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Burlington Northern

In the case of Burlington Northern, my recommendation is to commit to the development and installation of the ARES system. I will qualify this recommendation in the following analysis of the case through Porter's 5 forces, stakeholder analysis, and innovation as it pertains to the current and future operations of Burlington Northern.

In reading the case, it would appear that Burlington Northern's mission is to provide a reliable, low cost shipping service for customers in their various industries. The structure that facilitates this has executives at the top making decisions involving purchasing assets and initiating improvement efforts. The engineers fix the trains, and make sure they stay running on the tracks. Conductors control where the trains go and how fast, MOW crews fix the tracks, and dispatchers communicate with conductors and MOW crews to make sure no train collisions occur, and the MOW crew is safe to begin work on a particular section of track.

Analyzing BN with Porter's 5 forces, we get a clearer view of how effective the structure is in achieving the ongoing mission of BN. To start with, competitive rivalry mostly appears in the delivery of mass goods like coal and wheat with other railroads. Part of this is because railroads can't typically compete with trucks door-to-door service, or their ability to get things delivered on time consistently. So for the things that railroads do well (massive shipments for cheap) there is huge competition with Union Pacific. Otherwise, there doesn't appear to be much competition. The threat of new entrants is relatively low, to build a new railroad, or to buy up an already established railroad takes a huge amount of capital. It's not

easy to get into that business. Trucks already came along and took up time sensitive and smaller shipments, but for things like coal and wheat, BN is pretty safe from new entrants, at least for now. The threat of substitutes is high, trucks have better consistency in timely deliveries, and other railroads can always undercut you for a bulk shipment, so that's something to really be concerned with. Suppliers seem to have a lot of power, if you look at specifically those that supply BN with locomotives and such, you see BN pours a lot of money into them, the equipment they use isn't cheap, and those companies providing the equipment are likely few and far between. Customers also have huge bargaining power. Right now, BN is on its toes trying to get the time sensitive deliveries expedited so they don't lose even more business to entities like trucking companies, having to worry about things like substitutes gives customers more power. Because of high competitive rivalry, a high threat of substitutes, and high customer bargaining power, it is in Burlington Northern's best interest to invest where it can in opportunities like ARES that can provide an edge. Now we'll look at how an opportunity like ARES could impact each of the most important stakeholders in the Burlington Northern system.

The most important stakeholder when viewing any sort of radical business effort is the organization itself. Customers don't matter if the organization will not exist, any decision made should be in the best interest of the organization as a whole. Really this just means any effort made should be in the pursuit of building stability and growth of an organization so it can make more money and stick around. This usually means that whatever is most favorable for the customer should also be most favorable for the business, provided the right frame of reference to view the situation is used. After the organization itself comes the customer, without whom the organization could not profit. Next we have the senior executives, engineers,

conductors, dispatchers, and the MOW crew. Each of these above stakeholders would be affected by such a radical change as introducing ARES. If ARES has the desired impact, it should allow BN to increase its throughput, meaning it can accept more shipments and make more money. Customers would be able to expect more reliable delivery services, meaning they could potentially utilize BN for a cheaper just-in-time delivery service when compared to trucks. Dispatchers would have better control over their regions, and be able to better handle unforeseen issues, make better reactive decisions, and minimize collisions and stop times for trains that would meet on a track. Engineers would be able to better maintain the locomotives they service, and wouldn't have to stop and refuel at every fuel station – saving considerable time and money. Conductors might not have much to do if ARES brings about more automation, and could possibly eventually be eliminated altogether. Finally, the MOW crew would be able to actually get work done, they wouldn't have to waste trips and time trying to reach a dispatcher who may be too busy to give them clearance to work on a strip of track. If the project fails, and ARES does not provide the insight or advantage the ARES team claims it will, the company just wasted upwards of 300 million dollars, customers might not be affected, but the executive staff might be let go, engineers, dispatchers, conductors, and MOW crew would all have the frustration of learning a new system, only to have it rolled back to literally the 1920's method of operating a railroad. Basically, BN would be out hundreds of millions of dollars, and would have a bunch of frustrated employees to deal with if the project fails.

Many of the arguments executives of Burlington Northern posed against ARES later on in the 1980's had a lot to do with the way Burlington had been handling its finances. The financial situation of Burlington didn't lend itself to starting a

company-wide reengineering project like ARES. To start with, the perceived stability of BN was low due to its high debt to asset ratio. Even by today's standards, that' pretty high. According to cismarket.com, the average debt to equity ratio for a railroad is 56%, in 1988 BN had a ratio of 76%. Part of the effort to restore BN in the stock market included getting rid of some excess debt, which required capital, and made it even more difficult to get behind a massive project like ARES. There was also the matter of normal equipment replacement and maintenance, as well as possible opportunity in an acquisition that would lead to West Coast port access. This would acquisition would require 100-200 million dollars on its own, combine that with the debt minimizing efforts and costly everyday equipment replacements and BN had about used up all of its cash.

Despite all of this, the potential of the ARES system would far outweigh the cost. Eliyahu Goldratt proposes in his book *The Goal* that the goal of every organization is to make money. Organizations do not exist for their own sake. Any action taken to make more money for an organization is productive, anything else is counterproductive. In order to make more money, a company needs to generate more throughput, and "throughput" in Goldratt's terms is defined as: "the rate at which the system generates money though sales" (p60). Theoretically, the higher the throughput of a system, in this case a railroad, the more money can be generated. One of the first steps he lists in increasing throughput is finding your systems constraints. Unfortunately, BN doesn't have enough information to know its own operations well enough to determine its constraints. ARES would provide that data, as well as track the trains and provide optimum routes that have been programmatically calculated – thus improving delivery times. This alone has a huge impact on throughput in a few ways. Now dispatchers don't have to focus on

expediting 5 trains at a time, they can focus on the big picture. If a train needs to have its speed or route altered due to some unforeseen issue, now the dispatcher can see the immediate impact across the map and make better decisions on how to handle those issues. More shipments could be made, and more timely deliveries could be expected. This would give the railroad a more competitive edge with other railroads as well as trucking companies, though there would probably be intermodal shipping involved where railroads took business from trucks, most people like the door-to-door service of trucking companies, but that’s another opportunity in itself, and BN would still be gaining business, and customers would still save of the shipments were on time more often from railroads.

MOW crews can now work without wasting trips or bothering dispatchers, the crew can see where the trains are within a few feet of accuracy, and make sure they’re well out of the way before the next train arrives. Locomotives now won’t have to make excess stops, because ARES will provide engineers and conductors with useful information about the train in its current state like Fuel, oil pressure, and engine temperature. This also lowers the cost of fuel, as it takes a lot of energy (and thus fuel) to get a loaded down locomotive moving. By lowering fuel costs, and allowing trains to bypass unnecessary stops, we’ve lowered operating expenses and at the same time improved throughput since we’ve cut out unnecessary stops, which only serves to improve Burlington’s service to the customer.

To sum it up, customers can now rely on BN for more of their just-in-time shipments, and they get to enjoy the lower cost of the railroad compared to the expenses of trucks. Burlington makes more money overall due to an increase in throughput and eventually more sales (in the form of shipping service). The Executives get to see an improvement in the health of BN overall, Dispatchers can now deal with routing

issues more intelligently, and engineers can be used to solve problems before they happen, rather than reacting to a completely preventable train breakdown. Conductors become a little redundant, but still important if communication ever goes down between train and dispatch. The MOW crews also become a more effective force for maintaining the railroad, and should have some sense of security from a steadier work schedule. In essence, everyone but the competition wins.

It is also at this point that BN can make one of two decisions, either find other jobs for the people they no longer need in certain areas (like conductors) or they can lay them off. According to paycor.com, Labor is by far the biggest expense of any business. With greater efficiency in how the money making process is done, it is possible that labor costs can be cut without hurting BN in the short run. These cuts would allow BN to recoup some of the cost of ARES in the short term through money saved on labor, which would be viable only in the short term. Eventually, they'd need to bring more people on to support expansion, but by that point, they should be making considerably more money.

Just because there are is a lot of potential upside to the ARES system doesn't mean there isn't a lot of risk in investing $300 million in it, but the thing we've come to see over the last few decades, is that no company is safe if it's complacent. Take Eastman Kodak for example. For a very long time, Kodak was king when it came to photography. It was a household name, and even a common phrase for describing special occasions was "it's a Kodak moment". Today, that company is a shadow of what it once was. According to Chunka Mui's article *How Kodak Failed* on Forbes site, the company knew ahead of time that their products were becoming obsolete, but did nothing with the innovation that was killing their business and actually started in their own company. Because of complacency, Kodak file for chapter 11

bankruptcy in 2012, and nearly closed for good. Such is the fate of businesses and organizations that don't continue to try and improve what they already have. It doesn't matter if money is tight, if a given business like BN doesn't stay hungry, it will eventually be beaten out by competitors. While this particular innovation would require a massive reengineering effort, the potential benefits discussed earlier outweigh the risk.

Michael Hammer in *The Reengineering Revolution*, talks about several companies that have successfully undergone reengineering similar to what ARES would require of Burlington Northern. One such was Federal Mogul in the mid-nineties. This company was already behind the curve, taking twenty weeks to fill sample orders that took others up to six. They had hardly any business, and were pretty beaten up by the competition. It looked a lot like the competition between railroads and trucks for consumer and just-in-time shipments – there wasn't any really competition. By completely retooling and rethinking the way they do things, Federal was able to pull itself out of the gutter, turn out orders for samples in 18 days instead of 140, and increased their orders by a factor of four. BN could potentially have similar success if they were to roll out ARES, not because they're simply putting a new system out there, or just changing the way they do things, but because the way ARES functions increases the intelligence and speed with which Burlington Northern would operate. The best thing about it is, Burlington has time to make sure ARES provides the best results possible since they aren't in any major danger yet.

Let's consider some alternatives to ARES, the first and most obvious is to do nothing. If we look at companies from today's perspective, we see BN would go the way of Blockbuster and Kodak. The competition would eventually get to a point

where they beat BN into a shadows of its former self, or take it out of the railroad game completely. This is not a viable option, companies that do nothing, die.

Our next alternative is a piece-meal solution. Many of the executives of Burlington Northern posed the idea of finding cheaper, less invasive ways of accomplishing some, if not all of the ARES objectives. I've seen personally what cheap, piece-meal options get you, but let's consider Kodak again. In order to try and survive, they did at one point have a picture sharing site as discussed in an article titled *The* last *Kodak moment?* from The Economist which was meant as a means of staying relevant. This site was mostly for Kodak selling its printing service to those who used the site, and it ultimately failed. It's because this was a cheap, Band-Aid solution to a bigger problem, their business process. Kodak was still pushing film in a digital world, and it just didn't work. For BN, a piecemeal solution might yield some benefits, but it wouldn't give them what they really need: a way to find and exploit the constraints of their railroads.

The last alternative I've entertained is BN waiting and buying into the ATC system. A lot of the other railroads seem to be interested in it, but it doesn't make a whole lot of sense for Burlington. To start with, ARES provides a holistic view, where ATC looks at trains as separate units, not the way you want to run a complex system. ARES, according to the case, was already 5 years ahead of the ATC. In what world would it make sense to wait an additional 5 years for a system that didn't work as well, and wasn't built specifically to meet the needs of Burlington? There is no competitive advantage in that. Not when every other railroad would buy into it. The ATC system would still cost a boat load of money, and still require reengineering the BN business process, at least with ARES, there's more control for BN.

Not doing anything will ultimately lead to the end of BN, a piecemeal solution helps for a while, but doesn’t provide nearly the value of a holistic solution, and the ATC system is just something everyone else is going to have, there is not real competitive advantage in using it when compared to ARES. For these reasons, and the increased throughput ARES would provide, I maintain that ARES is the only real solution in this case.