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Implementation of lean management in an airline cabin, a world first execution?

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Abstract

This research focuses on introduction of lean management into the cabin environment of an aircraft. It is based on a case study of a lean implementation project that was pioneered by Icelandair, which is Iceland's largest airline. The research examines the background and objectives of a lean-oriented project in the context of the very specific challenges and opportunities of cabin management in the airline environment. The paper examines how Icelandair uses lean management to reduce waste and increase benefits of their passengers as well as flight attendants. The paper uses qualitative research with project members and stakeholders within Icelandair to critically evaluate the nature of project success. It also uses quantitative research and measurements done on site. From that that conclusions are drawn about the execution of lean project management in the airline industry

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1. Introduction

Lean management is a process improvement methodology built on Toyota Production System (TPS) that focuses on reducing waste and increasing benefits. According to lean management there are eight categories that non-value added waste can fall into. These categories are: overproduction, waiting, unnecessary transport, over processing, excess inventory, unnecessary movement, defects and unused employee creativity.

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Icelandair, which is the largest airline in Iceland as well as being the largest privately owned company in the country, decided to implement lean management in 2008. Their pilot project was to introduce lean management to Icelandair Technical Services (ITS). That division of the company is responsible for maintenance and repairing of Icelandair's aircraft fleet. This lean management implementation was a big success, and resulted in reducing the time it took to change an engine in an airplane from twenty hours to eight hours. In the following years, lean management specialist was hired full time within that division to lead more improvements. Based on the success of lean management implementation within the ITS division, the company begun seeking opportunities to replicate that success by introducing lean management into other parts of their operation, including the office environment as well as the aircraft cabin, which is the first known lean management implementation example of its kind.

In an aircraft, the part where passengers sit is called a 'cabin'. Therefore the employees working there are called 'cabin crew'. But even though the main purpose of them being on board, is to perform security and safety related matters, such as helping everyone finding their way out in an emergency and assisting those in need, the part that takes most of their time is servicing their passengers. That means rolling a trolley through the cabin and supplying people with drinks and food. The front of the cabin, closer to the flight deck, is where the business class is. But where the two economy classes are, is called the 'aft cabin'.

A cabin in an aircraft is a place where everything has its place, where all spaces are used to their fullest, and the cabin crew and the airline have streamlined their work methods. In such work environment one could wonder if there is room for improvement. However there are many things in the work environment of a cabin that can cause waste due to how unstable it is. On each flight cabin crew works with different people, do not know what kind of passenger to expect, and are subject to unpredictable weather conditions.

The business model of Icelandair is that there are three classes in the cabin; economy class, economy comfort and business class. Icelandair has always made a priority to serve children well, through the years they have all gotten special service where they all get a package from the airline. Before, this service was all provided after take-off, which meant that the children didn't receive entertainment early enough. Previously that meant many visits to each child; one visit with a coloring book and colors, another with free headphones, third with a blanket, fourth with a free children's meal.

After a workshop with the cabin crew and inflight office the projects were prioritized in that way that Icelandair decided to implement lean management only to two economy classes. Three cabin crew members executed this part of the service. They work in the phase 'Work to meet', which means that one trolley, with two cabin crew members, starts in the front by the curtain that separates business class from the rest, and works their way towards the back of the cabin. The third cabin crew member starts with a separate trolley in the back of the cabin and works his way towards the front, until the two trolleys meet.

In 2014, Icelandair's route combined 38 destinations, 26 in Europe and 12 in Northern-America. After the kaizen workshops, projects were prioritized in that way that in the first phase, lean management in the cabin was implemented on European routes only, and a few months later it was implemented on Northern-America routes. Cabin crew member's work on all routes that are randomly assigned to their work schedule. All the aircrafts are Boeing 757, although the kitchens may differ between aircrafts, and that of course helps a lot on implementing lean in the cabin, since the cabin crew only need to be trained for one type of aircraft.

The lean cabin project started early in 2014. It was led by an external advisor that came and taught those that would manage the implementation about lean management at the office about the benefits the cabin could gain from lean management. Then project managers, from human resources and inflight department, were assigned as leaders of the project that was intended to carry the torch onwards and implement lean management into the cabin environment of the aircrafts. Lean management was only implemented in the aft cabin of the aircraft which is why this research is limited to the two economy classes and does not explore the business class environment.

2. Literature Review

This research sheds a light on how those tools and methods were used in the lean cabin implementation.

2.1. What is lean?

Lean management has many names e.g. lean thinking, and continuous improvement. This research uses lean management for all terms. Lean management has its origins in the Toyota Production System, often called TPS, where eliminating waste is one of the key essentials. TPS identifies seven different types of waste and later the eighth was added. Those are: Overproduction,

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