

Optimizing Airport Baggage Handling

A Case Study of Off-Airport Baggage Service at Copenhagen Airport

Graduate



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Problem: The baggage handling process at Copenhagen Airports A/S (CPH) faces severe challenges due to rising passenger and baggage volumes. Key issues include check-in congestion, causing long queues and increased wait times, and inadequate early baggage storage capacity, leading to manual interventions in baggage operations. The current system's limited scalability and adaptability hinder the efficient handling of future passenger growth. While CPH has undertaken various infrastructure investments to alleviate these issues, the high costs and intensive labor demands have prompted the exploration of more sustainable solutions, particularly Off-Airport Baggage Service (OABS). By focusing on these challenges, the research underscores the pressing need for innovative solutions in baggage handling processes at CPH.

Approach: Adopting a mixed-method approach, the research integrates both qualitative and quantitative analyses. Utilizing the Design for Six Sigma methodology, the study is structured into distinct phases:

- Defining the project scope, objectives, and customer requirements.
 - Measuring the existing baggage handling system to understand stakeholder roles, process workflows, and bottlenecks.
 - Analyzing operational data to pinpoint inefficiencies, complimented by an investigation and benchmarking of existing OABS, to identify key service components.
 - Designing five tailored OABS concepts by integrating benchmarked components to meet CPH's specific requirements.
 - Validating the OABS concepts through a sensitivity analysis, to identify the one that best meets CPH requirements. Followed by a SWOT analysis of the chosen OABS, revealing potential risks and devising strategies for mitigation.
- This systematic approach ensures a thorough analysis, setting the stage for solution development.

Result: The study had two main findings. Firstly, the design of an OABS concept with the Baggage Pick-Up Service emerging as the most viable concept for CPH. The SWOT analysis highlighted challenges, including dependency on external logistics, operational costs, passenger trust, sustainability, and technology reliance. To mitigate these challenges, the thesis advocates for robust stakeholder collaboration, targeted market segmentation, and comprehensive pilot testing of the concept.

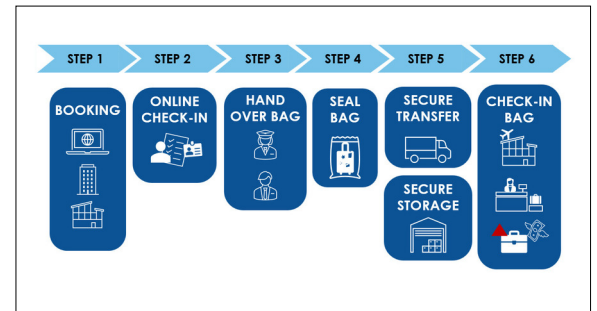
Secondly, it was discovered that CPH's core issue might not be capacity-related but stems from operational inefficiencies in the check-in process. This indicates that an OABS might not directly address the root problem and could introduce further complexities to the check-in process.

These insights emphasize the necessity of viewing

the baggage handling process holistically, suggesting that the true value of an OABS can only be realized by comprehensively understanding and addressing the fundamental issues it aims to solve. This study thus sets the groundwork for further detailed research into optimizing baggage handling processes.

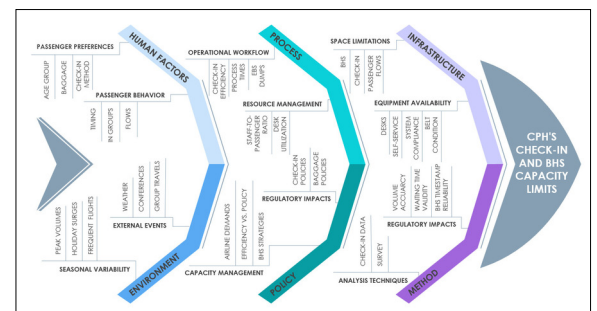
Illustration of the processes involved in the Baggage Pick-Up Service.

Own presentation



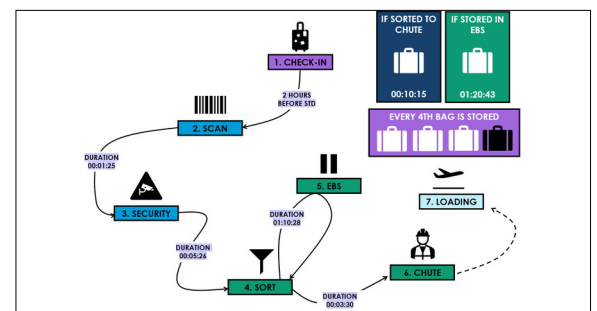
Fishbone Diagram constituting the causes for CPH's check-in and baggage handling system capacity challenges.

Own presentation



A simplified process overview of departing baggage and the duration between processes and baggage's cycle time.

Own presentation



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Subject Area

Business Engineering, Innovation in Products, Processes and Materials - Business Engineering and Productions

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