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CASE STUDY – Burlington Northern

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**OVERVIEW**

Burlington Northern Railroad (BN) which is a railroad company that primarily ships coal as well as agricultural commodities, industrial products, forest products, food and consumer products, and automotive products. Coal is BN’s largest source of revenue. The focus of this case is whether to invest in Advanced Railroad Electronics System (ARES) or not. This would cost roughly $350 million but would be a radical change to how the railroad operations were planned and controlled (Cash 146).

**PROBLEM**

As stated in the overview, the main problem for Burlington Northern is whether they should move forward with implementing the ARES project. ARES is like the air traffic control system using for directing flights. This uses the Global Positioning System (GPS) to calculate a trains position within 100 feet, which is an improvement over the previous system that could only locate within a 10 to 15-mile resolution. Other issues within Burlington Northern are problems with scheduling maintenance-of-way (MOW) crews. Without knowing an accurate window of when trains will be passing through, crews must spend a lot of time sitting around waiting for trains to pass through. Sometimes the windows would be completely missed and wasted trips would be made (Cash 131). Another problem faced by the dispatchers is the lack of information they had about other territories. They would try to catch delayed trains up even though there was enough slack on down the line for them to catch up on their own, which in turn would jeopardize the schedules of the other trains that were currently running on schedule.

**MISSION STATEMENT**

Burlington Northern’s mission is to offer a fast and reliable delivery that competitors cannot match. They are more focused on a differentiation strategy because they don’t necessarily want to be the cheapest, they want the customer to notice the significant improvement in their deliveries that they are willing to pay a premium because of the value it will add to the customer.

**PORTER’S FIVE FORCES**

***COMPETITIVE RIVALRY***

Burlington Northern’s major competition in coal was other railroads especially Union Pacific. This is an important reason for Burlington Northern to make improvements because Union Pacific had made substantial investments in heavy-duty double track and in new technology, fuel-efficient engines for carrying coal. The management at Burlington Northern believed Union Pacific had excess capacity where as Burlington Northern were running very close to capacity. (Cash 128)

Trucks were another major competitor for Burlington Northern. One big reason for this was due to the trends in manufacturing such as just-in-time production systems and cycle time reduction. This made trucking more valuable because of the door-to-door delivery and the reliability of delivery. Often, drivers of trucks were able to make up for unexpected delays which further increased reliability (Cash 129). When you compare the on-time delivery of trucks versus Burlington Northern, you will see that Burlington Northern peaked at 75-80%. Trucks consistently achieved 90-95% in on-time deliveries. This created a challenge for Burlington Northern since some customers were incredibly sensitive to consistent, reliable deliveries (Cash 129).

***THREAT OF NEW ENTRY***

The threat of new entry is not very high for the railroad industry. As mentioned at the beginning of the case, Burlington Northern was formed as a merger of four different railroads. They were able to start with a lot of infrastructure that was already there. There aren’t many companies that would be able to start from scratch and even if they could, it wouldn’t be worth it since the cost would be enormous. It would be better for companies to get into trucking since it would a much lower upfront cost. Even though trucking gives Burlington Northern competition, they still can’t offer the same low-cost shipping over the same distance.

***BARGAINING POWER OF CUSTOMERS***

The bargaining powers of customers for Burlington Northern isn’t very high since there aren’t many options for railroads. They could potentially lose customers to Union Pacific or to the trucking industry. This could potentially change depending on what Burlington Northern decides to do with their upgrade. Union Pacific could take a competitive advantage with their technology upgrades and upgrade to the rail system. This could substantially increase the bargaining power of the customers.

***BARGAINING POWER OF SUPPLIERS***

Bargaining power for suppliers should be rather the same as the customers of Burlington Northern. The main difference would be who the customer or supplier is directly dealing with. A company dealing directly with Burlington Northern to ship their products to another customer would be considered a supplier. A company paying the supplier directly would be considered a customer. Like the bargaining power of customers, as long as Burlington Northern can stay competitive and not let Union Pacific out scale them with upgrades and technology, the bargaining power will not be very high for the suppliers.

***THREAT OF SUBSTITUTES***

A threat of substitutes would be any other form of shipping. There are multiple forms of shipping such as air, land, and even sea. These won’t really be able to be much of a threat to Burlington Northern since they primarily deal with shipping in bulk. Too much for a truck to transport, and often to heavy for a plane to ship by air, especially coal.

**STAKEHOLDERS**

***Employees*** – This would be the dispatchers, MOW crew, conductors, engineers, supervisors, and other middle management.

***Executives*** –These would be the people that are responsible for making the decision to proceed or not proceed with the ARES project. They will be the ones with the most at stake pending the outcome of the project.

***Shareholders*** – These would be anyone who have any kind of stock or financial stake with the company.

***Union Pacific*** – Since Union Pacific is Burlington Northern’s main competitor, anything Burlington Northern does is likely to have some type of impact on them.

**ALTERNATIVES**

**DO NOTHING**

A choice that Burlington Northern could make is to do nothing. This means that they would choose not to implement ARES or any other upgrades. This would probably be the worst thing that they could do and would have a significant impact on the stakeholders. Here is the following impact this alternative would have on the stakeholders:

**Employees** – They would have the same issues and inefficiencies as before, especially the MOW crew, and dispatchers. Operations would continue the same as always. If things continue this way, it is likely the employees will be out of a job or must find work elsewhere since the main competitor will be implementing new technology and improvements. This will likely put Burlington Northern out of business having a severe negative impact on the employees.

**Executives** – Doing nothing would make the executives look incompetent and terrible at their job. With the decline of Burlington Northern, the executives will likely be fired or lose their positions due to the company going out of business. Executives would be impacted negatively with this alternative.

**Shareholders** – Anyone who invested money into Burlington Northern would see huge financial losses. The stock prices will greatly decline, and shareholders will be forced to sell off all their stocks to salvage what they can. Again, shareholders would see a huge negative impact.

**Union Pacific** – Burlington Northern’s main competitor couldn’t be any happier with their decision to do nothing. A lot of business would be pushed their way. Union Pacific would need to play this smart though. They would want Burlington Northern to stay in business so that they would be come a monopoly and see heavy regulation. Over all, the decision to do nothing would have a positive impact on Union Pacific.

**SWITCH TO ATCS**

This alternative would most likely be better than the “Do Nothing” alternative since it would improve processes and efficiencies. ATCS is Advanced Train Control Systems. This system will only control the trains and not the entire railroad operation like ARES will (Cash 151). Here is the impact this alternative is likely to have on the following stakeholders:

**Employees** – This would potentially have a positive impact on the employees. It would likely improve dispatchers’ abilities to micromanage the trains and give them the tools they need to perform their job more efficiently.

**Executives** – This would still be a risk for the executives. It could go either way because this is a relatively new technology that is still being developed yet would not be able to do as much as the ARES system. With it being a brand-new technology, there was still a chance it could flop. It would likely be better than the “Do Nothing” alternative but would still be a risk.

**Shareholders** – This alternative would be better than the “Do Nothing” alternative since there would be some hope for a return on investment. “Do Nothing” would be a guaranteed loss, but ATCS would give them some hope.

**Union Pacific** – If ATCS succeeds, it would likely give Union Pacific some good competition. Assuming Union Pacific retains their fair share of the market, this wouldn’t necessarily be a bad thing. It would prevent them from becoming a monopoly and being heavily regulated. I would say this would have a neutral impact, again assuming Union Pacific maintains a good portion of the market which I think they likely will since ATCS doesn’t provide as many advantages as ARES would.

**PROCEED WITH ARES**

With this choice, Burlington Northern would proceed with their plan to implement ARES. ARES will offer much more than ATCS and will increase efficiency and likely provide a huge competitive advantage. Here is how this choice would impact the following stakeholders:

**Employees** – This will choice will most likely be split between a positive and negative impact on employees. With the improved efficiency of ARES, jobs will likely be cut. For the employees remaining, they will likely be much better equipped to do their job which would lead to much less stress.

**Executives** – With this choice, executives will look like heroes. The company will be more efficient, which will lead to increased revenues and more profit. With improved efficiencies, they will likely take some business away from Union Pacific.

**Shareholders** – They will love the return on investment they are seeing and likely continue to invest money into the company. This will give Burlington Northern even more resources to continue to improve.

**Union Pacific** – This choice will likely have a negative impact on Union Pacific. It will likely eclipse the improvements Union Pacific has made which will lead to them losing business to Burlington Northern.

**RECOMMENDATION**

To me, it seems like it would be a no brainer to choose ARES. It is not a new technology, it is just new to the railroad. For any business, the goal should be to survive. ARES would be the best decision to survive long term. With long term survivability, this will lead to Burlington Northern making money now as well as in the future (Goldratt). Implementing ARES will address many of the problems that Burlington Northern faces. Burlington Northern has already identified some of their constraints, which really cannot be fixed without elevating them as Goldratt would recommend with his theory of constraints using his five focusing steps which are Identify, Exploit, Subordinate, Elevate, and repeat (Vorne). Identifying bottlenecks is crucial to an operation because one hour lost at the bottleneck is one hour lost at the whole operation (Goldratt). The MOW crew had issues with being able to work due to not being able to accurately track the trains. With ARES, this constraint would be elevated, which would remove that bottleneck likely leading to another bottleneck, but that is the beauty of the five focusing steps. You continue to repeat them for continuous improvement. With ARES at there disposal, Burlington Northern would likely be able to address constraints they didn’t even know they had yet. Since the Theory of Constraints focuses more on throughput rather than cutting expenses ARES would be perfect (Goldratt). Instead of “cutting costs” to save money, ARES would allow them to continuously improve their processes leading to a smaller cycle time, which would intern increase throughput improving profits (Goldratt). Competitor’s customers would likely notice and would end up drifting towards Burlington Northern further increasing their market share. With ARES, a lot of wasted time would be eliminated, which is what Lean Manufacturing is all about, removing wasted time (Vorne). Even though it is called Lean “Manufacturing” the same concept of reducing wasted time would still apply to the railroad industry. When you compare the choice ARES to ATCS, ARES appears to contribute more towards the long-term survival of the company. ATCS would be a brand-new technology and still not offer as much as ARES. It would likely keep them competitive short term, but not long-term.

Works Cited

Vorne Industries Inc. “Theory of Constraints.” *Overall Equipment Effectiveness Manufacturing Made Easy by Vorne*, [www.leanproduction.com/theory-of-constraints.html](http://www.leanproduction.com/theory-of-constraints.html).

Goldratt, Eliyahu M., and Jeff Cox. *The Goal: a Process of Ongoing Improvement*. Routelege, 2016.

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