Case 1.1 Burlington Northern: The ARES Decision

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The Problem

Burlington Northern is a transportation company that owns a vast rail system and several different types of natural resources. The main problem that they faced within this case study was a decision based around whether it was feasible to implement ARES, a system designed to automate most of their business processes, or to keep things as they were. Some of the underlying problems within the case are:

- Justifying the costs of implementation vs. benefits
- Analyzing the dangers of being an early adopter
- Weighing the tangible benefits vs. intangible benefits

The number one reason for most businesses to forgo business process automation implementation is that the immediate costs-savings are not attractive enough. According to Statista, a well-known statistics portal, 35% of businesses say that the cost-savings, or the results of their feasibility analysis, are not enough to invest in BPA. This is one of the underlying problems that contribute to the main problem of Burlington Northern being unable to reach a decision about the ARES system. BN's CEO, Gerald Grinstein, expressed a fear of being the sole adopter of the ARES system. This represents the underlying problem of being an early adopter, and it also contributed to Burlington Northern's lack of a decision on the ARES system. The final underlying problem, intangible benefits vs. tangible benefits, was represented by many of the BN executives, who believed that a more efficient system would not necessarily lead to enhancements in revenue or increased customer satisfaction. This contributed to BN's inability to decide on the ARES system as well. All three of the underlying problems revolve around Burlington Northern's main problem of the ARES Decision.

Industry Competitive Analysis

Mission Statement

The mission of Burlington Northern is that they are a transportation company that provides transportation services to customers who needed to move raw materials, automotive goods, and consumer goods using a cost leadership strategy.

Organizational Goals

BN's main goal, as with any other organization, was to survive in a highly competitive market and to make money in the process. Their organizational goals according to Dick Lewis, Vice President of Strategic Planning at the time, were to improve their overall ability to deliver service, to reform and reconstitute their service offerings, and to improve utilization of their assets. By doing this, BN hoped to increase their volume at the expense of their competitors and to raise their prices by reconstructing their services to be differentiable from the competition. By improving asset utilization, BN hoped to reduce the time spent during a transportation service and the costs associated with rolling stock.

Generic Strategy

The generic strategy of BN is cost leadership because they were in a market that included railroad companies and transport trucks, and consumers were always more likely to go with whoever offered transportation services at the cheapest price. While management may have wanted to implement a more cost-focused strategy, BN ultimately did not offer services that were efficient enough to remove some of their competition. Burlington Northern did, however, offer lower prices than the more expensive trucking companies, and the Staggers Rail Act of 1980 gave railroads freedom in setting their own rates. From there it's natural to assume that BN probably lowered their rates to compete with other railroad and transportation companies. That is why their generic strategy is cost-leadership.

Stakeholders

The stakeholders found within the case are:

- Burlington Northern Executives
- Railroad Employees
- ARES Development Team
- Burlington Northern Customers

The BN Executives are the ones who will ultimately make the decision on whether ARES will be implemented. Their decision affects the rest of the stakeholders because ARES lies at the center of the problem. It directly impacts the job responsibilities of the railroad employees and the safety of the MOW workers, the time and hard work of the development team, and the overall satisfaction or dissatisfaction of BN's customers. The case also states that prior to the ARES presentation in 1990, $15 million was already invested into the project and the executives' decision had the power to make that investment a necessary cost or a substantial waste of time and money. That is why they should be considered stakeholders within the case.

The railroad employees are a stakeholder within the case because their jobs will be affected by the ARES system. ARES would improve the working conditions of railroad workers, like the MOW workers, because they would have a set schedule for when the could perform maintenance on the rails, instead of being on an on-call basis. It also improves the safety aspect of their jobs because they no longer have to worry about whether a train will show up while they are out on the rails. The same goes for railroad engineers, as they no longer have to worry about collisions with the MOW workers or other trains. On the flipside, train conductors are negatively impacted by the implementation of ARES because it takes away some of their job responsibilities, and likely some of their pay. Thirty years later, the effects of business process automation on industrial jobs show that the conductors fears about ARES were rational.

According to a 2018 survey by Statista, business process automation reduced industrial/manufacturing jobs by 52%. That is why the railroad workers are a stakeholder.

The ARES development team is a stakeholder because they designed the system, and their design decisions will have an impact on the railroad employees and Burlington Northern's customers. They also put plenty of time and work into the project, and according to the case, many of them wanted to see the system implemented. Another reason they are a stakeholder is that they directly influence whether the system, and consequently the business as a whole, will succeed or fail since they are the ones who designed it. If the ARES system is a success, the business will likely benefit from its improvements. If ARES fails, the business will likely be hurt by the massive amounts of time and money that were put into the project.

Lastly, Burlington Northern's customers are a stakeholder because they will be affected by the supposed improvements in service that are brought about by the ARES system. The time saved by reducing meetings between trains could save both BN and their customers money by reducing the total shipping time for an order. Customers are also the ones who are hurt, however, if the system fails and ends up taking BN's service in the wrong direction. If the ARES system displays the wrong schedule for two different trains, a collision could occur, and that would spell disaster for any customer trying to get their materials transported in a reasonable amount of time. That is why BN's customers should be considered stakeholders.

Alternatives

The alternative solutions to the ARES Decision are to:

- Do nothing
- Improve operations with a different, yet similar technology

1. **Do Nothing**

Since the main solution to the ARES Decision is to implement the system, the main alternative solution is to do nothing. By choosing this solution, Burlington Northern could solve the problem presented by the ARES Decision, and in turn, solve the underlying problems within the original one.

The pros of doing nothing include the fact that BN could continue their operations as they normally had and could potentially come up with a different solution in the future. Technology is always advancing, so a new solution to their operational problems, not necessarily the main problem of this case study, may present itself in the future. It is not necessarily a good thing to be an early adopter. Doing nothing is also a good way to ensure that Burlington Northern keeps its position within the market, at least for the time being. As stated before, the main goal of the business should be to survive and implementing a failed ARES system could jeopardize BN's survival. Finally, doing nothing ensures that ARES is neither a failure nor a success. If the system is never implanted, it can't produce definite terms of failure or success. By the time of the executive meeting in 1990, however, doing nothing could be considered as more of a decision to cut losses there, since $15 million had already been invested into the project by then. Those are the pros of doing nothing.

The cons of doing nothing are that it may cause Burlington Northern to miss out on a potential advantage that they could've gained over their competitors. The Association of American Railroads was said to have already been developing their own system similar to ARES called the ATCS system. In terms of development, it was years behind the ARES project, but it could potentially have many more adopters once it has been released. If that happens Burlington Northern would have lost the advantage of having the ARES system, and any potential differentiation caused by the benefits that the system produced. They would have also lost any potential new customers that would have been attracted by their automated, more efficient

railroad system, any time saved by the system, and any revenue enhancements to be gained by the new system.

Another con of doing nothing is that none of their current operational problems are solved. Based on the information presented within the case, Burlington Northern was already dealing with operational problems like poor utilization of assets and poor time management. According to Eliyahu Goldratt, constraints are anything that hinder the processes of a business, and the Theory of Constraints, a way to improve the business process, was created to eliminate them. Burlington Northern was suffering from the constraints of poor utilization of assets and poor time management and implementing the ARES system would have helped to eliminate these constraints by getting rid of the bottlenecks created by poor time management, and increasing throughput, the process of turning inventory into sales, thus utilizing more of BN's assets in the process of doing so. Both operational problems could be solved with ARES and doing nothing only leads to nothing getting done about them.

Finally, the impact that doing nothing has on stakeholders is that the executives will still have to deal with the loss of time and money already invested within the project, and they will not have solved any of their previous operational problems. The railroad workers will keep their poor working conditions, and they will also continue to operate inefficiently due to poor scheduling. The MOW workers will still have an unsafe work environment. The development team will likely move onto another project, but they still would have wasted a lot of their time, and the customers will continue to receive the same service that they were currently getting. They are unlikely to switch service providers unless a competitor of BN develops their own system to automate their business processes. Vice versa, it will still be just as hard for Burlington Northern tom attract new customers. After all, according to Vilfredo Pareto, a famous Italian economist, 80% of your sales come from 20% of your customers. The good thing about doing nothing is that it has little to no impact on the stakeholders' current situation. Everything just remains the

same. The bad thing is that there are no improvements to be made from doing nothing. Everything just remains the same. That is an overview of the main alternative solution.

2. Improve operations with a different technology

The second alternative solution is to improve their current operations by investing in a different technology. The technology can be cheaper than ARES, while still obtaining the desired results. The ARES project itself revealed that many of Burlington Northern's business operations could be improved without spending $350 million. During the executive meeting in 1990, it was suggested that Burlington Northern could obtain the benefits of the ARES system without actually implementing it. For example, the scheduling of trains could be improved by simply keeping better track of locomotives. This leads to always knowing where a train is and planning accordingly when something breaks down. It also reduces times when trains will meet and must pass. BN can do this by investing in a different technology that improves their operations. The ATCS system that was being developed by The Association of American Railroads used a technology that used transponders on rails to locate trains. It was different from GPS but still produced the same results, and it was readily available. Burlington Northern could have used that to improve their time management problem. They also could have just taken the GPS aspect from ARES and implemented it within their trains. Either way, BN could have just used a different technology, or a slightly watered-down version of the ARES system to achieve some of the same results. They were already aware of their problems, and the supposed technology already existed, so nothing was stopping them from taking a similar, cheaper approach.

The two solutions discussed so far have been to implement ARES and to do nothing. This solution is a mix of the two. Burlington Northern still does not implement ARES, like in the do-nothing solution, but they do attempt to solve the problems that would have been solved by the ARES system. The pros of this solution include avoiding the dangers of being an early adopter and lowering the costs for implementation, while still retaining many of the benefits created by

the ARES system and solving some of the major operational problems. On the other hand, the cons include the risk that invested technology may still fail to solve Burlington Northern's operational problems.

The impact of using a different technology on BN executives will be that they either solve the operational problems plaguing their business processes, or they will fail to solve them and have to go back to the drawing board. This will also likely involve lots of money, which will in turn affect the business as a whole. Using a different technology will also impact their decisions on how they handle BPA in the future. The impact on the railroad workers is that they gain the improved working conditions that were originally presented by the ARES system, and the added safety measures. The development team will likely move on to another project, but at least BN would have gotten something out of their work on the ARES system. Lastly, the customers of Burlington Northern will either benefit from the increased efficiency of the new technology, or switch to one of Burlington Northern's competitors because the new system failed. That's the impact of using a different technology on the stakeholders.

My Solution

In my opinion, choosing a different technology, or at least a watered-down version of ARES, is a better solution than doing nothing. Burlington Northern would still retain many of the benefits that were gained through ARES, and they capitalize on the problems that the ARES system helped them define. In a journal article by Kirk Fiedler, Varun Grover, and James Teng, the authors describe the old saying "if it ain't broke don't fix it". In the article they state that the saying is "being increasingly replaced with its antithesis, the adage that if it isn't broken then there is still time to make the improvements necessary to survive." This represents the pressure on a business to continually improve its efficiency and effectiveness to survive in a competitive market. If BN chooses to use a different technology instead of doing nothing, they may increase

their efficiency, and therefore, their overall effectiveness. These are represented by reduced scheduling time and improved customer satisfaction respectively. The ARES project also exposed many of Burlington Northern's operational problems to the executives and produced solutions to them through the process of automation.

My final point is that the CEO, Gerald Grinstein, knew that the industry would have to implement new technology at some point in order to survive, the main goal of any organization. Technology will not be slowing down any time soon, so in my opinion, it's better to get in front of vast technological changes instead of being caught off-guard by them. This is the case in 2019, and it was certainly the case in 1990, since the only thing one has to do is look back at how much technology has changed in the last thirty years. Businesses must continually evolve as technology changes around them. This is not solely my thinking, however, as Goldratt also believed that business processes must be continually improved. He stated that you must constantly use the Theory of Constraints in order to be successful now and in the future. Going the technology route will ensure that BN survives the competitive market, because they will have a means to continually improve their business through business process automation. That is why I think choosing a different technology is better than doing nothing.

Conclusion

This case study involves Burlington Northern, a transportation company, and the problems that its executives faced when deciding to implement ARES, a business process automation system. The obvious solution for BN is to go ahead and implement the ARES system. The two alternative solutions are to do nothing and to select a technology that is different to ARES, but still achieves the same result. My findings while conducting this study led me to decide to choose a different technology because technology will always evolve, and businesses need to evolve with it to survive.