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The Impact of the Automated Check-in Process on Bahrain International Airport Customers

Fatema Saleh Jarssi
Information & Communication Technology
Bahrain Airport Services
Muharraq, Kingdom of Bahrain

Joy Winston
Thesis advisor
AMA International University Bahrain
Salmabad, Kingdom of Bahrain

Abstract:- This study is about understanding The Impact of the automated check-in process on Bahrain International Airport Customers which fallen under the modernization and implementation of the automated technologies in airport industries. The research will be limited to the International Airport of Bahrain and will focus on the reasons that made this solution necessary be implemented, inanition to the impacts and overall solution acceptance by passengers and staff that will handle it. The methodology used in this research was the Solvin's formula from random sample survey techniques, and the overall result was that employees and passengers has agreed that applying the automated check-in process will improve the customer's satisfaction from different three angles: Processing & Queuing time, software design & Expense reduce. Data analysis has been done through the SPSS system which confirmed that the survey questionnaire was reliable and the results were employee and passengers agreed on that the automated check-in process will improve the overall customer's satisfaction.

Keywords:- *Automated check-in , International Airport of Bahrain, SPSS, Customer Satisfaction.*

I. INTRODUCTION

Self service technologies were defined as technologies that provide services to customers directly without the presence of service employees. The use of those technologies has been increased and start replacing the traditional ways, as it will add value to the business and will increase the operation efficiency. Bahrain International Airport (BIA) receives approximate of 10 millions passengers yearly, which means that the workload in this airport is immense and any small mistake can have a big impact. Converting to self service technology in this field through the check-in counters will have a great benefit on the airport in reducing the passenger's waiting time and speed up the process. This technology will reduce the human errors in printing boarding passes and passing passengers without charging for the excess baggage. Staff shortage issues will be reduced which will in turn will reduce some extra costs like salaries, Overtime, and training. Such system will be in line with kingdom of Bahrain 2030 vision which targets to automate the government processes and transactions.

II. PROBLEM STATEMENT

The purpose of this study is to impose the automated self-check in service in Bahrain International Airport (BIA) to improve the passenger services. The effect of applying such study will be on passenger's satisfaction, cost, speed of service, and BIA reputation. Some passengers were more interested in using systems than dealing directly with employees, while others are aggressive to system use and wish to deal with humans.

III. OBJECTIVE OF THE STUDY

The study mainly focusing to determine the impact of automating the check in services in Bahrain International Airpot on reducing the different expenses, and the overall impact on the BIA customers.

IV. LIMITATION OF THE STUDY

- The study is limited to BIA and BAS specifically in the Kingdom of Bahrain, as it will be limited to BIA customers including the airlines and airport staff.
- The study has been conducted within 6 months that can be considered as limited period and prevent from covering other airports in the region.

V. LITERATURE REVIEW

The literature review will summarize the various studies conducted by other researchers regarding the same research topic regionally and globaly. there was a low aviation demand in the past because of the level of difficulty air travel was to access. But in recent times, international airports have become saturated with a rapidly increasing number of passengers daily. Many airports have begun expanding to accommodate the growing number of passengers. [1] Technology rapidly evolves and changes, making airports and airlines to constantly having to adapt to new technologies to keep up with its competitors. Airport self-service technologies today have many forms, from information kiosks, retail kiosks, internet booking, to checkingin online. Self-service technologies have had a huge impact on airports and airlines. Customers now have more control over the service delivery and are in control of the process. [2]. the comparisons between the traditional and the automated check-in process, along with the future trends. Modern technology has become an irreplaceable part of people's lives, which is now being reflected in many areas of the industry and services. An important area where

technology has been flourishing is the check-in process. Passengers are found to be completely satisfied in check-in all on their own. Having this process in the airport adds more weight on the time-saving advantage. [3] In order to develop a check-in product, airports must have a clear understanding of the market requirements, a key driver for an airport's process development. A check-in is usually seen as a single-task process. It is however, a collection of tasks such as confirming ticket, selecting plane seat, printing boarding pass, checking-in luggage, and verifying travel documents. By automating all these separate steps, the check-in process can be optimized even further. This of course means that the airport must adapt to these technologies and comply with the changing market demands. [4] Adapting the self service technology will have a success rate which will depend on the degree of acceptance of the company adapting this technology, and the customers that will be using it. The more the company is resistant to this technology, the more ineffective and useless the technology becomes, and the more frustrating it becomes to be used by the customers. [5] The adaptation of self-service kiosks has been implemented in the Cairo International Airport, and it is showing great results, but what is more important is the understanding of the procedure. Regardless, the acknowledgement of this new self-service technology inside Cairo International Airport depends on the state at which the staff works. The author had an expectation that the aircrafts will probably advance the traveler's utilization of e-registration systems, and so will reduce costs by diminishing the number of registration kiosks. The airport will then be able to have room for many improvements, and possibly for the baggage drop process. [6] These technologies provide many benefits to customers, and especially to passengers passing through international airports. Passengers will be able to purchase their tickets, check their luggage, and be able to monitor their flight's schedules through the airline's kiosks. This frees up the airport staff from simple data-entry tasks for thousands of customers every day. Instead, the staff has an opportunity of helping passengers facing trouble with these kiosks or need special assistance. The airport can accommodate a single multi-functional kiosk or have separate kiosks for each operation such as information kiosks, ticketing kiosks, retail kiosks, and CUSS kiosks. The functionalities of a CUSS kiosk would vary depending on the airport. These types of kiosks allow a passenger to perform all sorts of operations that would require a check-in counter in the past. [7]

VI. SYNTHESIS OF THE STUDY

The literatures discussed is considered as references to explain the role, the importance, and the effect of applying the automated check in service in BIA on different parties including the Bahrain Airport environment, the ground handler BAS, the passengers and airlines. The previous literature discusses such automated solutions in other countries airports, where different variables and study frames are implemented.

VII. FRAMEWORK OF THE STUDY

The conceptual framework can be defined as ideas and principles set in specific fields, that is explaining the Input - Output Process Framework (I/O). Figure 1 shows that it can be found that the Input is containing the BIA requirement from the new technology, the process will show the data that will be collected from different parties, and the output which is about the results that can be reached after applying the new technology to improve the overall check in process in BIA.

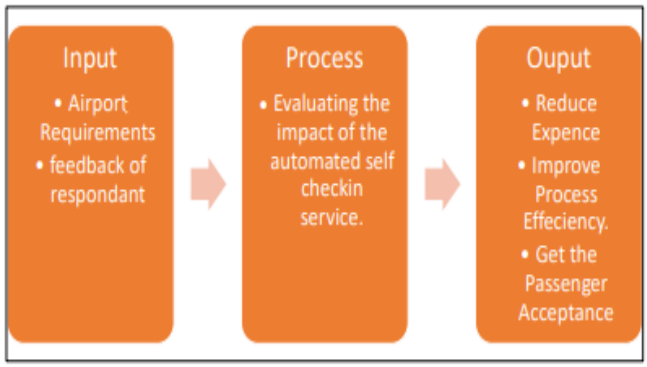

Fig 1:- Input Process Output Framework

VIII. METHODOLOGY

This section presents the methods used in this study in order to measure and analyze the data collected from the field. This section will detail also the research design used in this study. Moreover, it will list the population and sampling limited to this study, as well as the number of respondents received. This section will also describe the research instrument used for the used survey as well as the statistical instrument used to analyze the data collected.

A. Research Design

This study is considered as a descriptive research that describes the characteristics of BIA, and its check-in process along with the issues it faces. The method used in the study was quantitative, and the data was collected through a questionnaire. The above-mentioned method were designed to extract much information on the automated check-in service, technical installation, software design, kiosk culture, and by what means passengers will accept this solution in Bahrain International Airport.

B. Respondents of the Study

Respondents	Population N	Sample Size	Percentage
Airline Check in Staff	150	22	12.5%
Airport Management	45	7	3.75%
Group of Passengers	1005	145	83.75%
Total	1200	174	100%

Table 1:- Respondents of the study

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Table I, explains the respondent classification from, Airport Management which will include the civil aviation and airport authority, Airline check in staff which will be from the airline and the ground handler, and Group of passengers. The above data has been analyzed through SPSS application to get the statistic.

C. Development of Research Instrument

Measuring and classifying the answers were based on the Likert scale five levels of answers. The range of the Likert scale is as follows, 5: Strongly Agree, 4: Agree, 3: neutral, 2: disagree and 1: Strongly disagree. Those statements represented the automated check in variables: The Dependent Variable: Automated Self check-in service, Customer's Satisfaction including Software Design, Reduce Expense, Processing & Queuing Time.

D. Survay

1. Demographic

The demographic questions has been considered as characteristics of the population and samples that is represented by : Position, Gender, Age, years of experience, and occupation.

2. Automated Self Check in Service

Automated self check in service which will provide the control to the passenger to complete his travel process.

3. Customer's Satisfaction:

This section include the below variables:

a) Software design

The service's software may have simple clear interface with detailed instructions.

b) Reduce expenses

Reduction of expenses after implementing the self-service technology.

c) Processing & Queuing Time

Impact of the new service on processing and queuing time customers would spend checking-in.

IX. RESPONSE RATE

Table II, shows that the questionnaire has been circulated to 153 respondents in the Kingdom of Bahrain. This result is found to be more than the anticipated sample size calculated earlier, which was 149 respondents. The total number of valid surveys received was 146 responses. The below formula used to calculate the response rate:

$$Response\ Rate = \left(\frac{Responses\ Returned}{Surveys\ Sent\ Out}\right) * 100$$

$$Response\ Rate = \left(\frac{146}{149}\right) * 100 = 97.98\% \quad (1)$$

The response rate is 97.98%.

Total Survey distributed	Responses Received	Response Rate %
149	146	97.98%

Table 2:- Response rate

X. ANALYSIS RESULT

*A. **Demographic information***

The first question was in regard to the role of the respondent in the airport and in what manner the respondent would conduct themselves in the airport. The results are shown in the figure II below: That 61% of the respondents were passengers have good experience in the traditional check in way, 29.5% were ground handler staff are handling the process of check in, 2.05% were civil aviation and 4.79% were from Airport Authority, where the role of supervising the overall operation in the airport. 2.47% were from the airlines, where those staff were involved in the check in operation as well as with the ground handler staff.

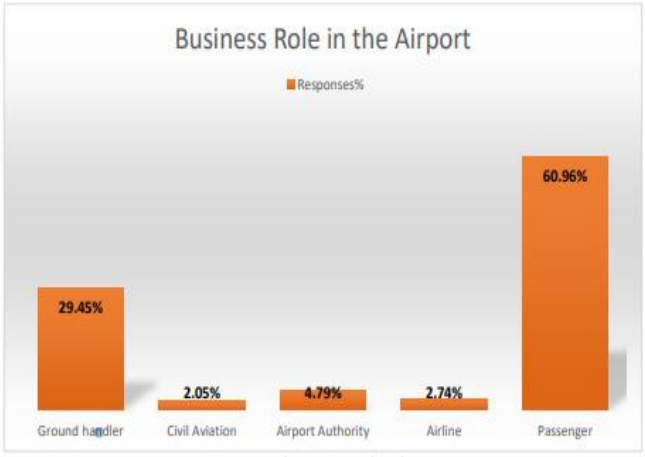

Fig 2:- Respondent Business Role in the Airport

Figure 3, was about the gender of the respondent, which is shown below: he percentage of females answered the survey was 53% which is higher in compare to the males (47%). The numbers are not far off from each other, making it apparent that the gender of the respondents will not have a critical impact on the results found in this conducted survey.

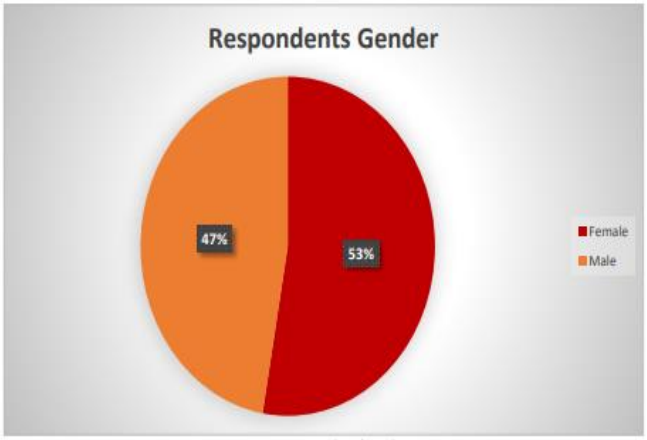

Fig 3:- Respondents' Gender

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Figure 4, captured the range of ages of the respondents, 32.88% of the respondents were in the age range between 35 and 44 years, and 29.45% were in the age range of 25 to 34 years. This can be used to explain the results captured for the overall questionnaire, as the young adults and middle age are well immersed in technology and understand in what way it can make any process more efficient. Therefore, these age groups will push for technology and will agree on such systems.

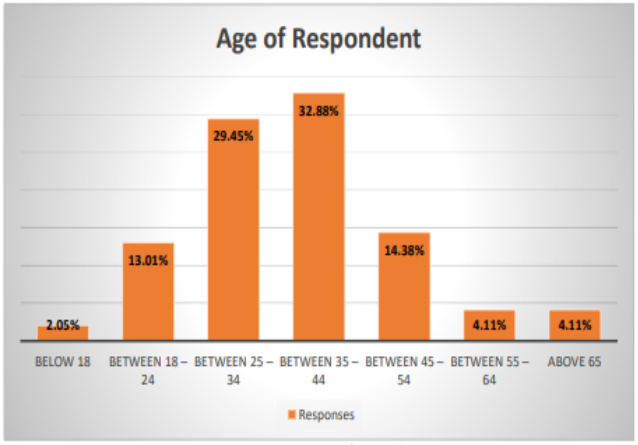

Fig 4:- Age of Respondent

B. Automated Self Check in Service Section

Figure 5, he respondents' point of view on the automated self- check-in service is Agree. The overall weighted mean is 3.911 and was captured as Agree. The statement "Automated Self check-in service shows modern airport image" has scored the highest mean in this section. This means most of the respondents, whether the respondents were in support of this technology or not, agreed that technology helps make an airport look more modernized.

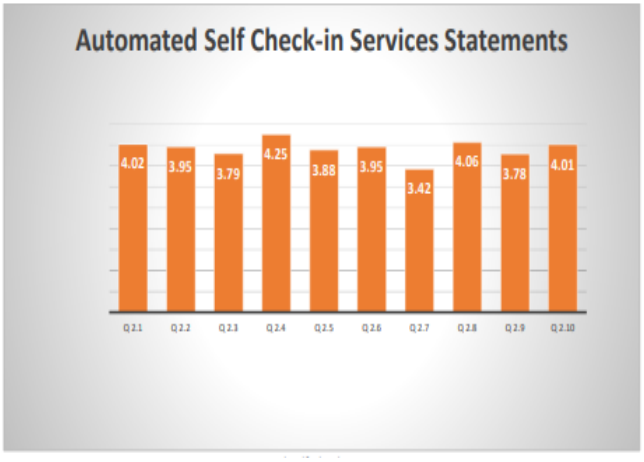

Fig 5:- Automated Self Check-in Services Statements

C. Customer Satisfaction

1. Software Design

Figure 6, The respondents' point of view on the automated selfcheck-in service software design is Agree. The overall weighted mean is 4.178 and has been captured as Agree. The high-ranking mean was 4.26 for the statement that the interface should be tailored for all level of users including less technical knowledge people. Most of the respondents agree that if these technologies were to be implemented and should be very simple and user-friendly. The respondents believe that even if the technology was very effective and high in functionality, it would be regarded as useless if the average passenger did not know in what way to use them.

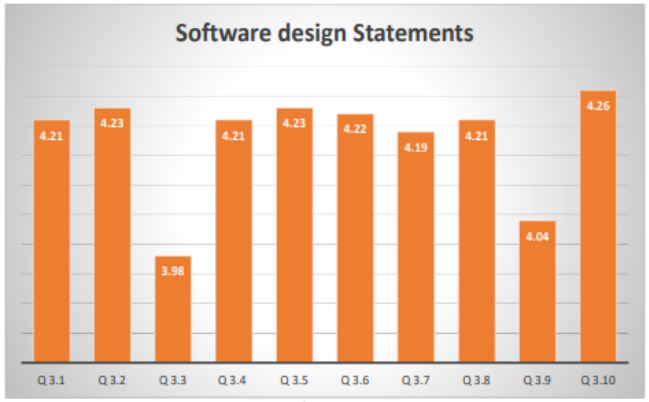

Fig 6:- Technological development response

2. Reduce Expense

Figure 7, the respondent point of view on the automated self- check-in service reduce expenses is Agree. The overall weighted mean is 3.821 and has been captured as Agree. The high-ranking mean was 3.98, for the statement replacing the traditional check in way with the automated self-service will allow to engage the staff in other roles. Most of the respondents believe that these self-check-in technologies will allow the staff to engage in different tasks other than the timedraining process of checking-in passengers. The staff could be of more assistance in the event of staff shortage, without risking the disruption of the customer check-in process.

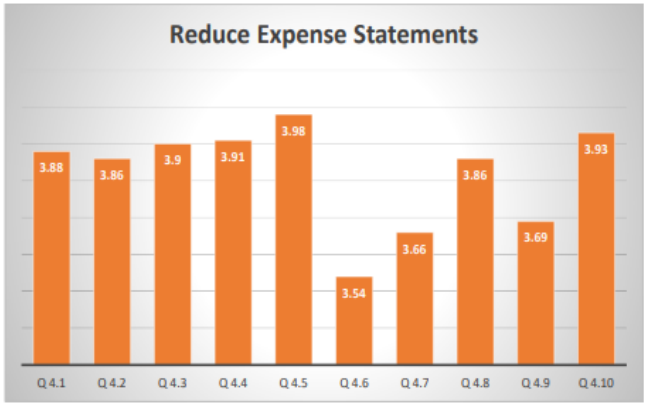

Fig 7:- Reduce Expense Statements

3. Processing & Queuing Time

Figure 8, the respondent point of view on the Automated self- check-in service will reduce expenses is Agree. The overall weighted mean is 3.97 and has been captured as Agree. The high ranking mean for this statement was 4.02 for the statement Replacing the

traditional checkin way with the automated self-service will reduce the overall transaction time. This means that most of the respondents acknowledge that the traditional check-in process is time constraining and that self- service check-in will help speed up this process. Some of the older respondents disagree with this statement, believing that their lack of knowledge with handling technology will only prolong their time wasted on checking-in and would delay them from reaching to their flight. However, this issue can be easily solved, as with now more free staff can be designated nearby the self-check-in kiosks and assist any passenger facing any issues.

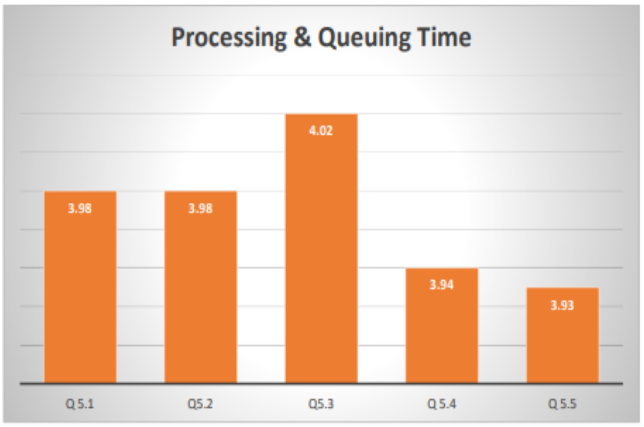

Fig 8:- Processing & Queuing Time

XI. SUMMARY FINDING AND DISCUSSION

In regards to the Automated Self-check-in Service, the overall weighted mean of 3.911, and reasonable responds with Agree on the automated self-check-in technology and their relation to the airport development and shows their acceptance. This indicates that a lot of the respondents are open to the idea of having an automated check-in service, while a few of the respondents had some reservation about the technology or chose to remain neutral on this topic. In terms of System Design with overall weighted mean of 4.178, respondents agreed on the automated self-check-in technology and their relation to the airport development and shows their acceptance. Most of the respondents agree that if the selfservice check-in technology would be implemented in airports, the user interface for the system should be very simple and clear, to avoid any confusion among passengers once using the service, as well as helping older passengers that may have trouble understanding the process or what should be done.

Based on an overall weighted mean of 3.821 in the Expense reduce, respondents agreed on the automated self-check-in technology and their relation to the airport development and shows their acceptance. The respondents agree that this technology will help cut down costs for airports. Airports will then be able to invest and create more facilities that will attract more passengers, allowing them to expand and grow. In terms of Processing and Queuing time with overall weighted mean of 3.97, respondents were agreed on the automated selfcheck-in technology and their relation to the airport development and shows their acceptance. Many respondents believe that this service will help solve the long waiting time in queues that passengers must endure. Creating self-service check-in systems will reduce waiting time and will be able to make a passenger's experience in airports more pleasant. Some of the respondents believe that this service will slow the queue down even more if the passengers are not familiar with the technology. It should be taken in to consideration that passengers might initially face issues with the service as it is a new technology. However, with time and as passengers begin adapting to the technology, the waiting lines in the airports will move much quicker. Airport staff should also be present around this service if any assistance is needed at first, which with time will become very seldom.

XII. CONCLUSTION

Based on the results of this study, the following conclusion points are drawn:

- The Bahrain International Airport must begin implementing and shifting from traditional check-in to automated check-in service, to make the Airport efficient.
- The Automated Self-check-in Service will help in reducing the airport's overall future cost and expenses and will have a positive impact on the Airport.
- The Automated Self-Check-In Service will gain customer acceptance and satisfaction if implemented in a proper way that fits all the stakeholders, which mainly includes the passengers and the airlines alike.
- The Automated Check-in System will contribute in accomplishing one of Bahrain's vision for 2030.

RECOMANDATION

Based on the pervious findings and conclusion, the below recommendations were offered:

- Bahrain International Airport should implement a comprehensive automated self- check-in technology to improve its operations and garner more customer satisfaction, and educate its staff that are not aware or familiar with the new technologies.
- The Software Design of the Automated Self-service Check-in system should have an easy, user-friendly interface, and should be accessible by different level of users, keeping in mind nontechnical and the old people that will have difficulties in using the service if the system is too complex.
- The International Airport of Bahrain will benefit from implementing such technology as it will cut down costs and expenses, as well as profit the airport and move it into the future as an advanced, highly modernized airport.
- Implementing this technology will increase the value of the airport, making it highly automated by giving the transaction control to the passenger, as well as having high security features including x-rays, updated database of passengers. However, such modules in a system need to be frequently reviewed to avoid the pass of illegal luggage or unauthorized passengers.

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