Case Study #2: The Baggage System at Denver – Project Management

The design and implementation of a fully automated baggage handling system at Denver International Airport faced significant challenges. Severe project management failures led to **delays**, cost **overruns**, and operational **inefficiencies**. This analysis highlights three critical issues underlying these failures.

1. Inadequate Scope Definition

The project aimed to implement an unprecedented automated system to handle all baggage transfers, including oversized items, using a network of 4,000 carts and 27 kilometers of track. These goals were overly **ambitious**, targeting unmatched speed (38 km/h) and complexity far beyond prior systems' capabilities.

Scope definition occurred **late** in the project, as the system's design began after construction was underway, limiting design flexibility.

Furthermore, the **lack** of prototype testing or phased implementation meant the system was committed **without** validation, increasing the risk of technical **failures**.

Misaligned scope and technological readiness caused cascading **delays** and required significant **rework** to make the system operable. This problem highlights the critical need for scope definition to align with achievable project milestones and proven technologies.

2. Poor Requirements Management

Requirements management was another significant **failure**. Stakeholders, including the City of Denver, United Airlines, and contractors, had **conflicting** priorities. For instance, United Airlines demanded faster performance than the technology could realistically achieve.

Key factors, such as variable baggage loads and operational challenges like line balancing, were **overlooked** during the initial requirements gathering. The tight 21-month timeline further **restricted** validation through simulations or testing, leaving the system **unprepared** for real-world conditions.

The lack of change management process meant that stakeholders' late-stage demands further increased costs and complicated implementation.

3. Lack of Contingency Planning

Despite the risks, **no** meaningful **backup** plan was in place. Conventional systems, such as tug carts and conveyor belts, were not pre-installed, leaving the airport **without** a fallback when the automated system failed. The system was deployed **all at once**, without phased testing or operational overlap with manual systems. It relied on **unproven** technologies, such as radio-frequency identification and distributed computer control, that were not fully tested under operational conditions.

Failures such as baggage cart jams and lost luggage led to severe **disruptions**. Retrofitting a backup system added **$500 million** in delay-related costs and an additional **$50–75 million** to install a conventional system as backup. Proactive risk assessments, phased implementation, and simulated testing could have mitigated these risks.

These issues were interconnected, amplifying their impact on the project's failure. They underscore the importance of realistic scope, effective requirements management, and robust contingency planning in complex projects. Learning from these mistakes can help prevent similar failures in the future.

Marta Sofia Farinha Antunes 2021216180