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BAE DIA CASE STUDY

Executive Summary

In the 1993, the Denver International Airport (DIA) was facing many different problems regarding the construction, operation, and implementation of its automated baggage handling system. The airport itself was interacting with and managing a rapidly increasing number of passengers and the once portion of the airport that became the critical path for the entire airport was the baggage handling system that was becoming increasingly inefficient. BAE Automated Systems, who at the time was a leading provider and designer of automated systems, was directly approached by the city of Denver after the contract bidding process yielded an astonishingly dwindling number of respondents. BAE Automated Systems sought to create a novel and massive innovative design that would service the entirety of the new international airport. This called for twenty-two miles of twisting track and various degrees and types of conveyor belts that would have little to no human interaction during the process (*DIA20*, n.d.).

Prior to opening the project up to the bidding process, the Project Management Team (PMT) had allowed each individual airline carrier to create their own baggage handling system (Michael Schloh, n.d.). The fundamental issues that BAE encountered with the creation and implementation of the system were a severe lack of communication between BAE and the PMT that Denver had enmeshed in the construction of the airport. The greatest question for BAE during this time was how to implement the automated baggage handling system with all the fallout from the numerous delays, cost overruns, adversarial communication between BAE and the PMT, and technical difficulties.

Industry Competitive Analysis

Organizational Mission

The Organizational Mission at the time of the Case Study for BAE Automated Systems was not specifically stated but it can be assumed through research and a general understanding of the type and scope of work that BAE was involved with that is involved providing high-quality automated systems and services to its customers. This could include a focus on operational efficiency, innovation, product design, customer satisfaction, and reduction of costs. The expansion of its business enterprise and the creation of more wealth for its shareholders would be assumed as another key aspect of the organizational mission.

Generic Strategy

There was no single generic strategy that BAE used. The Generic Strategy of BAE Automated Systems was a combination of Cost Leadership, Differentiation, and Focus Strategy. BAE, by winning the bid of Denver's airport project, offered products and services at a lower cost than the competitors, using economies of scale, and implementing efficient processes to reduce costs. BAE effected differentiation by offering a unique and superior product and service as opposed to its competitors, this is shown by offering an exceedingly unique service and product in the form of the automated baggage system. And finally, the Focus Strategy was implemented as well since it focused on a very narrow market for its products. BAE had a niche market for complex systems for exceedingly specific markets that involved technology and complex designs.

Organizational Structure

The Organizational Structure of BAE Automated Systems is not explicitly stated in the reading. Instead, there is a breakdown of the overall structure of the Project Management Team (PMT) and how they delegated the entire project among BAE, the local contractors, and the

airport staff. The entire organizational structure was chaotic at best; each concourse of the airport had a senior manager along with a manager for the main terminal. This presented a severe issue for BAE as the baggage handling system traversed all the concourses, this meant that there were four different managers to communicate with over right of way and other facets of the project. It is stated that the project was initially divided into three general areas of expertise: mechanical engineering, industrial control, and software design. Mechanical engineering was responsible for mechanical components and installation.

Porter's Five Forces Analysis

Porter's five forces is based on perceptions that the strategy of an organization should encounter the threats and opportunities and threats in any external setting. Porter has argued that the aim of any strategist is to manage, recognize, and understand any competitive setting by looking at competitors and contemplate broader perspectives that competes with the organization (*Tanwar*).

Competitive Rivalry: Competitive Rivalry for BAE in this case is moderate. The rivalry for a contract that was \$176 million would normally be extremely high and competitive but the massive scale and novel nature of the automated baggage handling system frightened most companies away from the contract. So much so that the city of Denver had to approach BAE directly about taking the contract. These facts show that there is little interest in undertaking the project for other companies. The only conceivable reason for other companies to undertake the project is to learn from the mistakes of BAE and build on their failures.

Threat of New Entrants: Threat of New Entrants for BAE in this case is exceptionally low. The market that BAE operates in is a very niche market that designs automated systems, and specifically automated baggage handling systems. This requires an extremely high barrier to

entry as the required personnel must meet exceptionally high education and intelligence requirements. A project of this scale would also require exceptional amounts of capital and professional connections to be successful.

Threat of Substitutes: Threat of Substitutes for BAE in this case was low. BAE Automated Systems operated in a niche market and had a history of success. A substitute being able to replace BAE on the contract would require extensive rewritings of the contract language, a massive amount of time lost in the changeover from one company to another, and a huge financial burden on BAE, the city of Denver, and the new company coming in. The new baggage handling system was also an overwhelming and novel idea and there were very few other companies that were even willing to attempt an undertaking to create the new baggage handling system.

Bargaining Power of Suppliers: Bargaining power of suppliers for BAE in this case is moderate. This is an interesting case since the project comprises of many diverse types of work: engineering, construction, software design, and many other aspects. Suppliers for construction materials would have a low amount of bargaining power if there were many other suppliers of raw materials in the area. Bargaining power of hardware material for the software design team would depend on the type of material they would require. Essentially, bargaining power of suppliers would depend on varying aspects of the project and would vary wildly across the scale of power.

Bargaining Power of Customers: Bargaining power of Customers for BAE in this case is high. If referencing the airport, then passengers on flights have significant purchasing power and have the capability to switch to other modes of travel and transport if the airline industry refuses to respond to the needs of the passengers. Passengers could compare prices easily and

switch to other airlines, take other routes to other airports, or take other modes of transportation. The bargaining power of the city of Denver as the customer to BAE is extremely high in this case as they could demand changes, file litigation, or restructure the organization of the entire project at whim.

Stakeholders

Stakeholders are different than a shareholder in that they are a party that has interest in a company, but they can either affect or be affected by a company, business, or organization. This is broken down into five different individuals or groups: customers, employees, investors, suppliers, and the community.

BAE Automated Systems Customers: The customers of BAE Automated Systems will be impacted by anything that BAE Automated Systems performs at the Denver International Airport. The entire airport was constrained by the baggage handling system's inefficiencies, which is why BAE Automated Systems was contracted to create the new baggage handling system in the first place. The customers would be far more willing to use the services of the airlines and airport if their layover time were as short as possible. The number of customers and their satisfaction levels with the airline and Denver International Airport are a direct result of the efficiency of the airport to reduce the layover time of the customers. Since this is an International Airport, the customers effectively come from all over the world and "word of mouth," and notoriety can spread extremely easily.

BAE Automated Systems Employees: The employees of BAE Automated Systems are stakeholders in every decision made within the organization. Any decision made by BAE Automated Systems could impact the employees' wages, benefits, promotions, new job

openings, loss of jobs, new training for innovative technology, increased educations and training, and many other aspects that potentially affect every employee. Those employees that specifically work on the project for the Denver International Airport Baggage System will have their careers affected by their performance in the implementation of the system. If the system fails or does not operate efficiently, then their future work will be tainted by the perceived failures of the problems encountered at the Baggage System project.

BAE Automated Systems Investors: Investors in BAE Automated Systems are also considered stakeholders as they affect and are affected by all decisions of the company. Any increase or decrease to the stock price of BAE Automated Systems will directly affect the investment of the investors. There are also decisions that the investors will be involved in due to their shares in the company. In the case with Denver International Airport, the investors of BAE could stand to lose significant amounts of money if the contract is lost. It is paramount for BAE to find a working relationship with the city of Denver to accomplish the original goal concerning the automated baggage system.

BAE Automated Systems Suppliers: Suppliers are affected because they supply materials, equipment, and any service that is required by the company or project. Decisions within the company have many different impacts on suppliers. The suppliers of BAE would be impacted if the contract ends, there would be no rental of equipment or purchase of materials. This would affect the profits of the suppliers and their relationship with BAE.

Local Denver Community, National Passengers, and International Passengers: The local city, Denver, is a stakeholder due to the potential increase in tax revenue, tourism, and jobs that would be created with the construction of a new international airport. The

passengers would be stakeholders as they would come from across the nation and across the world. Their experiences at the airport would be their first indication of the city and state and would drive the reputation of both around the globe.

Alternatives

First Alternative: Do nothing: Doing nothing would be the furthest from ideal in this case study. The breakdown in communications, the schedule delays, and the cost overruns already had a severe impact on the relationship between BAE, the PMT, the local contractors, and the city of Denver itself. Doing nothing would equate to BAE following the most recent decisions that were made. This would mean that BAE would continue to have strained relationships with all contractors and the PMT, work would stall as it already had, monetary issues would persist, and the system would face the same problems that had been plaguing it. The system had been a failure and had not met its design requirements and it would only lead to an increase in lost revenue for BAE along with a loss in international respect for the company. The disastrous ad hoc display of the baggage handling system to the media in 1994 by Denver caused a significant amount of lost respect to BAE and Denver (Flight Global, n.d.).

Second Alternative: Abandon the Project and cut losses: This was a strategy that was heavily considered by the executives of BAE and the project management from the BAE side at the project level. The numerous roadblocks that had been placed in the way of the project made the losses to BAE significant. The display of the automated system to the media, as previously mentioned, cause a loss of respect. The litigation that soon followed the disastrous events represented a massive potential loss of additional respect and

finances to BAE, BAE had created the \$232 million baggage system and was demanding that United pay them the remaining \$17 million for use of the system (Steers, n.d.). Cutting losses here and removing themselves from the process would be painful in the short term but the massive amount of ill will, the possible litigation for the future, and increasing complexity and black hole of the entire project makes cutting losses a viable option for this situation.

Third Alternative: Repair relations and re-establish communications: This option would require the city of Denver, the PMT, the local contractors, and BAE to re-establish communications and determine responsibilities and feasibility of the project. All players involved in the project became adversarial during the project due to consistent political referendums on the project which resulted in artificial time limits placed on the project. There may be agreements made to reduce the size and scope of the automated baggage handling system, they could establish proper communication channels, or agree to the use of other methods as an alternative until the system is operational. One of the recommendations was the extensive use of tugs and carts to transport bags through the tunnels to the concourses, the ventilation would have to be modified but it would suffice in the short term (*New Denver Airport: Impact of the Delayed Baggage System*, n.d.).

Recommendation

Abandon the Project and cut losses: Unfortunately, for this case, the best scenario would be to recognize the inability to create the system and cut losses before they mounted too high. There were several reports from committees and firms that were hired that explicitly stated that the project was simply too complex to achieve. There were numerous indicators that the project was destined for failure and was a foolish undertaking that represented a financial black hole. There were other projects that were implemented in other airports but at much a far smaller scale that

were much simpler. Recognizing when to cut losses is essential and the DIA automated baggage system was an untenable and impossible project for the then-current technology. Doing nothing is not viable as it would only lead to more losses and continued degraded communication. Any attempts to re-establish communication would fail as this had been attempted numerous times already with poor results. The local government informed BAE to sort their affairs out with the other contractors. This was also difficult to do with the ever-changing political nature of the project.

Works Cited Page

- *DIA20: The high-tech Denver airport baggage system that failed to launch.* (n.d.). Denver Business Journal. Retrieved February 9, 2023, from https://www.bizjournals.com/denver/blog/broadway_17th/2015/02/dia20-the-high-techairport-baggage-system-that.html
- Flight Global. *BAE Systems puts Denver luggage troubles behind it.* Flight Global. Retrieved February 9, 2023, from <https://www.flightglobal.com/bae-systems-puts-denver-luggage-troubles-behind-it/16577.article>
- Michael Schloh. (n.d.). *Analysis of the Denver International Airport baggage system.* Retrieved February 9, 2023, from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www5.in.tum.de/~huckle/schloh_DIA.pdf
- *New Denver Airport: Impact of the Delayed Baggage System.* (n.d.). Retrieved February 9, 2023, from <https://www.govinfo.gov/content/pkg/GAOREPORTS-RCED-95-35BR/html/GAOREPORTS-RCED-95-35BR.htm>

- Steers, S. (n.d.). *An Airport Divided*. Westword. Retrieved February 9, 2023, from <https://www.westword.com/news/an-airport-divided-5056604>
- Tanwar, R. (2013). Porter's Generic Competitive Strategies. *IOSR Journal of Business and Management*, 15, 11-17.