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Digital Applications to Reduce the Time Passengers Spend at the Airport and Recommendations on the Issue

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Abstract

When considered specifically for passengers, airports need to improve themselves and meet expectations more practically and quickly, in line with the increasing number of passengers and their increasing expectations. One of the most challenging issues for airports is the inability to manage heavy passenger traffic in a healthy manner. For this reason, in recent years, efforts have been made to make intensive use of the elements provided by technology in order to effectively manage passenger traffic within the airport. At this point, the main goal is to direct passengers to technology-integrated tools for the necessary procedures in order to reduce the congestion of airports, thus completing their procedures more quickly and reducing the time they spend for their procedures at the airport. This situation is not only a necessity caused by passenger crowds; it is also a key element in understanding the management quality of an airport and being able to compete with other airports. In recent years, airport managements have attached great importance to digital elements and the presence of authorized personnel in the airport for the management of these elements. This study examines the effects of using technology at airports on minimizing the time passengers spend on their transactions at airports, and various system and application suggestions are presented on the issue.

Keywords: Airport, Airport Use, Digitalization, Passenger, Technology

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Introduction

Although airlines are seen as the primary and most valuable actors in the civil aviation sector, the growth experienced in the sector has shown that all actors in the sector are equally valuable and important. In addition to helping airlines carry out qualified operations, these actors also provide convenience in order to increase the value of sectoral operations and do not help to increase the quality of the airline transportation sector.

When the importance of the value of all the actors in the sector is considered, the value of airports in the sectoral sense is extremely remarkable. The features of airports, which are used not only for routine flight activities of airline companies and passengers but also for many different activities, are important for passengers and all other users.

When the airports are handled in the general perception, there is a view that they are places that only have a meaning for flight operations, but when it is considered in the commercial point that the sector has reached in general, it is understood that airports have an increasing value in commercial terms. Now, airports have reached a structure that has the potential and space to provide services in terms of activities other than flight operations such as sales, marketing, rest, accommodation, etc.

Considering all development processes, it is understood that the development of airports with the latest elements of technology in the current period is important. Airports, which have now become an extremely valuable area in commercial and institutional terms, are increasing their value with the benefits of the digital world. Therefore, it is not possible to think of the quality and functionality of airports without the development of technology and the increasing power of digitalization. The digitalization process is both a necessity for airports and a contributing factor for the competition of the sector.

Literature Review

Airports Digitalizing with Technology

In the current process, the technologies preferred in airports to make the processes progress faster are mostly beneficial in reducing the workload of airport administrations, increasing the time saving level of passengers and thus allowing them to use the airports more efficiently. In particular, technologies developed to easily meet the individual needs of passengers, visitors and users are valuable in increasing the effectiveness of airports (Kiliç, Ucler & Martin-Domingo, 2021).

In general, although the digitalization of airports seems to be technically important and beneficial for the parties that manage the airport's system, flight processes, etc., it is actually also important for passengers, visitors, and users. Although the digitalization of the airport can be considered as the ability of these segments to carry out their own transactions, the digitalization of airports provides great convenience in terms of the realization of many different applications, services and transactions within the airport. At this point, it is possible to say that digital airports are designed to shorten the processes for individuals, facilitate transactions and provide convenience to many people at the same time (Frost & Sullivan, 2018).

The “aerotropolis” approach, which is based on the idea of building airports with a city concept, has an importance in the technological development of airports. According to the aerotropolis approach, airports must be designed to meet the expectations of everyone who uses them, as a result of the increasing density of use. However, in order to meet these needs in a qualified manner, the technological infrastructure of the airports must be extremely strong and effective. For this reason, in airports based on the aerotropolis approach, all technological elements that can be used are designed to suit the interests of everyone who benefits from the airports (Rogerson, 2018).

Again, in terms of the use of technology at airports, the concept of the “smart airport” is seen to be very much highlighted. Applications that will facilitate the use of passengers from the time they enter an airport to the time they reach the plane are the basic functions of such airports. In addition, with smart airports, an area is created where the circles that use the airport technically will interact with each other faster and more actively, especially in terms of communication. When considered in line with the needs of the people who actually use the airport, within the smart airport concept, technology, in a sense, is designed with a digital approach for almost all of the services offered by the airport and offered to the people who will use them (Rajapaksha & Jayasuriya, 2020).

Kováčiková et al. (2022) have determined in their research that the Covid-19 pandemic is a very important triggering factor in the digital transformation process and speed of airports. According to the researchers' general assessment, efforts to minimize the contact element in particular have increased the use of digital elements in airports. In this way, new applications, new tools and new rules have been developed to reduce passenger-employee interaction and contact. Therefore, it is possible to say that the Covid-19 process is the main factor in the digital transformation process at airports to occur perhaps 5-6 years earlier.

Digitalization of Passenger Activities at Airports

Considering the time lost by most passengers for their transactions at the airport and the stress they experience, it is highly probable that the developed digital applications will positively affect the activities of many people working at the airport and airline companies by starting with the passengers. At the same time, an important step has been taken to eliminate the financial losses experienced by airline companies due to flight delays (Poulaki et al., 2021).

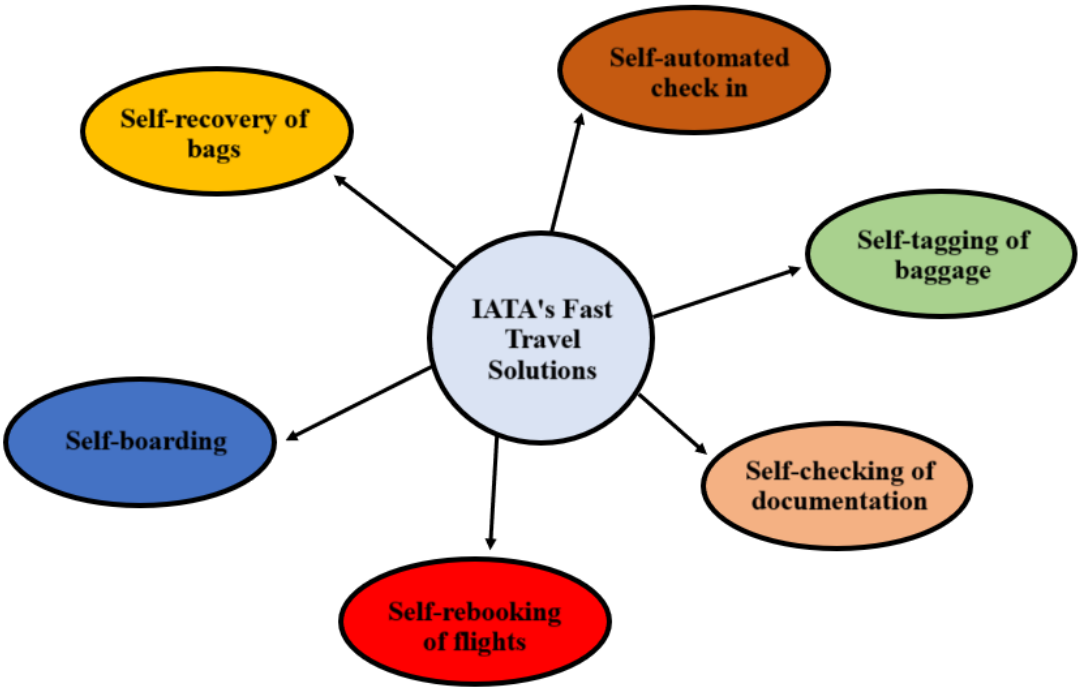

Figure 1. Digital applications within the Fast Travel Solutions system developed by IATA for passengers (image created by the author) (IATA, 2016)

The digital elements of the program called “Fast Travel Solutions”, which is shown in Figure 1 above and belongs to IATA (International Air Transport Association), are designed to enable passengers to carry out their transactions effectively and quickly, in line with the digital transformation identity of airports. This program, which is built entirely on passengers’ acting and making decisions on their

own, envisages passengers performing all or most of their transactions digitally, from the moment they enter the airport until the moment their journey begins.

In recent years, the most important technology applications that have been actively and intensively used in airports are as follows (Mohamed, Gomaa & El-Sherif, 2018):

- E-Gates: Used both at the airport entrance and during the flight, after security, passengers pass through these gates by scanning their tickets, passports, etc. with electronic devices. The aim in the process is to speed up the passage as much as possible and reduce the use of staff.

- Self-Check-In: These are systems that allow passengers to check their tickets and passports on their own, without waiting for a staff member, through vending machines and by scanning barcodes. The aim in the process is to speed up document transactions as much as possible and reduce the use of staff.

- Airport mobile application: Focuses on sharing information such as the general status of the airport, its density, map, flight times, etc. with passengers while they are inside or outside the airport.

When the existence of these basic applications is examined, it is seen that extremely useful steps are taken in order to reduce the congestion at the airports and to inform the passengers about the general situation regarding the airport in advance. These applications are important in order for the passengers to get the most out of the process, to save time and to be affected by the congestion at the airport to a minimum level.

The quality of digital elements at airports has great importance for passengers. The quality and sustainability of the technological elements that passengers benefit from positively affect all users of the airport, especially the airlines, as well as the passengers. Especially in terms of time management, the technological development, change and transformation of airports provide many important benefits in terms of the operation of the system. Perhaps the most important of these is the reduction of time and budget costs, as well as the prevention of large crowds waiting and occupying large areas for their transactions by making profit from the use of space (Kapila, Chatterjee & Mishra, 2020).

The technological applications developed for passengers at airports have largely adopted a logic called “self-service”, as stated by IATA, based on passengers handling their own transactions. The elements of the general and technical features of this technological infrastructure designed as self-service are as follows (Bogicevic et al., 2017):

- It helps to carry out many internal and external flight transactions without being dependent on airport staff.

- It allows the purchase of additional services ranging from travel planning to car rental.

- Sufficient technical and software equipment is provided for passengers to carry out many bureaucratic transactions as well as the transactions at the airport.

- It contains a wide data set containing passport, identity, flight and baggage information of passengers.

- It guides passengers to carry out their transactions audibly and visually without the need for any intensive and effective technical knowledge.

- Instead of written outputs, it can inform passengers instantly and quickly via smartphones, tablets, personal computers, e-mail or message.

- Guidance can be provided with various videos on how any transaction will work.

- Since the system cannot be personalized, passenger information is secured through one-time transactions.

When listed applications are considered, it is seen that technological developments and applications at airports contain extremely positive and helpful elements for all types of passengers. Although these technological applications have been developed for passengers, it is possible to say that these technological applications also have indirect advantages for the staff at the airport.

This smart structure at airports basically focuses on passengers performing their own transactions, very quickly and without waiting in any queues. Thus, even if they want to spend time at the airport, all the time is left to the passengers after the transactions in question are carried out through various vending machines and on-board computers. These vending machines and on-board computers are capable of performing all transactions of passengers, whether they enter their own information directly into the system, scan their documents (tickets, passports, etc.) into the reader system, or present themselves to face or finger reader systems. Therefore, digitalization at airports can meet the demands of passengers to a large extent and eliminate problems such as loss of time and stress that they may experience in terms of airport use (Otieno & Govender, 2016).

Plško & Remencová (2022) see encouraging passengers to use digital elements at airports as an extremely important move. According to the findings of the researchers, as a result of passengers interacting with digital elements much more, a significant time saving opportunity is achieved for both the passengers themselves and the airport employees. However, a digitally enabled airport will make it possible for passengers to engage airport staff much less often, which researchers believe is a demand from passengers as well.

Heiets et al. (2022) think that digital applications and tools within the airport enable communication between passengers and airport management and between passengers and airlines to be more effective and faster in terms of the functioning of the process. The researchers' determination is that it is possible to act quickly to solve the instant problems experienced by passengers, especially in booking processes, with the digital elements available at the airport, social media, mobile applications, etc. In this way, it is made more possible for passengers to encounter the least amount of problems for their transactions at the airport.

Generally speaking, one of the issues that causes the most time loss for almost all passengers at airports is the baggage claim process. During the process, airline employees also face a great risk of losing time. However, in digitalized airports, self-service baggage claim areas help passengers easily and quickly deliver their luggage to airline baggage areas. For these transactions carried out through a digital system, it is important to allocate the required width of space and to design an electronic mechanism that works at the expected speed (Kovynyov & Mikut, 2019).

System and Application Recommendations

In the current process, it is seen that there is a standard procedural structure worldwide regarding the digitalization of airports. In fact, many airports implement similar applications. The number of these applications increases and their content expands every day. However, it is essential to present various suggestions regarding some overlooked issues both in terms of practical application and the development of literature. Based on this, the suggestions presented can be listed as follows.

Elimination of quantity and quality problems

Although there are automatic systems in airports that assist passengers with ticketing, baggage delivery, seat selection, etc., their small number and the fact that the software and hardware systems within them are still not fast enough make the use of these systems dysfunctional. For this reason, both airline companies and airport managements must take new steps to increase the number of these automated systems and to increase their technical capacity. With the increasing passenger capacity every day, the investments of airports in this regard will be an indicator of their technological development.

Quantitative reduction of security procedures

Passengers have to communicate with police or equivalent authorities for a long time while passing through security checks, which brings with it a huge time loss problem. Therefore, it is necessary to integrate tools and systems into the process that allow passengers to easily pass through passport control, identity recognition, ticket control, etc. stages with various vending machines or their own smart digital devices. Applications such as thermal imaging, facial recognition, etc. may still remain in effect, but the use of innovative digital applications may be beneficial in order to speed up the process without ignoring security aspects. In this way, the work of the police and equivalent security forces will be made easier so that they can fully ensure security at the airport.

Increasing information opportunities regarding flight characteristics

Many passengers frequently ask questions to airline employees at the airport about the details of their flights. The vast majority of these questions are about the aircraft on which the flight will be carried out, the facilities to be offered during the flight, the refreshments to be provided during the flight, the operation of the transfer processes, etc. Airlines provide passengers with a certain amount of information on these issues through mobile applications and websites. However, passengers, who need details want to get answers to these questions from airline employees at the airport. Therefore, providing the details of the above-mentioned information to the passengers through vending machines, digital information and information systems, airport-specific mobile applications and robot assistants within the airport would be a qualified service.

Providing support for using airport facilities

It is observed that passengers are more hasty in accessing some airport facilities during periods when the time they will spend at the airport is short. The most important example of this is the difficulty of passengers finding an opportunity to eat during the short time at the airport. Therefore, joint action by airport managements and restaurants and other commercial areas at the airport will help passengers to save time. Ordering and preparing a meal before arriving at the airport, obtaining information about the status of a gift item to be purchased, accessing figures regarding foreign exchange transactions, obtaining information about the stock status of a needed medicine, etc. can be carried out quickly through one or more different applications. Some commercial areas providing service at the airport do not have their own websites or mobile applications, making it necessary for airport managements to provide support to their passengers in this regard.

Providing health and accessibility support

Individuals, who will use the airport but have health or physical disabilities are in strong need of the transportation and access support that will be provided to them at the airport. Although these individuals have the chance to find this support through airport employees after reaching the airport, it is not easy to find this support during some busy periods. Therefore, individuals with health or physical disabilities can report their condition early, through a mobile application, through digital channels, before arriving at the airport, and inform airport authorities so that this support can be provided to them quickly at the airport entrance, which will eliminate the problem of loss of time as well as various disabilities, injuries, etc. With such an application, it is important to employ a sufficient number of employees and provide the vehicle.

Sharing information about airport congestion

The density of airport usage is an important issue for passengers and visitors. Passengers, in particular, want to learn about the density of these areas of the airport for their actions such as resting, eating,

shopping, etc. while waiting for their flights. Although it is not possible to present the density inside airports to passengers in a digital environment with cameras for security reasons, an application or platform that will inform passengers about the density of these areas using digitalized images or videos with different methods will meet with a positive reaction from passengers.

Increasing the number of technical staff to solve problems

Assuming that digital systems and digital applications directly or indirectly connected to the airport are actively used, the employment of knowledgeable employees who will use these systems and applications quickly and effectively is of critical importance. Considering that airports are very busy areas, frequent use of digital channels will inevitably bring with it various technological problems. In order for these technological problems not to disrupt the flow within the existing airport, it is of critical value to employ employees who are competent in problem solving and to provide them with a sustainable technical training service.

Conclusion

The technological development and service provision of airports is important for the management of airports and represents an important example of the change in the quality of airports, especially for passengers. While the applications in question in the current process increase the usage value of airports, the importance of the benefits to be obtained from technological elements also increases as a result of the increasing needs of the passengers almost every day. Passengers, who live more closely with technology every day, want to interact more with technological elements when they arrive at airports in order to save time and to avoid the stress that airport procedures create/will create. For this reason, airport managements need to make investments in this direction by taking into account the benefits provided by technological elements.

The most striking element throughout the process is that the current technological elements at airports allow passengers to save a significant amount of time spent at the airport, while their perception of service improves and shapes their views on choosing an airport. In other words, an airport designed and operated with quality and technological elements becomes the primary choice for passengers. The fact that this situation is becoming increasingly obvious around the world shows that it is imperative for airport managers and technology developers to establish more frequent relationships. The highest level of benefit that passengers will receive regarding their transactions at airports will provide significant advantages and savings not only for themselves but also for the parties providing them with services.

Ultimately, meeting the technological expectations of passengers at airports is also of critical importance. Passengers will be eager to benefit more from airports, especially with the mobile communication tools they use frequently. Although the services in the current process meet the needs of the passengers to a great extent, steps will need to be taken to make the highly functional technological elements even more functional in order to reduce the transaction density despite the growing capacity of the airports. Therefore, both the suggestions put forward in this study and the opinions collected from the passengers themselves regarding their expectations will help shape the rest of the process and increase the technology-based service quality of airports.

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