes	No	In Time
Innovation	TBD	High	Med to High	High

For AV procurement the high non amortization cost for Orbitty is prohibitive when spread across the 5 years of the contract lifespan and the total of 53,500 units.

Elroy is the lowest cost provider but is a TBD on innovation, followed by the next lowest cost of Rosie which is a no on joint IP and a desire to truly partner. The IP would still seem to be as risky even if there was an offer of joint IP. This supplier geography is complicated further by current US Chinese trade relations.

Both Orbitty and R.U.D.I score highly on joint IP and levels of innovation, albeit R.U.D.I would be a WIP for IP. R.U.D.I's cost should be viewed with the level of innovation, previously working with GM and partnership in mind. Additionally the 4 days for delivery.

Total Cost of Ownership EV

	GM TCO FOR EV PROCUREMENT			
Target Quote Per Unit price \$43 for EV	151,000	Units Over Lifespan of Contract		
Supplier	Elroy	Orbitty	Rosie Auto	R.U.D.I
EV Quote Per Unit	\$44.252	\$44.239	\$57.450	\$82.763
<i>Non-Amortized Costs</i>	<i>\$1,550,000.000</i>	<i>\$4,000,000.000</i>	<i>\$150,000.000</i>	<i>\$0.000</i>
NAC Per Unit	\$10.26	\$26.49	\$0.99	\$0.00
Packaging Cost per Unit	\$1.52	\$1.52	\$1.24	\$1.52
Shipping Cost Per Unit	\$0.44	\$0.63	\$0.59	\$0.15
Total Cost Per Unit	\$56.477	\$72.879	\$60.273	\$84.433
Joint IP	Yes	Yes	No	In Time
Innovation	TBD	High	Med to High	High

For EV procurement the high non amortization cost for Orbitty is not so prohibitive when spread across the 5 years of the contract lifespan and the total of 151,000 units. One factor from the qualitative analysis is the stability of Europe and also the 25 days or shipping

Elroy is the lowest cost provider but is a TBD on innovation, followed by the next lowest cost of Rosie which is a no on joint IP and a desire to truly partner, Complicated further by US Chinese trade relations.

Both Orbitty and R.U.D.I score highly on joint IP and levels of innovation, albeit R.U.D.I would be a WIP for IP.

Solution Analysis with Viable Options to Consider

An unlikely solution for GM would be to buy out R.U.D.I completely and then own the IP rights including the entire braking systems. This would allow GM to produce e-boosters themselves and have ownership of important decision calls regarding future adjustments. It would be a question though if R.U.D.I's level of innovation would continue as a very small subsidiary of a much large car company.

In addition, GM has the financial ability to make software and products in house as GM is fully capable, it's again a question of whether you can simply buy innovation.

Option A. Award both AV and EV RFP's to Orbitty.

For EV, Orbitty is a compelling combination of price, viewpoint on IP ownership and strong partnership potential, and an extremely high level of innovation proposition. This is being cognizant of the delivery timelines and part of a supply chain that is commonly accepted in business as global in nature.

For AV, the initial offer of software costs from Orbitty makes the amortization across units a cost prohibitive proposition.

In the contract negotiations we would look for a \$2-\$3 million concession on software costs for awarding both the AV and EV contracts together. There is a potential for the non-amortized software costs to have some overlap between the \$6m quote for AV & \$4m quote for EV.

Option B, Award AV to R.U.D.I and EV to Orbitty. There is an increase in risk having a multi-source approach to the procurement but it is tapping and learning form two supplier streams of innovation. Transparency as in the Starbucks example would need to be a paramount point of negotiations and the origin of an unknown part would need to be disclosed. There would also need to be some strong contract language around the transition to joint IP ownership and what the context of that would look like.

2 X 2 Framework: In a classic 2 x2 framework this total AV and EV vehicle production for Option B would be a mix of insourcing (domestic production by GM), outsourcing with R.U.D.I (domestic supplier) and offshore outsourcing with Orbitty (the work being conducted in a foreign market):



Conclusion and The Impact of The Decision: A final decision would depend on the contract negotiations for software cost overlap with Orbiitty but **Option B** is a particularly powerful combination of two innovative suppliers.

For Orbitty, an opportunity exists to have GM workers and management visit the supplier in Germany. This may help some of the perceived abrasiveness seen in the business practices and could be something simple as cultural differences.

For R.U.D.I, there would need to be granular contract language in place, and a package of strong documents similar to those we found at BMW, for the phasing in of joint IP ownership and a commitment to a long partnership. Combined with that full supply chain transparency and no unknown parts of undetermined origin. An internal GM compliance team review and sign off for government funding is recommended for the procurement.

The impact of the decision is to navigate the ongoing news flows of Intellectual Property theft in China and the rising cost & unionizing of production in Mexico post USMCA legislation by procuring outside of those regions.

Further the recommendation is incredibly rich in innovation by partnering with the two suppliers since they both are on the cutting edge of new autonomous vehicle technology. GM will get to share in that collaborative thought partnership with joint IP in one product line and the transition to joint IP in the other, firmly a strategic partnership procurement win.

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