Case 1-1: Burlington Northern

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Executive Summary

Burlington Northern must decide if their project ARES (Advanced Railroad Electronics System) is worth a $350 million-dollar investment to implement across the company. In this situation Burlington Northern can either decide to do nothing, implement the ARES fully, or put in place a phased implementation. ARES would automate the railroad control system for Burlington Northern and lead to greater efficiency, more reliable deliveries, and help foresee future issues with the locomotives. This decision is not only a large monetary investment but will take considerable time and affect many processes within the business. In the company, some executives believe ARES might not be the best investment while others believe this implementation could offer them the competitive advantage they need to grow in their market. In this case, the environment of the business, stakeholders and all the alternatives will be analyzed concluding that a phased implementation would be the best option.

Problem

The railroad industry is seeing a decrease in regulation allowing for more competition to enter the market and drive down the rates. There has also been a shift to more truck transportation as they can deliver door to door and easily adjust their schedules making them more reliable. Moreover, during this time Burlington struggled with efficiency. There had to be regular meet and passes where a train had to be directed off to a siding so another train could pass when they met on a single track. Controlling these meet and passes was hard to predict which could lead to delays affecting many trains. Moreover, the dispatchers were responsible for twenty to thirty trains but could only focus on five to seven while using technology from the 1920s. It was also difficult to plan maintenance around the trains schedules as they could only estimate where the train was. Burlington saw theses inefficiencies in their company and the changes within their

environment and decided to take an open systems view in developing ARES showing that they scanned and sensed changes in the contextual environment and tried to eliminate potential dysfunctions (Morgan). ARES was developed so that Burlington Northern could improve its' efficiency while standing out among its competition, but the cost of this implementation makes it a decision worth analyzing.

Industry Competitive Analysis

The mission of Burlington Northern is to provide a high-quality railroad service to their customers while offering reliability and trust that meet their expectations. The company's generic strategy was to rise above the competition through differentiation. Burlington Northern wants to provide highly reliable services that will make them stand out among their competitors. BN is structured where much of their strategic planning and corporate functions are in Fort Worth, Texas while the Operations Department is in Overland Park, Kansas. This is the largest department that includes dispatchers, research, and maintenance. They also have corporate staff such as Information System Services in St. Paul, Minnesota. Porter's five forces offer a more detailed look at the company and its environment:

Bargaining Power of Suppliers: Burlington relies on the suppliers to help with the parts needed to build and provide maintenance to their railroads. Much of the railroads were already built but Burlington must still rely on the suppliers to improve upon tracks in the future. There is also Rockwell International that helps supply the technology needed for the ARES project. They have a high bargaining power as this technology is cutting edge and will be offering products not seen in the railroad industry, but since Burlington Northern is the only railroad company looking to add this to their business, the suppliers do not have many other options if Burlington Northern were to back out.

Bargaining Power of Buyers: Burlington makes most of their revenue from coal and has a large source of it from the Powder River Basin. With an anticipated increase in demand in coal along with their customers under long term contract, the bargaining power of current coal buyers was low. BN decided to lower the power of grain buyers through implementing Certificates of Transportation Program making commitments for reliable grain delivery. The other five commodities they provide are service sensitive and have random demand where the customers have high power here through making tradeoffs between price and quality.

Threat of Substitute Products: At that time trucks were the major substitutes that threatened BN. Trucks, while more expensive, offered more reliable service. They could make up time from unexpected delays and reach their customers at their door. This kind of service is something the customers would pay more for rather than the inconveniency of railroads.

Threat of New Entrants: The railroad industry was unlikely to see new entrants as the main competitors and leaders in this industry were already defined. The cost of breaking into this market seemed high and not worth the investment for new companies.

Rivalry Among Competitors: Burlington's main competitors included other railroad companies like Union Pacific which offered an extra line and highly efficient locomotives. However, it is believed UP had excess capacity while BN was only running close to capacity. Deregulation increased competition between the other railroads as many began to drive down their rates.

Stakeholders

- **Burlington Northern**: What Burlington chooses to do affects the long-term strategy and outlook of the company. The company must decide if the ARES investment is worth the possible return and if it is correct decision given their position in the market. For

Burlington Northern to grow and become a "learning organization" they must be able to develop an ability to question, challenge, and change operating norms and assumptions (Morgan). With implementing ARES they could challenge their norms as an organization and change the way their business processes.

- **Burlington Northern Employees**: The employees are major stakeholders in any decision Burlington makes. If the company decides to take on this investment, some could lose their jobs at Burlington due to cutting back extra costs while for those that stay, would see increased safety and efficiency. The employees that are executives could see their operating areas generate more profit or could see more pressure to come up with something else if they decide to scrap ARES.
- **Burlington Northern Shareholders:** The decision could cause shareholders to continue to see normal returns or have to wait for a long period but see higher returns if the investment pays off.
- **Burlington Northern Customers**: The customers have say on how successful Burlington's decision will be. If decision results in higher efficiency and reliability, Burlington could see increase in customer loyalty and new customers. On the other hand, customers could disagree with decision and its effect resulting in them leaving Burlington's consumer base if Burlington becomes unreliable.

Alternatives

- **Do nothing**: Burlington Northern has the choice to do nothing with ARES and continue to operate as they are. They could choose to scrap the whole project and find growth and revenue in another area that does not require such a large investment. By choosing to do nothing BN will save $350 million dollars, but operations will still be inefficient.

- **Implement ARES all at once**: This alternative would require Burlington Northern to implement ARES throughout the company for $350 million dollars. Burlington Northern would have to change their business process and operations in every location of the company if they chose this option.
- **Carry out a phased implementation of ARES**: This alternative involves implementing ARES in small parts of the business first and gradually implementing more areas until the whole business has adopted it. This option will allow Burlington to see and measure more accurately the effects of ARES. This will give them proper time to adjust to the changes, work out any problems, and get rid of unnecessary functions before the rest of the company adopts it.

Impact on Stakeholders

- **Do nothing**: This will affect the company as they will not have to drastically change their business processes and spend a large sum of money to implement or test ARES. Although without implementing ARES, they would be losing out on future profit and higher efficiency throughout the company. This decision would affect the customers negatively as they would lose out on the option of increased reliability and predictable delivery of their products. On the other hand, employees could see varied outcomes as they may get to keep their jobs but must also work in unsafe, unpredictable environments. Shareholders would still see similar returns but in the future, they could see them decrease if Burlington Northern does not make a change for the better.
- **Implement ARES all at once**: This would affect Burlington Northern by increasing their efficiency, reliability, and revenues. Depending on the implementation they could see revenues from $400 million to $900 million depending on the implementation. This

option could negatively affect employees as some could lose their job from cuts due to this investment. Although, some employees would see greater efficiency and safer work environments. Shareholders would have to wait to see any gain for a while, but in the future, they could expect larger returns. Customers would be affected by seeing an increase in more reliable deliveries while they also could see their prices rise due to new technology offering better service.

- **Carry out a phased implementation of ARES**: This will affect Burlington Northern as they can hold off on the full investment and save money while they assess ARES. It will give them time to see if it is the best option to continue implementing and what to focus their attention on when implementing in other areas of the organization. It will also give them time to focus on changing and adjusting their business. It will affect the employees by causing some to lose their jobs but also give some the time to adapt and learn from the mistakes of other employees in areas that have already implemented. The shareholders will still have to wait to see the returns they want, but the returns could be larger considering this will lead to a more efficient implementation. Customers will gradually see an increase in reliable deliveries and not be victim of large mistakes that could occur from implementing a new process all over the company.

Recommendation

I would recommend Burlington Northern to carry out a phased implementation of ARES. It will give them time to adjust the implementation and business processes, prevent them from making the same mistakes in multiple areas, and give them increased reliability and efficiency throughout the company. I chose this option over do nothing because doing nothing will result in a continued loss for the company. As of 1989, dispatchers could only realistically watch over

five to seven trains, were using technology from the 1920s, could not accurately predict the trains schedule and location while maintenance crews were left with less working time. Having dispatchers in charge of this many tasks violates principle three “Requisite Variety”, of holographic design. This principle states the control system must be as varied and complex as the environment being controlled. (Morgan). Implementing ARES would create a system as varied as the railroad environment and allow for the dispatchers to handle the complexity that comes with it.

With the rising of competition in the railroad industry due to decreased regulation and the threat of trucks taking some of their commodities, doing nothing would not be advantageous for the business of Burlington Northern. They could do nothing and wait to see how another company implements certain technology then move, but they would be losing on profit and time from lack of efficiency. ARES has been predicted to generate revenue in the range of $400-$900 million with expected present value of $600 million and present value cost of $220 million. These studies align with the goal of every business to make money now and into the future (Goldratt). By 1989, Burlington had already invested $15 million dollars into the project. Due to this fact, ARES is already a part of the Burlington inventory and if they were to do nothing they could not turn the inventory into throughput which is the rate money is generated through sales. (Goldratt). This inventory would result in a loss for the company if they were to do nothing.

Also, ARES has been proven to decrease total trip time by 7-8%, 5% improvement in reliability resulting in 20% increase in prices, reduced train control accidents, and offer savings in maintained man-hours, departure delay, and reduced severity of repairs. While these were just studies, the results indicate they are worth testing in the actual business under supervision and critical analysis.

Moreover, this decision would make dispatcher's tasks more mechanistic through automating them and using machines to increase their overall efficiency. This would be beneficial for Burlington Northern as mechanistic approaches work well when there is a straight forward task to perform, the environment is stable, one wishes the service to be the exact same, precision is at a premium, and employees are compliant. (Morgan). For example, the task of notifying dispatchers of the limits of authority and speed fit all these criteria. Implementing ARES would also provide necessary conditions defined in *The Goal* of happy employees and satisfied customers through reliable deliveries and safe and secure environments for those operating locomotives and providing maintenance (Goldratt).

I chose a phased implementation over the full implementation because there were still questions about ARES and its full effects being worth the cost. Having full implementation would cost the company a large amount of money and energy trying to change everything over at once. Allowing there to be stages of implementation will give different areas of the business the time needed to adjust to the coming change. This way they can see what parts of ARES work best and which parts are not providing the appropriate advantages. They can use this to cut out the underperforming areas before they invest significant amounts money into them. Moreover, it will help them understand the best way to implement at other locations, so they are not making the same mistakes.

If Burlington Northern wants to continue to profit and succeed they must make progress in certain areas of their organization. Carrying out a phased implantation of ARES allows them to increase their efficiency and reliability while testing out various parts of the project before implementing it in the whole company. It is the best option when you consider their environment and their past, present, and future.

Works Cited

Goldratt, Eliyahu M. *The Goal: A Process of Ongoing Improvement*. North River Press, 1984.

Morgan, Gareth. *Images of Organization*. Sage Publications, 2006.