CIS 410

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Case 3-2: Burlington Northern

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Burlington Northern: The Ares Decision

Burlington Northern (BN), was formed in 1970 merged by four different railroads. Which means it has a vast railway system. And they owned substantial natural resources including extensive land grant holdings including minerals, timber, oil and gas. They also have lots of products, seven segments compose their primary revenues: coal, agricultural commodities, industrial products, intermodal, forest products, food and consumer products, and automotive products. And coal is the largest source of BN's revenue which represents about one-third of the total revenue. And the coal would also have a promising export potential to Japan and other Pacific Rim nations if the US government enacted the anticipated acid rain legislation during that time(1970s).

1. The competition in the industry

BN's major competition in coal was other railroads, such as Union Pacific (UP). And due to UP had made substantial investments in new technology and engine, UP had a higher capacity than BN does. For agricultural commodities, BN was the number one hauler of spring wheat and number 2 hauler of corn. They also have competitors in this field. As I mentioned before, the Union Pacific are competing with BN in railroad filed. And there are lots of companies competing with BN in transportation field such as UPS, USPS, FedEx, etc. For UP, they have a

better train capacity than BN. For those truck transport company, they probably have less capacity each run, but their deliver time could be more stable which can keep up to 90% - 95%. And BN only has a 75% - 80% on-time delivery. But they also got their advance which is the cheaper price. Trucks charge as much as two to three times what it would cost for rail service.

2. Potential of new entrants into the industry

In this case, potential of new entrance to the industry is low. As the railroad industry, or as a transport service company, the market barrier would prevent those new company who wants to enter the market. Even they could get some business, it would be small and local business. While the maintenance capital expenditure contributes significantly to capital spending, investing in new tracks is not viable in current industry scenario. And the railcar cost, manpower training, and operate tracks are the barrier for new firms.

3. Power of suppliers

For BN, after deciding to start the ARES project, their supplier would be supply them with the Global Positioning System satellites, to help them calculate the train's position. And the dispatcher will control the railroad system based on the GPS calculation. Their labors are stable. I think the suppliers' power is moderate.

4. Power of customer

BN is a railroad service company, the goal of the firm is to deliver the good for customers on-time with a good condition. As there are a lot of competitors such as UP and other truck transport services, the customers' bargaining power is relatively higher in this scenario. Due to the switching cost is low for the customers, improving the service quality (on-time delivery) and make customer happy (good customer services) would be important. ARES project would help

the BN to have a better control of the track in different areas, reducing their training meeting and waiting time, reduce the risks while they have a Locomotive Analysis and Reporting System(LARS), they could monitor the health and efficiency of locomotives and provide early warning signals about potential failures. This could improve their service as well.

5. Threat of substitute products

As I mentioned above, BN's intermodal business competes with trucking. Long-distance hauling via trains stands to gain when fuel prices are high. Trains are nearly four times as fuel efficient than trucks. However, when fuel prices are low, the truckers would take more advantages competing with BN railroad. They probably also competes with maritime shipping for certain commodities.

BN is a specialized company; all their employees are trained to do a specific task. Their field are narrow: a people who work as the engineman is only going to do this job. Other employees too. As the results, their skill sets are deep, to have a specialty on a specific work. "The organization structure serves enables organization members to undertake a wide variety of activities according to a division of labor that defines the specialization, standardization, and departmentalization of tasks and functions" (Cited from "Management of Information System", by Dr. Robert Barker, Page 104).

The estimation of the turnover is high of the project, while the enhanced revenues would increase a lot. ARES are also measured in reduced expenditures on fuel, equipment, labor and trackside equipment, and damage prevention. The labor cost would reduce significantly due to the system has a much more precise and tell the employees what to do. Which means the operating cost will reduced and the stakeholder would be happy about that. After building up the

system, the trains will be more efficient, created more on-time delivery and make the customers happy. The customer could also be happy to pay more for this service because the price would still be cheaper while comparing with truck transportation.

In this case scenario, when the company was making the decision, which is they are spending lots of money to build the ARES systems, the main problem they are facing is that worth to spend $350 million to build the whole systems? Do BN really need those benefit the Ares systems could bring to them? And they also don't know if the $350 million represents the actual cost of the project. As the investment would be made over a several year period, the investment would turn out to be much larger than estimate. What's more, the potential benefit of ARES is large but highly uncertain, especially for enhanced revenues, which had the most uncertain estimates. There are also lots of departments that would potentially be affected by ARES: dispatching, mechanical, maintenance-of-way, control system and communications, freight car management, and information system services. During this long period project, these affects could be enhanced to each department. As the book mentioned, "The challenge of managing the evolution of the IT architecture of the firm is daunting… Managers must consider the influence of legacy systems, organization culture and history, IT and business leadership, the capabilities of IT professionals and end users, and the demands of the business environment"(Cited from "Management of Information System", by Dr. Robert Barker, Page 47). On the one hand, the technology alone does not deliver the benefits. BN needs to change their underlying business processes which are not only large in number, but intensely interrelated. On the other hand, during building the ARES system, we cannot ensure and predict the technology will change or improve. "Rapid, Unpredictable Technological Innovations. The rate at which knowledge doubles is accelerating, placing increasing burdens on managers trying

to keep up with changes in the technologies that affect their business" (Cited from "Management of Information System", by Dr. Robert Barker, Page 83).

To solve the problems, I think the team who was analyzing the turnover of the project should be more careful and precise to the practical market. As we can see, the nominal value used for ARES analysis is much higher than the customer response and what customer told the company that they will pay for the service. There will be a huge risk to implement the project while having the wrong estimate turnover. Especially for vast project that will change the whole structure of the railroad system and affect lots of departments of the company.

For the concern of the potential affected by ARES, the company could start with the project in a specific area of their tracks. There would be less work to build up the system in a smaller area, and also have a good preview of what benefit the system would brings and what other potential problems the system would cause. There will be a lower risk and easier to control with the test for the system in a controlled environment. "The purpose of control is to create a set of conditions that improve the likelihood that desirable outcomes will be achieved, despite changing technologies, markets, competitive conditions, and other features of an organization's volatile environment."(Cited from "Management of Information System", by Dr. Robert Barker, Page 142). Like it says, the system could also get improvement during the test, and to see if it achieves the estimate outcomes.

For BN, the bottleneck before building the ARES systems is the meeting of two trains on the same tracks. BN managers believed that thousands of meets and passes occurred each day, but unsure about the precise number. "A bottleneck is any resource which is equal to or less than the market demand placed on it" (Cited from "The Goal", by Eliyahu M. Goldratt). It seems like the bottleneck was created due to there are not enough tracks for trains to go through. But the

problem is when dispatchers controlled the trains, due to lack of information and calculation, and probably potential maintenance problems, this situation happened. The trains refueled nearly every time they passed a fueling station, even if the added fuel was not necessary for the next part of the trip will also make the process inefficient. By using the ARES system, it could help the dispatchers with all these elements and set a better schedule for each train on the track and improve efficiency.

After noticing this problem and the managers found out what ARES can achieve with the test in a test areas of tracks and dispatcher, they could have a better control of system and when it applied to the whole tracks, they would have a tight control of the system. “In general, tight control of actions and results is appropriate in a situation of relatively high stability and certainty” (Cited from “Management of Information System”, by Dr. Robert Barker). That may help the manger have an idea how the system works and be more familiar with the outcomes it could affect each departments of the company and figure out what decision should make.