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### Case 1: Burlington Northern

Burlington Northern is a Logistics and Distribution company that primarily operates in the Midwest and Pacific Northwest of the United States. They're largest revenue source is coal (\$1.5 billion) from the Powder River Basin, followed by agriculture products (\$718 million), Industrial Products (\$682 million), Intermodal (\$649 million), Forest Products (\$480 million), Food and Consumer (\$413 million), Automotive (\$154 million).

The problem BN is facing is the market pressure of becoming a Just-In-Time company. Improving service to its customers will allow BN to gain market share and increase volume. As technology has changed markets, the consumer has become more accustomed to products being delivered when they want them and when they want them. Customers count speed of service as a primary reason for doing business with a company (Kalakota, pg. 38). This JIT ability is made possible by new IS systems.

BN's major competition in the coal industry is other railroads. Specifically Union Pacific. UP has made significant investment in track and new technology. BN management believes UP also has excess capacity. This puts even more pressure on BN to maximize its capacity. Trucking has an inherent advantage of being able to deliver to a customer's exact location, an advantage that BN does not, they are at a market disadvantage. Although trucking is not as much of a threat as UP, it is a longer-term threat if costs of trucking go down from automated driving systems and it also represents the trend toward JIT services.

To survive in this competitive market-place BN must make operations more efficient and cost-effective. This requires investing in new IS systems. BN has an advantage in that they can transport non-time sensitive goods, coal, grain, etc. for a lower cost than trucking, however they cannot compete with trucking when it comes to transporting perishable goods. If there were a delay or accident on the tracks,

perishable goods could easily be spoiled. Another issue facing BN is improving the ability to track trains. Their current system is not precise, it can guess the location of a train to within 10-15 miles. Implementing a GPS system would solve this problem and allow for more efficient scheduling. Another issue is fixing trains and damaged railway track in a timely manner. Since BN does not know precisely where its trains are, the MOW crews often have to wait extended periods of time before it is considered safe to fix track. Often times the repair crews spend a whole day at a site before it is considered safe. All these issues create bottlenecks and could be avoided by implementing an IS system that allows for instantaneous communication and direct location of trains (Goldratt, The Goal).

BN is deciding whether to implement the proposed \$350 million ARES system as a whole, or to implement just portions of the ARES system. This could be a complete or partial *Business Process Redesign*. Cost is a significant factor in which approach will be taken. BN has recently financed through debt and has made a debt repayment plan a priority. However cost is not the only issue. Aligning the IS with the goals of the company and making the IS effective is the main issue. (Fried 1, CP p. 274). Another issue is whether BN wants to be an industry leader by being the first to adopt this system. This carries great risk. A project's initial implementation may go over on time and costs. A \$350 million project could go significantly over budget and a system that was projected to be operational in 2 years, could take 3 years or longer.

The mission of the company is to provide JIT delivery to customers at a low cost.

BN's generic strategy is Cost Leadership. As a logistics and transportation company they are a service-based company. Their product is delivering commodities to customers in a JIT manner. The ARES system's point is to increase efficiency and productivity while reducing costs while charging industry-average prices. This lines up with Porter's Cost Leadership strategy (Porter, Module 3 Tanwar link). By increasing efficiency BN can raise productivity. BN can thus run more trains on the tracks which will

result in an increase in the number of commodities transported. With more trains running the cost per trip will be reduced. Efficient logistics is a key to cost-leadership. Also, BN has a strategic advantage in having its railways being located close to coal and timber producing areas.

**Competitive Rivalry:** BN's Competitive Rivalry is high. BN's key competitors are other Logistics companies. Although BN has a monopoly on rail in the Midwest and Pacific Northwest, they are still vulnerable to competition. If they do not evolve and become more efficient with lower costs, customers will switch to cheaper alternatives. Because the products that BN transports are generic, BN is at a greater risk.

**Threat of New Entrants:** The threat of new entrants is weak. The Railroad companies have been around for centuries and the investment to buy land, track, and trains is formidable. BN also has a high barrier to exit due to the amount of infrastructure it takes to run a railroad logistics company. (Module 3, Porter's Five Forces link)

**Threat of Substitutes:** The Threat of Substitutes is moderate. Although BN can lose market share, the consumer can't find alternatives to replace all services of their infrastructure. BN transports commodities, they need to be low-cost and on-time to retain and grow market share. If a competitor can deliver the same commodities but at a lower cost, then BN will not be chosen. The advantage BN has is geographic. It covers much of the Midwest and Pacific Northwest. In these areas it would be hard to out compete them, but in a larger market they face a greater threat. The price of their services is constrained by the price of their competitors services. (Module 3, Porter's Five Forces link)

**Bargaining Power of Suppliers:** Suppliers bargaining power is moderate. BN has several different options to choose from when implementing new IT systems. Also, BN could just wait for another company to invest in and develop new IT solutions. The IT problem is also a problem that gets cheaper over time, as processing power increases and technology becomes more widely available. The suppliers

also try to reduce costs. The \$350 million price tag for the ARES system is substantial, and another competitor could beat that price in a few years.

Bargaining Power of Customers: This is moderate. BN transports generic commodities. There are many regions across the U.S. that produce these same commodities. If BN cannot keep prices low, there are alternatives that customers can choose. However, these options are limited due to the limited number of railroad companies. Market forces can keep the price down but the infrastructure that BN owns cannot be easily replaced.

BN uses the functional organization structure. The company has many different departments, each with their own specialty. This is setup as a bureaucratic system with a COO and CEO at the top.

There are many stakeholders. The first being the **shareholders**, who have invested in the company. The **creditors** who have made loans to BN for financing. The **employees** of the company, especially those who could lose their jobs to automation, such as train conductors. All the **customers** that BN ships commodities for, such as the coal companies of the Powder River Basin and the grain suppliers of the Midwest. **The local communities** that rely on the jobs that BN provides and the business it generates.

There are several different solutions this problem presents. The first being to do nothing. The benefits to doing nothing are that competitors will implement the ARES system first. This will allow the ARES company to implement and fix the bugs in the system before BN decides whether or not to implement it. The first company to implement a new system can run into all sorts of issues, such as going over budget, not meeting deployment deadlines, not realizing an actual benefit from certain parts of the system. The shareholders will benefit by letting other competitors bear the cost and time of developing this new technology. Creditors will not have to worry about BN taking on more debt to implement the ARES system. Employees will have the status quo remain the same and thus new

technology won't threaten their job security. Customers will see the same level of service and won't have to worry about price hikes to pay for the new system. Local communities won't lose jobs to automation.

Another option is to implement the entire ARES project. This option if successful could put the company in an advantageous position against competitors, however, if costs rise over budget significantly this could hurt shareholders. This option is not for certain. The same goes for creditors, it is a risk that could pay off. Employees would likely see some jobs lost to automation, but overall more trains would be running due to increased efficiency which would mean more jobs for track maintenance and IT. Customers would benefit if the implementation was successful, but if not, then there would have to be a price increase to make up for sunk cost. Local Communities would see more train traffic and more movement of commodities.

The third option is to implement a portion of the system. Implementing a GPS tracking system and a system for instantaneous communication would increase the ability of the company to achieve dynamic and efficient scheduling. The Data Link Communication system would cost \$80 million. Knowing the precise location of a locomotive lets the schedulers be much more precise. This allows for more trains to be running at once and for repairs to be made on a timelier manner. Shareholders would see an increase in productivity as more commodities would be moved. Creditors would have their debt repaid back on or before schedule. Employees would have more working hours and better ability to schedule trains to meet the systems max capacity. Customers would see an increase in on time deliveries. Local communities would benefit from more commodities being moved.

The best option for BN is to implement the GPS and communication system. These are specialized applications that can optimize functions in two specific areas. (Kalakota, pg. 55) BN is not in a financial position where risking \$350 million or more on the ARES system makes sense. This is a new

system and there are a number of things that could go wrong with it. It could go over budget, it could not meet its deadlines, there could be software bugs that take months to figure out. By implementing just the GPS and communication system schedulers can run more trains because they know precisely where their trains are. This allows for greater efficiency.

The do-nothing approach does not consider that there are portions of this system that do make sense, such as GPS tracking. The GPS option is a proven technology that has been in use for decades therefore making it a reliable investment.

The full ARES approach is too cost prohibitive for what you are getting. The amount of new software that has to be developed, tested, and maintained could go well over budget and time. Also ARES is a brand-new system. There is also another autonomous train system being developed by the ACTS which could end up being a better product.

Implementing the GPS and communication system makes sense from a scheduling standpoint and an IT standpoint. Knowing where all your trains are located at all times allows for more informed decision making and a more efficient operation.