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Effectiveness of Self-Service Technologies on Passenger Travel Experience at Muscat International Airport

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Abstract

Self-Service Technologies (SSTs) become a necessity to any airport's operation in order to reduce the processing time, cutting cost, convince users, raising the operational efficiency, improving service quality, gain the customer satisfaction and enhancing passengers travel experience. The aim of this research is to explore the effectiveness of SSTs on passenger travel experience at Muscat International Airport. The study depended on primary sourced data which has been collected through interviewing senior managers at the airport and distribution of a questionnaire among sample of passengers. While the secondary data explored via reviewing of literature of similar studies. After implementing qualitative and quantitative methods on the collected data, the results have met the research objectives. The SSTs at Muscat International Airport were acceptable to the passengers as these facilities have reduced the processing time, enhanced the passenger travel experience and raised the level of customer satisfaction. Although, the airport's authority keeps working and planning for more SSTs implementation as part of its continuous improvement plan.

1. Introduction

Airports operators around the world aimed to process their passengers with safe, secure and smooth procedures during their journey through the airport. The traveling via the airport go through many steps starting from the check-in, Bag Drop, Immigration control and boarding. These steps have a great impact on the passenger travel experience in term of the time and service quality. So, many leading airports tended to increase the implementation of Self-Service Technologies in order to provide a quick and smooth journey for the passengers with high quality standards to enhance the travel experience. Moreover, by providing the Self-Service Technologies the airport authority will ensure a high level of safety, security and operational efficiency (1).

Self-Service Technologies known as the approach that enable the users or customers to utilize different services by themselves without the need of face-to-face interaction with the service representative. With the continuous growth in the air transportation users, a lot of the airports around the globe play a role as a hub to connect and serve the large number of passengers and airport users (9). Wherefore, the airports using various of smart solutions and Self-Service Technologies to control and manage the traffic within their terminals and to add a value to the passenger experience. Moreover, recently the Covid-19 pandemic speed up the process of SSTs implementations in order to minimize the people interaction and contact.

Passenger travel Experience can be defined by the level of traveler's satisfaction about going

through the entire airport journey without facing any delay, disturb or confusion. Airports focusing on providing the best travel experience to their customers to grow their traffic, rise their income and save their reputation among other competitors. So, the airports operators attempt to meet the passenger needs and expectations by deploying the latest technologies like Self-Service solutions to ensure a seamless travel experience.

Muscat International Airport implements many SSTs as a part of its strategy to be a smart leading airport which provide a unique travel experience to it customers. Self-Service Kiosk is one of a multi SSTs and initiatives that will be implementing to have a fully Self-Service journey through all travel touch points and aligned with IATA fast travel program which consider as the global guidelines for the airport's authorities. The plan includes also, the Self-Service Bag Drop, Self-Service Immigration Check, Self-Service Boarding to the aircraft and all these steps will be integrated in the future with a single token journey. Currently, MIA is in the second phase where is the implementation of Self-Service Bag Drop. The plan of SSTs deployment has been delayed as a result of the Covid-19 pandemic. However, the SSTs can play a big role in the recovery stage to bring the operation activities as per the pre-pandemic situation by handling and processing more travelers in a shorter time (6). In addition, MIA has other SSTs such as, E-gates which can pass through it by using ID card, the Passenger Boarding Scan (PBS) which enable the passenger pass via electronic gates by scanning the ticket, automated pharmacy, automated machine to get SIM card and other SSTs. The research will focus on the effectiveness and feasibility of SSTs and how can affect the passenger travel experience at Muscat International Airport.

2. Problem Statement

The traveler passes across many touch points and subject to different procedures through the airport journey starting from the check-in, bag drop, immigration check points and ending with the boarding gates. The passenger's experience and thoughts about the airport journey come from the quality, time spent, ease of these steps. During the peak time at Muscat International Airport, a large number of passengers passing through this process and the main challenge is the time spent by each passenger to be proceed and clearance due to the long queue. The airport authority attempts to control this issue by implementing the Self-Service Kiosk which is the first phase of the multi-phases will come to form a full Self-Service process. However, because of the delay in implementing the rest of phases, the SSK didn't make a big difference. This research will discuss and highlights the effectiveness of implementing the SSTs at MIA and how can enhance the passenger travel experience and minimize the challenges that affect the traveler's journey.

3. Literature Review

A Self-Service Technology term can be defined as a specific soft or hardware that can enable the customers to serve themselves and benefit from certain services (8). Also, it is known as the direct involvement of customers by enable them to get the service independently without direct interaction with the employees (5). So, it is an interactive process between the consumer and specific technology which is representing the service provider.

The concept of SSTs has been developed and growth in the last decade as the biggest companies and organizations tend to implement these technologies in attempt to make the process simple to the staff and encourage the customer to conduct a self-process (8). However, the cost reduction was one of the main reasons behind the rapid growth of SSTs among different sectors in the world (4). As the labor cost significantly increased in the last years, the firms chose to utilize the technological revelation by applying the SSTs to achieve the cost reduction and to improve the service quality (11). SSTs helped the companies to provide their services and products without restrictions of time and place.

The latest technologies affected the pattern of business and simplifying the interaction between the customers and their service providers to be more efficient and convinced to the users (13).

Although, the implementation of SSTs allows the companies to provide unique services and adding value to their customers which give the companies a competition advantage among others (7). Moreover, the SSTs reduce the centralization as the consumers can proceed their services from different options (10). Organizations look to SSTs as a tool that can reduce the number of required employees, cost reduction and minimize the pressure on the service provider. While the customers consider the SSTs as a solution to avoid the long queuing and convince them with better services. The cost of using the traditional check-in counter for example it costs the Austrian Airlines 3.68 USD per agent while the cost of operating the kiosk is 0.16 USD (16). Also, the customers feel that they have more control to the different transactions than dealing with an agent (12). The end users of SSTs tend to have high quality service, a quick process, convinced options, unique experience and a series of alternatives (14). Furthermore, the SSTs increased the accuracy of services, reduce the margin of errors and create a greater chance to share the information between the customer and the service provider. SSTs become one of the powerful strategic tools and weapons that push the national plans and economies. Moreover, the SSTs give the customers more freedom to go through different products and services without being in rush or under pressure from the service agent. So, it is more convenient to the consumers and can be used in their own time and under their control of adding any extra products or services as per their needs and desires.

The use and development of SSTs become essential for all the sectors to make the life easier and to serve the people and organizations better. Aviation sector is one of the top sectors that implemented the SSTs earlier in the last decade as it fulfils the concept of the cost reduction for the companies while it is effective and time saving for the. The different firms in the sector keep investing on SST as it delegates a lot of services and activities to the consumers which reduce the dependence and pressure on their employees.

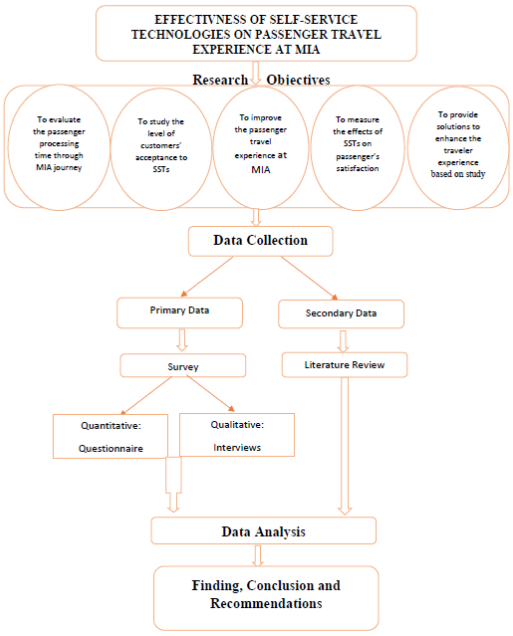
Nowadays, the trend of SSTs usage covered most of the airports around the world as it helped them to accomplish their main purpose which is providing a safe, secure and unique travel experience to their passengers (15). SSTs like, Self-Service Kiosk for Check-in, Self-Service Bag Drop, Immigration E-Gates and E-check points influenced the airport operational efficiency and improve the main processing activities.

4. Methodology

The main purpose of this research is to explore the effectiveness of SSTs on the passenger's travel experience at Muscat international Airport through conducting this study which will involve the airport's users, airport's management and previous similar studies. The research design is defined as the structure of the study's elements and blocks which help the researcher to reach the reasonable and credible results (3). It provides the full plan toward achieving the planned objectives by setting the best practices and define the needed methods to accomplish the research stages. This research designed to facilitate the researcher with the best practice of collecting and analyzing the required data.

There are many types of research designs that can be used to conduct the research and set the master plan to the study such as, descriptive, correlational, experimental, diagnostic and explanatory design (2). This research will be an exploratory designed as it will explore the effectiveness of SSTs on passenger travel experience at MIA. In addition, the study will use the qualitative methods by conducting focused interview with selected senior managers. On the other hand, the quantitative method will be applied through conducting a questionnaire to accomplish the research objectives. Moreover, the population of any research always selected to help in examine and explore the addressed problem of the study through conducting the selected tools and methods. In this research the selected group will be the users of Muscat International Airport, selected staff from Terminal Operation and Operation Project Delivery Team. The information from the targeted group will be

gathered through focused interview and via electronic questionnaire. The probability (random sampling) will be the applied sampling technique for this study. The sample size needed to conduct this study will be 250 of random respondents from MIA users through the electronic questionnaire. The questionnaire will contain selected questions with multiple choices to answer and it will be published among different channels like, email and social media to obtain the required information. Also, the interviews will be set with senior managers who have a direct interest of the Self-Service facilities at MIA. The interviews will be conducted with Terminal Service Manager and The Operation Projects Delivery Manager at MIA.



5. Result Analysis

The qualitative method applied by mentioning the answers of the interview questions while the quantitative methods have been conducted by deploying five statistical tests. The tests applied to the questionnaire data were, Descriptive, Histogram, Correlation, t-test and ANOVA test. In addition, Cronbach's Alpha test has been applied to explore the reliability degree for the research questionnaire. Thee researcher studied the related researches in the same topic and integrate them with this research to come out with the best results. Involving the most important part of the process (passengers) was significant to meet the research's objectives and that was done by collecting 214 users' feedback from a total targeted passenger 250 with a response rate of 85.5%. Also, conducting a focused interview with the Terminal Services Manager and the Operation Projects Delivery Manager who are directly responsible about the SSTs at MIA to explore the benefits, observed effects, challenges and future view of SSTs. In addition, by analyzing the data collected using both methods qualitative and quantitative, the findings showed that the results are supporting the research's objectives as they emphasized that the SSTs are reducing the processing time, enhancing the passenger travel experience, improving the satisfaction level and they are accepted by the customers. So, the airport's authority keeps developing the SSTs at MIA to provide the best services and enhance the passengers travel experience.

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	2287.918	212	10.79207	18.44712	0	1.176015
Columns	77.26808	9	8.585342	14.67512	3.15E-23	1.884777
Error	1116.232	1908	0.585027			
Total	3481.418	2129				

Table 8 expresses the result of ANOVA two factors analysis without replication which can represent the reliability level of the questionnaire by applying the Cronbach's Alpha equation. So, the reliability can be calculated as below:

Cronbach's Alpha = 1- (MS Errors/ MS Rows) = **0.945791**

Cronbach's alpha	Degree of Reliability
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Based on the above classification this questionnaire is reliable as the Cronbach's Alpha value is 0.945791 which represents an excellent reliability degree.

6. Conclusion

The research conclude that the SSTs have a direct impact on the passenger's travel experience and they enhance the level of customers satisfaction. The results showed that the study proof the research's objectives as the SSTs implementation reduced the processing time and improve the service quality. Also, the operation activities at Muscat International Airport have been improved by implementing the SSTs and that convinced the management to work on deploying more SSTs to enhance the operation and satisfy the passengers which showed a high tendency to use these facilities.

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