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DIGITALIZATION AND ITS

IMPACT ON AVIATION

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INTRODUCTION

Is your company ready for the digital age?

On the one hand, digitalization simply means converting analog data into digital data. On the other hand, though, it describes the automation of processes and business models by connecting digital technology, information and people. But what does this mean for companies? Performing this kind of transformation in a company needs courage, because digitalization can turn proven business models upside down. But of course, there are different options airlines can start with, such as modernizing current products and services with digital functions or integrating additional digital solutions into the existing portfolio. Airlines do not need to reinvent digitalization; they should rather secure the help of competent, innovative partners to implement the innovations made possible through digitalization.

Digitalization is one of the essential drivers of change today

Today, most airlines have already integrated digital processes like online check-in and real-time flight information for passengers. Several studies come to the conclusion that airlines fail with the technical implementation of new products. This could be due to an old IT infrastructure that needs updating or a lack of employees experienced in digitalization. Within the next years, there will be a huge bundle of opportunities that airlines need to catch up with if they do not want to find

themselves left behind. Development of new business models, the possibility of differentiation, increasing revenue and cost savings through greater efficiency are just a few of these opportunities. There are good examples of how airlines invest in innovation through digitalization, such as "Innovation Labs". These collaborations give startup companies the chance to invent, create and test new possibilities in different sectors, and airlines can profit from access to such achievements.

Another survey, driven by Bitkom, revealed that about 30% of all airlines do not have a digital strategy yet.[1] Most of them have implemented parts of it and all are sure that this is one of the most important points to take care of.

DIGITALIZED CUSTOMER EXPERIENCE

Nowadays, almost every customer uses a mobile device to book a flight and people are surrounded and spoiled by digital innovations that simplify their lives. To give you a sense of how important it is to address digitalization: Do you remember Nokia or Kodak? Both used to be leading companies in their business areas until they missed the train for digitalization.

Airlines are already doing a good job and are trying to catch up by implementing digitalized processes. But most projects are currently small-scale trials to sound out what could be possible.

In general, digitalization could take place all over the company – right up to a digital company culture that promotes innovations and the potential for optimization across all areas. As a first step, it is important to explore the potential of digitalization for customers and flight operations. Digitalization will offer new ways for a customer relationship. There will come a day when a good bonus mile program will no longer be sufficient. Wouldn't you want to deal with the airline that makes things simple and comfortable for you? It all starts with a quick and easy flight search and booking application with only a few steps. Regarding your current direct distribution channels, you should evaluate the value for your customers and ask yourself: Is it comfortable? Is it easy? How many steps until booking? Does it save time? One example of a new way of flight search is Lufthansa's chatbot "Mildred". Lufthansa is currently testing "Mildred" as a beta version on Facebook and it is able to find the cheapest flight.[2]

Furthermore, almost 3 out of 4 Airlines offer online check-in. Wouldn't it be great if your Airline App could check you in automatically

[1] https://www.bitkom.org/Presse/Presseinformation/Jedes-dritte-Luftfahrt-Unternehmen-noch-ohne-Digitalstrategie.html

[2] http://newsroom.lufthansagroup.com/de/meldungen/2016/q4/lufthansa-group-startet-chatbot.html

because it already knows you prefer a window seat? To realize interaction with customers, airlines can collect passenger data. The key word is big data, the large amounts of unstructured and semi-structured data that airlines are collecting about their customers every day and from different sources. Big data offers various possibilities of making a passenger feel individualized, but Airlines have to get creative to stay on top of the game. Here is an example of personalized offers: American Airlines switched from a collect-and-analyze approach of up-selling add-ons to a smart "collect, detect, act" system that analyzes 150 variables in a customer profile. Everything from previous destinations to prior purchases is analyzed in milliseconds to produce a tailor-made offer. This new system has increased American Airlines' revenue by more than 15%. It is most important to have an appropriate IT infrastructure which is able to collect, aggregate, analyze and visualize big data in real-time, as well as to have the know-how to understand and use the collected data properly. Data from customer behavior can be used to make key business decisions via market segmentation and predictive analytics. As a result, airlines need to see big data as a major competitive advantage and strategic asset for their organizations.

Customer data and preferences can also be used for the flight experience itself. Most long-distance flights already offer internet access, and domestic flights will follow shortly. This enables another way of optimizing customer satisfaction through personalized in-flight entertainment and on-board shopping. Furthermore, airlines could increase revenue through on-board ticket selling for tours, hotels, or any other products at the flight destination.

Traveling becomes more comfortable and individualized

There are plenty more possibilities, such as tracking a suitcase throughout a journey or a personal assistant that can tell you the time it takes to walk to the gate based on your location. Most of them become available due to innovative startup companies that create a thoroughly new customer experience before, during and also after the flight. There are startup companies that integrate virtual reality on board or have developed a special light concept that helps to prevent jetlag. In the future, more and more innovations will make our traveling much more comfortable, as there will be no waiting queue for baggage drop-off and it will be easier for passengers to get a connecting flight.

IMPACT OF DIGITALIZATION ON FLIGHT PERFORMANCE

Digitalization does not only have a huge impact on the flight experience of passengers or the utilization of big data: flight optimization will be an important topic for airlines in the future. Recent innovations enable aircrafts to calculate and identify the most efficient flight routes. This leads to enormous cost savings for airlines by reducing fuel consumption while simultaneously protecting the environment. On the one hand, less CO2 emissions are being released into the atmosphere, while on the other hand, efficient flight paths avoid overflying densely habited areas, which consequently reduces the noise disturbance of citizens.[3]

In addition to cost reductions and flight efficiency, there will be improvements within flight safety in the near future. For example, the enhancement of anti-collision systems will mean that they can be used not only during actual flight operations, but also to facilitate navigation at the airport facilities. Especially during foggy weather conditions, this could be very beneficial.

Flight Performance can be optimized tremendously

In summary, one can conclude that digitalization is gaining importance for the physical operation of flights. It could improve the efficiency of airlines, have environmental advantages and increase the level of flight safety.

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[3] https://www.bitkom.org/Presse/Presseinformation /Jedes-dritte-Luftfahrt-Unternehmen-noch-ohne-Digitalstrategie.html

MAINTENANCE (AND PRODUCTION)

Regular aircraft maintenance is an essential contributor to the safety of passengers. New developments to improve the safety of air travel shall therefore be encouraged. The engagement of Lufthansa in the development of digitalization is a perfect example for this. Similar to the Airbus BizLab, which is a development entity that promotes the progress of digitalization, the German airline established the "Lufthansa Innovation HUB". This organization "scouts and builds startups and digital companies with strong products for travel to jointly co-create innovative offers."[4]

> **Predictive Maintenance could reduce the risks of accidents**

However, Lufthansa Technik continues to emphasize its internal innovation development. One product coming out of this is predictive maintenance. With the help of "condition analytics", not only can the airline supervise the real-time condition of aircraft electronics, but the system is also capable of predicting the lifetime of parts. One important aspect to mention in this context is IoT (Internet of Things). Equipping electronic parts with sensors and connecting them to the internet is becoming more common and could increase efficiency, especially with regards to aircraft maintenance.[5] This reduces the probability of failures and makes it possible to proactively repair and maintain aircrafts before incidents occur. In addition, the airline is still concentrating on its "APOSEM" (Advanced Prediction of Severity effects on Engine Maintenance) project. This tool helps aircraft maintenance to observe engine performance over its complete lifetime with the aim of creating more precise prognoses about the aging behavior of engines.[6]

In addition to the optimization of MRO (Maintenance, Repair and Overhaul) processes, aircraft manufacturers will benefit from ongoing digitalization developments. The Airbus BizLab is currently working on a project for printing aircraft parts with the help of a 3D printer. This will take some weight off the shoulders of the very complex supply chain process and facilitate the process of aircraft manufacturing. Production will not be bound to specific locations at centralized factories; instead, suppliers or even customers equipped with a 3D-printer can take over this process.[7]

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[4] http://hub.lh.com/
[5] http://www.gruenderszene.de/lexikon/begriffe/internet-of-things

[6] https://www.lufthansa-technik.com/de/predictive-mtc
[7] https://www.airbus-bizlab.com/project/3dtrust/info

SUCCESS FACTORS AND CONCLUSION

The advancement of digitalization is already having an enormous impact on aviation today. Needless to say, this will not change in the future. As mentioned above, new technologies are leading to new opportunities for airlines and airports to improve air travel. But there is no need to change everything overnight, there are small steps a company can start with. For example, investigate your current IT Infrastructure – maybe a cloud-based system would be more effective? Analyze your steps for booking a flight – are they easy and comfortable? What could be modernized by digital functions? Also, regarding your flight performance, which ideas that are easy to add to your current system could be used to be more efficient?

Besides advantages like optimizing business operations, there are of course risks that come with digitalization. Airports could, for instance, experience difficult times due to their non-aviation earning structure. A major part of those earnings comes from parking facilities at the airport. Nowadays, passengers have numerous options for travelling to the airport. Good railway connections and a wide range of car-sharing offerings could reduce the number of parked cars at the airport and lead to massive revenue losses. In addition to this, local shopping is a substantial revenue stream for airports. New technologies accelerate passenger handling, which leads to

people spending less time at airports, which in turn results in them spending less money at the airport. Together with the increase in online shopping and the possibility of buying duty free products from airlines, another important revenue source could get smaller in the future.[8]

Also, the topic of IT security will become increasingly important. Data protection needs to be improved to prevent cyber criminality. Trainings can be used to counteract the problems of lack of know-how and uncertainty about digitalization. Workshops can detect what could be done better or what even needs to be improved, for example, refining security policies to protect client data.

In summary, one can conclude that new technologies arising from digitalization produce numerous opportunities for the optimization of air travel. Nevertheless, digitalization is not only beneficial from a customer perspective, it is also important for the players in aviation to have a digitalization strategy in place. Increasing profitability by optimizing flight performance is just as important as improving the customer experience. Preparing for the future is crucial. If you fail to keep up with the trend, you could well be left behind someday. New disruptors with innovative ideas are waiting just around the corner.

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[8] http://www.airliners.de/wie-digitalisierung-flughaefen-milliarden/41168

About PROLOGIS

With more than 15 years of experience and serving more than 50 airline clients worldwide, PROLOGIS is one of the leading aviation consultancies in the world. All PROLOGIS consultants have an average of 7 years of active experience in the airline industry; they are experts on Distribution & Revenue Management, Ground Operations & Airport Processes, Revenue Accounting, Network Planning & Scheduling, IT-Services (System Migration, Evaluation and Implementation). As a result of the international consultancy projects at network, low-cost and charter airlines in more than 34 countries, PROLOGIS knows best practice and can help to implement it into every client's existing structures.

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