Burlington Northern Case Analysis

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**Executive Summary**

The decision of whether to integrate the Advanced Railroad Electronics System (ARES) into their infrastructure is being debated by Burlington Northern Railroad. The technology would change how Burlington Northern keeps track of trains, plans cargo, and maintains data. This system is so comprehensive that it would have an impact on every aspect of Burlington Northern operation. The anticipated implementation cost is $350 million, and it would fundamentally alter how Burlington Northern organizes and keeps track of its activities. The Service Measurement System, used by Burlington Northern currently, compares bands of acceptable performance against actual operational outcomes to obtain accurate data and boost productivity. Apart from the Energy Management System, they may potentially adopt the ARES system in addition to these two alternatives. They would get the finest functionality, enhancements, and cost-effectiveness from this.

**Introduction to Burlington Northern & Their Issue**

The main categories of goods served by the Burlington Northern Railroad are consumer goods, coal, forest products, agricultural products, automotive products, industrial products, food, and intermodal shipping. This is done by utilizing their infrastructure to deliver a variety of goods efficiently.

The merger of four distinct railways resulted in the creation of Burlington Northern Railroad, which was established in 1970. In addition to the train system, Burlington Northern also had land holdings that held commodities including minerals, gas, and wood. The company was divided among three cities, each with a distinct purpose. The corporate offices for marketing, finance, and human resources were in Ft. Worth, Texas. Overland Park, Kansas, was chosen to house Burlington Northern's operations department, which includes a large number of dispatchers and operators. Information system services, among other corporate divisions of the business, were situated in St. Paul, Minnesota.

Coal was and continues to be Burlington Northern's greatest source of revenue, accounting for nearly one-third of overall revenue. Coal traffic never stopped moving since cycle time was critical to the coal business, resulting in a relatively consistent timetable. This was done to keep the total number of sets—or how many tons of coal in a train car-- required as low as possible, minimizing the customer's required capital.

Agriculture, namely grain and corn, accounts for the second greatest percentage of Burlington Northern's revenue. These deliveries are significantly more erratic than coal, as harvests vary from year to year and market prices fluctuate, causing demand to fluctuate as well. The other five major revenue sectors for Burlington Northern have varying movements and demand, making them particularly service sensitive. This means that in order to earn in these categories, you must provide adequate service.

Burlington Northern’s present activities comprise over 23,000 miles of track, with up to 800 trains passing through each day. Currently, dispatchers and operators oversee managing, regulating, and reporting on all of these trains. They must also handle up to 10,000 meets and passes every day, as well as schedule maintenance of way workers as needed. Their key concern is how to properly manage this burden so that trains arrive at their destinations on time while still providing appropriate service when needed. They must determine whether to use their present system, ARES, or another choice.

**Stakeholder Analysis**

The clients of Burlington Northern, or the purchasers and suppliers who depend on Burlington Northern to either send their items correctly or receive them when needed, are its most significant stakeholders. Companies from all industries who do business with Burlington Northern would be included in this category of significant stakeholder as well, especially those engaged in the prior listed primary income sources.

The Burlington Northern workers who run the system make up the other significant group of stakeholders. The decision the corporation makes will have a significant impact on the employees' daily tasks. A new method may enhance worker morale and safety since it might make their tasks significantly simpler. Since they will be the ones utilizing the system every day, they must also be properly taken into account when it is implemented. This shift to a people-centered approach is becoming increasingly common in many industries.

**Porter’s Five Forces**

Trucks are the most common alternative product for railroads. Trucks, being a new entrant into the transportation market, initially challenged railways for the same consumers. Trucking businesses were able to attain a success percentage of 90-95% for their just-in-time delivery services, compared to Burlington Northern's 75-80%. They may also provide a far more diverse service, such as delivering things to the customer's door. This used to make them a high-risk alternative since their performance is comparable to or greater to industry product performance, according to Porter’s Five Forces. However, deregulation in the 1980s like The Motor Carrier Act offered both railways and trucking businesses considerably greater pricing and access into the market. By 1990, trucks could be longer and carry more, carving up their own market niche and pushing railways to compete with one another.

Both its buyer's power and its supplier's power have a significant impact on Burlington Northern. In essence, a railroad serves as a middleman between a buyer and a seller. Both companies would lose money and reputation if they refused to work with Burlington Northern. The demand for several of Burlington Northern's main revenue streams, particularly agricultural goods, varies. Depending on the season, the market price of an item might increase or decrease demand. Additionally, suppliers' schedules are far more crucial than Burlington Northern's because they can only harvest during specific periods of the year.

Other railroad companies, particularly Union Pacific, are Burlington Northern's primary competitors. For its coal operations, Union Pacific made investments in powerful engines and heavy-duty rails, which greatly increased throughput. While Burlington Northern was considered to be using all of its resources to fulfill coal deliveries, Union Pacific's system was thought to have extra capacity. The aforementioned legislation was passed in 1990, which increased competitiveness even more. As a result of trucking carving off its own market, railways were obliged to lower their pricing in order to compete with a smaller overall market.

**Option 1: No Change**

The preliminary option for Burlington Northern would be to continue using their present system. The Service Management System is used in their present operations to enhance data recording and monitoring. Although it still depends on dispatchers to manually enter data, it is connected to the employee bonus program and provides additional rewards for satisfactory outcomes. In order to identify issues and keep operations operating efficiently, the Service Management System compares bands or ranges of acceptable criteria against the outcomes provided by the operations. Initially, this program increased acceptable outcomes by over 25%. This kind of action would have the obvious advantage of saving Burlington Northern $350 million on the ARES system. By skipping the process of installation and personnel training, they would also save time and effort.

But leaving things as is won't help with many problems. First off, ARES has already received over $10 million in investments, all of which would be lost if the project were to be cancelled. Even while this amount pales in comparison to $350 million, it is still a sizeable sum of money that would be lost. Second, the operators and dispatchers are under much too much stress and strain with the existing system. Rather than the predicted 5-7 trains that a professional dispatcher can concentrate on at once, dispatchers are required to monitor a territory by themselves, which can contain over 25 trains to watch at once. Additionally, they don't obtain data until a train enters their region, making planning considerably harder for them.

Every one of the estimated 10,000 meets and passes that take place on the tracks every day must be arranged around to prevent safety issues. Additionally, employees had to manually record all arrival times for arriving items as well as arrange maintenance of way personnel as needed. Dispatcher and operator inefficiency, human mistake, and accident rates all rise as a result of placing such a heavy weight on them. This would mean that in the age of omnipresent computing, Burlington Northern would fall behind in terms of technology. The idea that computers will serve all corporate functions is a quickly rising trend. Considering how quickly this trend is moving, Burlington Northern must keep up with the times.

**Option 2: Implement ARES**

The complete installation of the ARES system, which would need an expenditure of about $350 million, would be their next option. A new control center would cost $80 million of this, and an ARES-compatible Data Link communication system would cost another $80 million. The required on-board equipment, which is expected to cost about $100,000 per road locomotive, would be covered by the remaining $200 million. The suggested system's analysis revealed a number of advantages, the most notable of which were enhanced safety outcomes, greater efficiency metrics, better service quality, and increased productivity for the duties carried out by dispatchers.

All would result in improved customer satisfaction and dependability, which would increase Burlington Northern's income. As increasing the level of service they deliver gives a substantial chance to win or keep market share, service is what may set Burlington Northern apart from its competitors, according to Porter’s Five Forces. The enhanced dispatching procedures and safety enhancements of the ARES system will also have intangible advantages by boosting employee morale and preserving public safety. People are a company's most valuable asset, and in order to achieve organizational performance, they must be supported by proper structures, systems, and procedures. One cannot place a value on the fact that ARES is expected to 100x lower the likelihood of an accident.

The whole system would not, however, be implemented without problems. Even if the $350 million investment is not the biggest in Burlington Northern history, it is still a sizable chunk of money for a technology that would fundamentally alter the way their business operates. This investment would be made at a vital time for Burlington Northern, since the firm was already severely short on investment cash, when it could have to pay millions to its employees if crew numbers were decreased. Another consideration is if it really is essential. Improvements in service metrics brought forth by the Service Management System lead to the conclusion that policies and training may be given more attention to get comparable results for a lot less money.

**Option 3: Implement ARES Without the Energy Management System**

The whole ARES system, except the Energy Management System, could be implemented as a third option. The only elements that can be divided into independent modules are the EMS and the Locomotive Analysis and Reporting System, however LARS' tracking and reporting capabilities are essential to the system. In order to determine the best speed to conserve gasoline, the EMS considered the track conditions, the posted speed limitations, and the weight of the car. Analysis of the ARES features, however, showed that the EMS only produced 2% net fuel savings while also producing significant increases in operating times in other experiments. Additionally, the effectiveness of the remainder of the system, including the LARS and Meet/Pass management, already resulted in significantly reduced running times, which generated fuel savings on their own. The cost and duration of installation would be reduced while maintaining the core functions of ARES by doing away with the EMS.

**Recommendation**

Implementing the whole ARES system, with the exception of the Energy Management System, is the recommended course of action. By doing so, Burlington Northern would shorten the time it would take for the system to be operational and reduce their significant investment expenses. They might use this to establish themselves as the first railroad to use such a system. This is critical because the businesses who take the initiative in seeing a new customer demand and meeting it are gaining significant market share. Being the first to use this technique provides them a significant edge in promoting it. The EMS was one of the aspects that was not improving and was not performing as well as the rest of the system. Furthermore, the advantages of the EMS would still be derived from the overall system's efficiency. This strategy would provide Burlington Northern with all of the major features of ARES while reducing their costs and deployment time.

**Citations**

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