

## Team Assignment 1 - BADM\_567\_SP23\_134

### Case: Bergerac Systems: The Challenge of Backward Integration

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#### Bergerac Systems: Overview of their product and market

The role of pets in the household has dramatically shifted throughout the last three decades. Pets like dogs and cats were once seen as just that, pets. Now, they are often viewed as members of the family. There are more than 78 million dogs and 86 million cats that occupy more than 62% of households in the United States.

The emotion and commitment toward these animals mean owners care about their well-being more than ever. The ability to provide fast and accurate results and treatment when they are needed most is priceless to owners. Luckily, in-house pet diagnostics equipment has changed the way veterinarians handle diagnosing and treating health problems.

Bergerac is an important player in this market with their **order winning** diagnostic instrument OmniVue, which debuted in 2006. This is a product that provides chemistry, electrolyte, immunoassay, and blood gas analysis in less than ten minutes. It is an easy-to-use instrument that outputs accurate results. OmniVue is a small machine that only takes up one square foot of space. The accuracy, consistency and size make this product an **order qualifier** for veterinarians considering in-house diagnostics. OmniVue has these attributes while also having a lower cost-per-use than its competitors, which is what makes it an **order winner**.

Prior to the advancements in in-house testing, veterinarians would send test results to an external lab that could take multiple days to produce results. This is an issue since time is a crucial factor

in determining treatment. The market is quickly transitioning to in-house diagnostics testing that expedites the diagnosis process.

Currently only 40% of veterinarians have shifted to in-house diagnostics, but that number is rapidly increasing. When in-house testing becomes available there is a sudden increase in volume and revenue for veterinarians. Owners need to ensure the safety of their family members and they are willing to pay more to get the results quickly. This means Bergerac has an opportunity to capture market share with OmniVue as in-house testing inevitably expands.

OmniVue generates most of its demand from small and medium sized veterinarians. An OmniVue analyzer averages \$9,500 and the cartridges average \$9.25, which makes it affordable relative to competitor pricing. In the first 12 months of its debut Bergerac sold 750 OmniVue. There were a projected 7,500 units installed by the end of 2010. OmniVue is the foundation on which Bergerac plans to establish themselves as a market leader. This will come with many challenges as they look to improve their current product and ensure the demand for cartridges is fulfilled in the aftermarket.

### **Challenges**

The OmniVue cartridges are proprietary to the Bergerac Systems. Both the OmniVue instrument and cartridges were manufactured at the Parsippany, NJ, however production lines for the instrument and consumables were physically separated inside the plant.

Cartridges are intended for single use and every test requires a single cartridge. Cartridges vary based on the animal and tests. The cartridge contains 2 pieces - base and a cover (both pieces are plastic and injection-molded). When assembled, the base and cover create a series of chambers where blood samples will flow after the test. Cartridge production is a meticulous process that involves utilizing a

sterile clean room where chemical reagents are freeze-dried to get them to a stable state. Upon completion the base and cover are welded together and packaged in foil.

According to the business case reagents are sourced from multiple third-party chemical suppliers, most of them located in the northeastern US. Plastic parts come from two US-based suppliers GenieTech (Hershey, PA) and Elsinore Plastics (Lowell, MA). GenieTec provides a larger portion (three-quarters) of the plastic components and Elsinore provides the rest.

The supply of the OmniVue cartridges was inconsistent for some time in early 2010 causing temporary stock-outs and negative feedback from Bergerac's customers. Market volatility, uncertainty, and unreliability of the cartridge supply caused Bergerac to keep extra inventory of both parts and finished goods. Bergerac considered an ability to control the supply of plastic components as a risk mitigation factor and benefit to the business. To keep growing Bergerac had to address that risk and have reliable channels of manufacturing and supply of the test cartridges so that they can deliver on promised SLAs to their customers. They also were close to the contract expiration with one of the suppliers of plastic parts, which was a good time to reconsider the path forward.

### **Decision to make**

Bergerac has 2 options of the backward integration opportunity:

- **Buy** opportunity assumed the company to acquire their largest supplier of plastic components GenieTech. GenieTec's owner founder was ready to sell the company for a purchase price of \$5.75 millions. With the purchase Bergerac would get 8 molded presses which would allow them to produce 10 bases or covers at a time per press with the cycle time of 75 seconds. They would also get experienced labor force and with 90% uptime over 3 shifts and 5 days' work week half of the molding presses can cover Bergerac's current parts need. The remaining

presses could be potentially used for outside business (that had long-term contracts with GenieTech) and in the future used to cover growing parts demand from Bergerac. Acquiring GenieTech would reduce overhead of keeping extra inventory and lower total costs by nearly 26 cents per unit with the ROI period of nearly 5 years.

- **Build** opportunity assumed that Bergerac would build a new production of plastic components in-house at Parsippany, NJ. Company would require only 4 molding presses compared to 8 that come together with acquisition of the GenieTech. Another benefit of that approach is that Bergerac can buy newer molding presses with shorter 70-second cycle time (compared to 75 second with “buy” option), slightly more efficient use of raw materials, and machine uptime of 95%. The downside of the option was that Bergerac had to hire and train additional staff and they didn’t have that expertise in-house. There should be set up costs (time for installation and testing of the equipment) included in the analysis. However once done the build option would allow to save 57 cents per cartridge and ROI in nearly 16 months.

### **Comparison of alternatives**

Bergerac’s decision to buy GenieTech versus taking production in-house requires them to decide about whether becoming a supplier to other companies fits into their corporate strategy. This is an important question because 50% of GenieTech’s revenue is coming from other companies, so buying them would likely necessitate Bergerac remaining a vendor for other customers or the acquisition would likely be significantly overvalued. Historically, Bergerac hasn’t shown much interest in backward integration as they leverage third parties for a variety of components. However, this situation is unique in that reliable cartridge availability seems to be an order winner as that was a chief complaint among the veterinarians.

Pros and Cons for Build	
Pros	Cons
More ownership over the supply chain	Miss on potential innovation from Elsinore Plastics that they may come up with to produce these cartridges at a better cost.
Get newer equipment	The company would need to build a new cartridge parts production capability
Reduction in holding costs as lead times are eliminated and safety stock could be reduced since supply would be more reliable.	Opportunity cost for what else they could have put in the Parsippany plant instead of the cartridge production (i.e., increased capacity to build OmniVue or space to build OmniVue Mobile)
No lead time and costs for getting products from GenieTech to Bergerac's facility	The company has a capability of assembly line manufacturing, but the cartridge manufacturing could be more of Job Shop or Batch process arrangement, which may present challenges for them.
Shorter Payback (16 months)	May need develop a capability to better understand the raw materials market (i.e. oil) to determine if the tradeoffs of holding more inventory are worth it when raw materials decline.
Cost reduction in building cartridges could provide opportunity to lower prices for veterinarians to take share from Abaxis at an even faster rate.	May take the focus off product innovation
Generate more cash from cost savings to invest more in new product development or SG&A.	
Shorter Cycle Time vs Buy	

Pros and Cons for Buy	
Pros	Cons
The other 50% of GenieTech's revenue can provide another steady revenue stream	Older equipment
The company would acquire a cartridge parts production capability	Potential for losing the other 50% of GenieTech's revenue
More ownership of supply chain	Lead time will still exist and there will be costs to get products from GenieTech to Bergerac's facility
Would acquire a capability to understand raw materials market (i.e. Oil)	Opportunity costs of the cash they are spending on buying vs. building. They could use that cash to invest in other activities of the business (i.e. new product innovation, SG&A).

	Longer payback time (60 months)
	Longer cycle time vs. Build

Bergerac does a good job launching new products and growing the lines they have. For example, OmniVue has grown considerably from 750 analyzers to 7,500 and they plan on launching a mobile version of the machine. If they make the cartridges in house they may lose space for other production lines of machines, which may require additional setup costs as they change over lines to produce another line. Accordingly, the opportunity costs of using the space at their current plant versus buying GenieTech weren't considered.

In addition, there is also a risk that Bergerac will struggle building this new capability as the process seems a lot more specialized than the assembly line process arrangement, they are using to produce their OmniVue and other machines. What is the opportunity cost for building the new capability? Will this impact new product innovation and take the focus off Bergerac's corporate strategy?

### **Recommendation**

Given the analysis above, we recommend **building** a cartridge fabrication unit within Bergerac's own plant.

From the analysis above, we know that both Bergerac and the veterinary market in the US are growing rapidly at 13% and 8% per year. "Build" will be more cost-effective because for each unit Bergerac can save \$0.57 versus \$0.26 if Bergerac chooses to buy. The in-house unit will be more adaptable than "Buy" given the high growth potential. Given that Bergerac has an inconsistent supply issue because of the current suppliers, it is necessary for them to do the backward integration. It cannot be status quo. From the comparative and critical analysis above, we can see that "Build" has many

advantages compared to the "Buy", including newer machines that provides a shorter cycle time (70 seconds), efficient use of materials, and better up-time. The most important aspect is that the cost per unit is lower as mentioned above, and the payback cycle is 16 months compared to the "Buy" option, which is 5 years.

The cartridge fabrication is a new capability for Bergerac, so it would be challenging for them to build from scratch. Challenges include Bergerac's ability to acquire the right talents and resources to build it in-house. Also, Bergerac has no previous knowledge of the raw materials market. It could take time for them to figure out the EOQ and ROP for the raw material inventory. The "Build" option requires budget and talents that could have been used somewhere else, which is an opportunity cost that Bergerac needs to justify to all stakeholders. This decision to build cartridge fabrication could damage the relationship with the existing suppliers like Genie Tech or Elsinore, which may cause a further delay with the current orders.

There are multiple risks Bergerac faces if they choose to build the cartridge fabrication unit in-house. First, the project could delay longer than they anticipated, so the overall cost could be higher and customer orders could be delayed. Second, the overall cost could be higher than they thought, thus the "Build" option may not have a higher saving-per-unit than the "Buy" option. They may end up paying more. Third, the "Build" option can fail if they cannot find the right talents and resources. Fourth, there is an opportunity cost that Bergerac could have use budget on something more valuable to the company. And last, if with the sales growth, Bergerac needs 8 molding presses than 4, then it will need more resource and budget. "Build" option may not scale as good as "Buy" option.

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