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Role of Information Technology in Tourism Study of Airport Self Service Technology

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Abstract—*Information technology played vital role in tourism. This intensive and extensive study as the relevance and impact of self-service technology to consumers in general and especially to passengers since they have many uses in international airports, Therefore I have prepared a model that includes all applications of self-service technology in all international airports and specifically focused on the Common Use self-service technology (CUSS) and compared with a corresponding system in the function is called Common User Terminal Equipment (CUTE) This comparison shows the difference between them and proves that self-service technology help to raise the efficiency and performance of airports and airlines. Also this technology help to reduce costs in terms of staff and the provision of time and effort, etc., as well as the study shows the feasibility of replacing the CUTE system with the CUSS system or not in the near future, this has already been used in some international airports and I hope to apply it in Cairo International Airport and all this supported the output of the case study that I made this research and the output will be the beginning of the development or to change the current model of the traditional check-in and this is the objective of the research, when completed, namely, re-engineering or restructuring of the traditional check-in model which uses the CUTE system and so by replacing this system with CUSS system.*

Keywords*: Self Service and CUSS Kiosk.*

1. INTRODUCTION

Self-service in general is most definitely "in". From supermarket checkout to airline check-in kiosks, self service is proven to be a very large benefit to business, and more importantly their customers.

The use of self-service is not a new concept; banks have been using it for a long time now. The banking industry adopted the ATM concept for reducing costs and providing better services for the customers. The first ATM was installed in the early 1967 by Barclays Bank in London, UK The banks started installing ATM machines in the bank buildings first and where a cash dispensing machine was not linked to the account directly. With the spread of internet connectivity the ATM machines have become a part of the urban landscape and available at parks, shopping malls or airports with many more services on offer than just cash dispensing. The adoption of self-service is gaining importance in other industries for two main reasons, increased efficiency and reduced costs and labor. Self-service puts control into hands of the customers. It has been observed that customers are now more open to experiment with kiosks [2]. Other industries like retail, finance, hotels, etc. are considering using of self-service kiosks. Even libraries are trying out self-service technologies to issue books. The customers are now ready to make bigger transactions with kiosks and many models for self-service have been put to the test [3] After all this we have a new technology called self service Technology (SST). A self service Technology (SST) is an object which allows customers to interact with self service software (SSS). Such kiosks can be found in a variety of locations, and they typically include a computer loaded with the software and housed inside a protective case, although a self service kiosk (SSK) can also consist of a computer placed at a table or desk in an accessible area for customers to use. An internet-based self-service access must meet specific requirements of information technology as well as general requirements of the access system architecture. Only the integration of different functions, e.g. electronic payment, digital signature etc., can enable electronic transactions which allow 'one-, stop-non-stop-services'. [4]. Customers can adopt to use a self service kiosk to meet a need, rather than interacting with an employee of a company, and in some cases, customers may be required to use the kiosk.

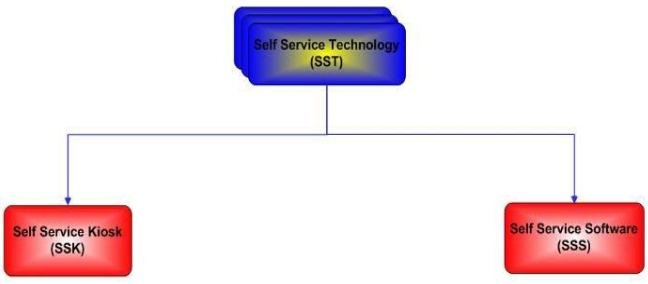

Fig. 1: The Classification of Self-Service Technology

From the consumer angle, time and cost savings is use of self-service technology biggest benefit, reduce waiting time, more

efficient, flexible and convenient to use, make consumers to customize the customization - more high-level [5], in addition, the convenient of location, and the use of IT services feelings of the Fun [6], and even some scholars have pointed out: when consumers used self-service transaction process, they can feel spontaneous delight of spontaneous. However, another group of consumers, the service technology transfer process has brought their anxiety and not the smooth operation of doubts; so that consumers will consider the cost size of use new technologies, whether it is worthwhile to transfer or not [7]. There are many studies of self-service technology [2], mostly focused on self-service technology attributes of the service quality performance, the impact of service providers, and the perspective is service a supplier to discuss impact factors of Self-Service Technologies (SSTs) performance. This study is based on the consumer s point of view, and analysis services innovative model of self-service technology attitudes impact factors. The result will provide the best service and business in the industry. The purpose of this study was to discuss service innovation to Self-Service Technologies attitude impact factors. The purpose of the study is to establish the key parameters that affect the self-service and traditional check-in process and the factors that influence them, All these factors will comes to live case study from experimental research at Cairo International Airport, to develop generic model which could be used to determine the efficiency and estimate the resources, to develop a simulation model with the understanding gained for estimating resources for the whole check-in system for any airport ,The model should be simple enough to understand and should use commonly available software, so that it is accessible to all and to add value to the industry understanding of the self-service and traditional check-in process in a tangible way for future use.

In recent years the airlines have started using innovative Check-in technologies. The dedicated Self-service Check-in kiosks are now an integral part of the airport facility and the new e-ticket also allows the use of the internet for check-in. These processes enable airlines to reduce the time and number of staff required, thus saving substantial costs in operations. These changes in the process have allowed airports to handle more passengers in the same space [8] by reducing queues. Further to this, IATA is advocating CUSS- Common Use Self Service, similar to standardized ATMs- Automated Trailer Machines at banks. New CUSS standards will allow the sharing of kiosks among airlines similar to CUTE- Common User Terminal Equipment, and also give access to the technology for the smaller airlines. The advantages of adopting CUSS have been discussed in many papers and conferences alike and will be discussed later in detail. The impacts these new check-in technologies have the design and operation of the airports and how far it has been successful in reducing queues is not quite evident. There is a need to understand the process and its implication on the effects that it will have on operations and implementation. Also it is essential to study what kind of changes will be required for moving from one technology to another. Also, there are no set standards for installing the system at the airports. Because technology is new, IATA does not have any standard procedures or thumb rules to estimate the requirements. There are many sophisticated simulation tools available that need a lot of inputs and are costly for an airport to acquire.

In this section, describes the passenger check-in at the airport. This includes conventional check-in and self-service check-in, the history of self service technology, the importance of the self-service technology and the workforce is reviewed. In section 2, I collected all types of self –service kiosks at international airports as a model; I focused on the steps of CUSS Kiosk. In section 3 comparisons between the traditional check-in (CUTE System) & self-service check-in (CUSS Kiosk) and the best practices of CUSS kiosk in the International Airports. Section 4, will provide the analysis of Egypt Air self-service check-in process at Cairo International Airport. This analysis is based on observational studies conducted during 2009 to 2010; additionally this section focuses on the acceptance of the technology by both the workers and the passengers. Data collected from passenger and agent surveys is provided, summarizes the findings from an in-depth station case study. I was deducing the generic model from the result of the survey of case study, The purpose of this case study was to raise performance and to help airlines to reduce their costs in employee staff, time and to identify best practices both operationally and organizationally in the eService process in an attempt to gain operational efficiency across the Egypt Air network.

In section 5, I was presented the case studies about all types of the airport kiosk in the international Airports with in the common factor of them. In section 6, describes the future work about using the generic model to make simulation model within the result of the survey of Cairo International Airport.

2. OVERVIEW OF AIRPORT SST

All previous studies focused only on one type of these kiosks and this is why we can deduce a general model for all the kiosks at the airports “Fig.5” also attached to this framework a comprehensive study of all types of kiosks not only at airports but also in life in Section 5. Airport kiosk is a standalone desk or an interactive computer terminal that provides information, goods, or services (Information Kiosk). In many airports, individuals can purchase tickets, check baggage, and monitor the status of arriving and departing flights at a specific airline's computerized kiosks (Ticketing Kiosk). Several airlines rely on kiosks to ease congestion and prevent long lines at check-in counters (CUSS KIOSK). An airport kiosk may also be a booth where people can purchase food, magazines, or souvenirs from a salesperson before or after a flight (Retail Kiosk).

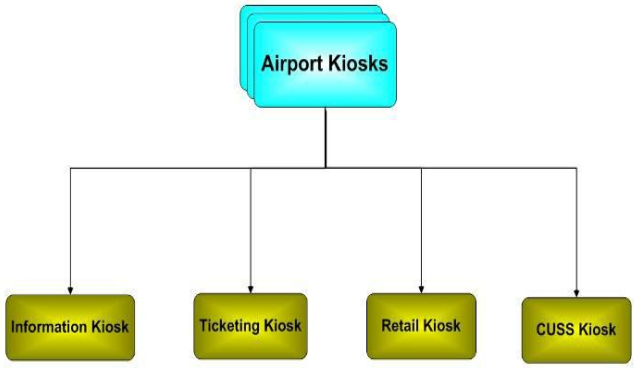

Fig. 2: Classification for all kiosks of International Airport

An interactive airport kiosk offers many advantages to both customers and airline employees. Computerized terminals allow customers to avoid long lines at ticket counters and check in for their flights at their own convenience. Customer service agents are relieved of the burden of manually entering information and checking in large numbers of passengers before flights. Instead, they are able to help people who have difficulties with kiosks and those who need to discuss special accommodations. The self-service model reduces or in some instances eliminates the requirement for airline personnel to "interface" for passengers, repetitively performing tasks that passengers often are willing and able to do for themselves. At least half-dozen vendors provide kiosk products to the air-travel industry. Many airlines are challenged in keeping a large force of ticket agents on standby 24/7 to handle surges in passenger traffic, whereas almost any airline can maintain dozens or even hundreds of kiosks at the ready to issue tickets, baggage tags, seat assignments, and boarding passes. Adopters of the technology assert that kiosks eliminate tedious repetitive work and free airline agents to deliver "real customer service."

2.1 Information Kiosk

The Info Kiosk provides passengers with information on Airport facilities a number of information kiosks will be planned. Information Kiosks will consist of freestanding column-type, or wall mounted, workstations consisting of an industrial PC with touch screen interface. The kiosks will have an easy graphical interface with multilingual support (Arabic, English and other languages as required) and provides the traveling public with information on airport facilities (restaurants, shops, lounge, flight details, etc.). Moreover, the kiosks can be used by the passengers and airport operator to provide (sponsored) information on hotels, car rentals, tours and other services that might be of interest to the public.

2.2 Ticketing Kiosk

Automated ticketing kiosks (frequently called self-service kiosks) are a subset of the more encompassing category of information technology known as Interactive Transaction Machines (ITMs). Automated teller machines (ATMs), patented in 1973 and extensively adopted by commercial banking in the mid-1980s, now number over 350 thousand in the U.S. alone and are one of the most widely used forms of ITM technology. Unlike some forms of ITMs, however, kiosks employed by the banking and airline industries do not function as standalone devices (such as self-service gas pumps). Rather, teller and ticketing machines are networked peripheral IT devices whose interfaces give consumers direct access to companies' centralized customer-service systems. Computerized, self-service kiosks are found near the check-in counters for many large airlines. At these terminals, individuals can review prices and flight times, and either purchase or confirm reservations. A self-service kiosk is able to confirm a traveler's identity by prompting him or her to input a confirmation number and insert the credit card used to purchase tickets. The kiosk has access to an airline's information database, and is able to immediately access profiles and payment information. If the terminal is unable to confirm a purchase or a customer does not have his or her credit card handy, the screen usually directs the traveler to a manned ticked counter so that he or she can speak with a customer service agent; the features and benefits as follows:

a) Self-service kiosks reduce costs by lowering employee headcount.

b) Improves customer retention rate.

c) Reduced costs for basic service levels. Reduces waiting in line by customer.

d) Virtual sales assistant increases sales.

2.3 Retail Kiosk

The Retail kiosks contain the largest segment of deployed kiosk applications. Analysts estimate that retail kiosks comprise at least 30% of the entire self-service kiosk market. Locations include Department Stores, Grocery Stores, Big Box Specialty Retailers and Convenience Stores. Retail kiosks provide convenient services to customers such as bridal and gift registry, non-stock product ordering, way finding directories, employment, product lookup, company information and targeted offers. These services increase consumer awareness and offer new channels for retailers to grow their business. That Includes loyalty, product information, store directory and many more Studies show an average of 7% increase in incremental sales when kiosks are added. More compelling investment returns are as follows:

a) Loyalty cards reward frequent customers, increasing brand loyalty.

b) Self-service kiosks reduce costs by lowering employee headcount.

c) Reduction in inventory overhead and warehousing costs.

d) Increased customer satisfaction = increased sales.

2.4 CUSS Kiosk

This evolving pattern will enable passengers to obtain boarding passes, check baggage, and conduct other transactions at times and places of their convenience. Passenger check in procedures will gradually shift from check in procedures performed at check in counters, to check in procedures performed at home from the internet, by mobile phone, or through self service check in facilities at the airport such as CUSS. The trend is towards common use equipment which may consist of free standing column type or counter type workstations with built-in Automated Ticket and Boarding pass (ATB) printer. The CUSS will provide ticketed passengers the ability to perform many tasks, not limited to, check-in for flights, select or change a seat assignment, and obtain a boarding pass for their departures. The CUSS will be used by self-service passengers to check-in, seat allocation, boarding pass printing, and baggage check-in in a common use environment. Self-service is becoming the common check-in mechanism in Europe, US and in the many airport. In the MEA- Middle East Area region it started as a dedicated self-service and the first CUSS kiosks have been installed at Cairo International Airport TB3. The CUSS will be designed for the use of different types of passengers with or without luggage where passengers with luggage could use the new use facility of the Common Use Baggage System-described in the above Industry Development section. The CUSS platform software will be responsible for managing the entire Kiosks System, The final configuration of the CUSS kiosk will very much depend on airport operational and security requirements. The equipment required for CUSS consists of two redundant servers (usually the same servers used for CUTE system), located in the main equipment room MER – Main Equipment Room and self service kiosks. The stand alone kiosks are placed in a group of 10 kiosks and the location of kiosks is horizontal to its success. With so many kiosk types available and with the changing requirements the configuration of the check-in kiosks depends on a large number of factors. The main aspects to be considered in the placement of kiosks are:

a) Visibility.

b) Accessibility and movement of passenger traffic.

c) Comfort and privacy of the passenger.

Fig. 3: CUSS Kiosk Machine

There are many possible solutions for the layout of kiosks and it has been observed that for the efficient use of kiosks it is essential to have some roving agents to help the customers increase their transaction speed .These are steps the procedures of travel using self-service technology at international airports, The new concept of self-service kiosks has divided the check-in process in two parts:

- Getting the boarding pass.
- Getting the bag-tag to dropping the bags at bag drop-off.

The passenger arrives at the airport and proceeds to the kiosk, which issues the boarding pass based on the information provided by the passenger .The passenger then proceeds to the fast baggage drop-off if he/she has any baggage otherwise can move to the security check .The main steps in the check-in process through kiosk are shown in “Fig. 3”.

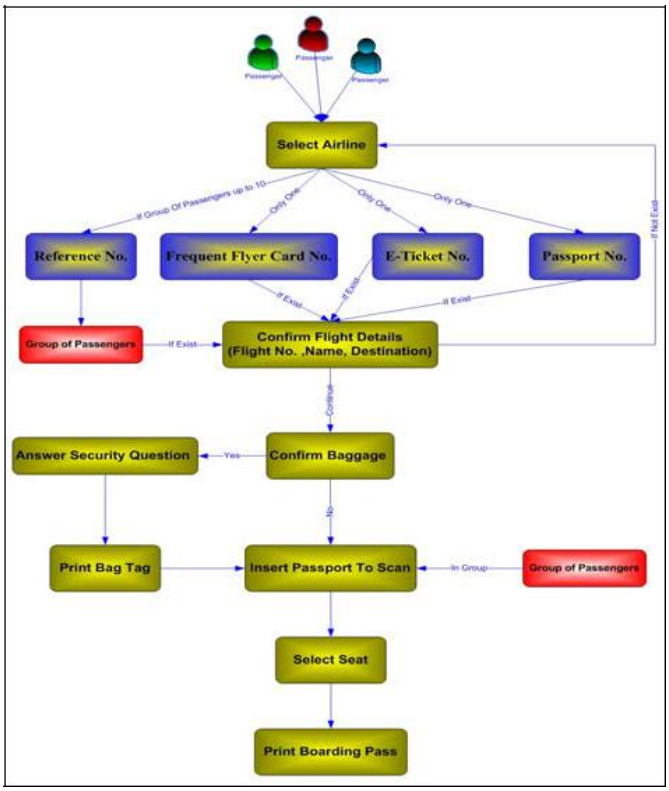

Fig. 4: How to make check-In procedures through common use self-service

It is easy to follow the instructions on the kiosk and very direct in most of the cases. The speed of checking in depends on the familiarity of the passenger with the kiosks and on the speed of the machine itself in processing the request. The kiosks are also equipped with the passport reader to enable international passenger check-in.

All this will take us to make a survey to compare between the CUTE System and CUSS Kiosk in (dis/advantage, benefits) depend on the common factor between them.

3. CUTE VS. CUSS

In the Conventional type of check-in environment, the overall throughput of the system can be constrained by a number of factors. The most likely causes of throughput limitation are the productivity of the ticket agents, the staffing levels established by the airline management, or the total ticket counter positions available to the airline.

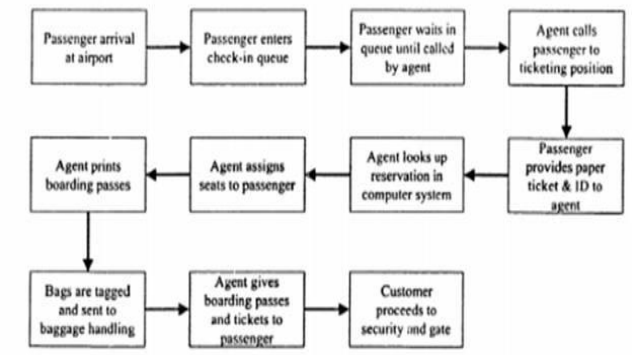

Fig. 5: The Conventional Check-In Process

CUTE- Common User Terminal Equipment, the facilities at the airports are shared between the airlines to reduce the space and resources required. CUTE was first implemented in 1984 for the Los Angeles Summer Olympic Games. It was at this point that IATA first created the recommended practice (RP) 1797 defining CUTE. It should be noted that ATA does not have a similar standard for common use. From 1984 until the present, approximately 400 airports worldwide have installed some level of CUTE. CUTE systems allow an airport to make gates and ticket counters common use. These systems are known as "agent- facing" systems, because they are used by the airline agents to manage the passenger check-in and boarding process. Whenever an airline agent logs onto the CUTE system, the terminal is reconfigured and connected to the airline's host system. From an agent's point of view, the agent is now working within his or her airline's information technology (IT) network.

In the Recent Model of check-in the airport passenger processing is a systematic process and the airport capacity is as good as the weakest link .The traditional passenger processing is shown in the" Fig. 4" in yellow .The passenger arrives at the airport and approaches the check-in counter .The check-in process is a one-step process where he/she can interact with the check-in agent and decide on seats and drop bags .After check-in, the passenger proceeds to the security check where the hand baggage and personal belongings are scanned .The check-in baggage in most of the European airports is scanned in-line unlike the new security requirement at US airports and Cairo International Airport where the bags need to be scanned before taking them to check-in .Passengers are now in secured area and can shop and relax .Prior to boarding the aircraft they queue up in boarding lounge where the identity of the person is verified once again .If the flight is international, passengers will have to go through the Immigration process.In that case, the passenger without baggage can directly move to the security check and board the aircraft without any hassles at the airports .The passengers with baggage can drop the bags at the baggage drop-off and proceed to the security check; this is represented in "Fig. 5" .CUSS Kiosk Check-in has seen a rise in passenger acceptance as it gives them a higher comfort level. It is believed that both the CUSS Kiosk check-in will cater for most of the passengers in the near future.

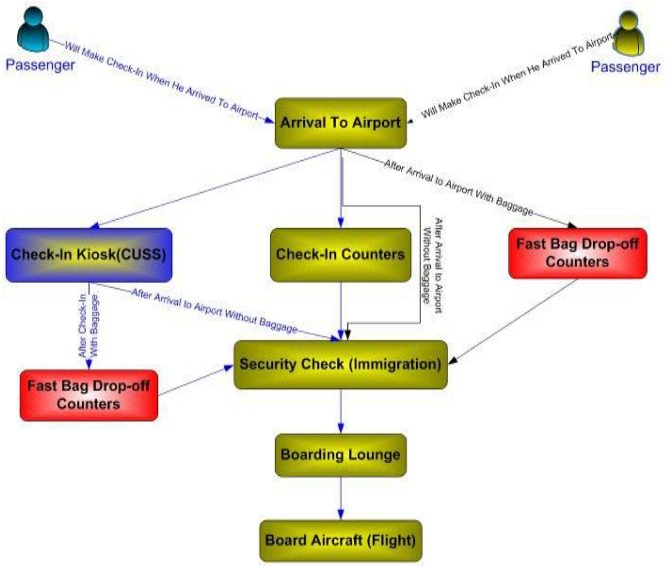

Fig. 6: The Proposed Model for Recent Check-In Process Flow

CUSS- Common Use Self-service kiosks were first introduced by Continental Airlines in 1995 at US airports [15]. Since then the CUSS has become an integral part of providing services for passengers .Most schedule airlines now provide the option for Common Use self-service kiosk check-in at major airports .The cost of check-in through kiosks is just $0.16 as against $3.68 with normal check-in with an agent [8]. There are only 8% airports planning to deploy dedicated kiosks as against 60% to implement CUSS. The airports and airlines have understood the importance of the shared facilities [16]. I was converted the interactive map in the IATA website to the statistics more easily to read (The airports have realized the benefits of the kiosks and IATA is now promoting the installation of CUSS instead of dedicated check-in at all International Airports In The world.)

Fig. 7: This statistics shows the current numbers Of CUSS Kiosk around the world

Fig.8 This statistics shows the current numbers of CUSS in future Kiosk around the world

4. REASEARCH VALIDATION

In order to achieve the stated objectives, I conducted case studies at Cairo International Airport to understand the process and also collect the secondary data to be used in the simulation model. The purpose of research Cairo International Airport is to understand the variations in the process that exist at Cairo International Airport, gather as much data as possible and to appear the advantage of using self-service kiosks is that the check-in process can be divided in two steps and it can process 40 to 50 passengers per hour. The location of kiosks decides the passenger flow pattern and convenience. The two steps include printing a boarding pass and dropping the bags along with bag tags at baggage drop off. The baggage drop off are manned and the agents print the tag and attach it to bags. This is more convenient as the passengers tend to make errors in attaching tags, which might prove costly in overall operations. This system has a larger throughput as the passengers without bags can be filtered and need less processing time. The method of data collection will basically include observing the passenger in the process and other key issues at Cairo International Airport. The data collected will be analyzed to understand the differences and various factors that might affect the check-in process at Cairo International Airport. The collected data will also help in establishing key parameters for the simulation model. For the research in Cairo International Airport TB3, this was useful for the exploration of attitudes and experiences with check-in technologies as the technique "uncovers specific events and behaviors that underlie service encounter dis/satisfaction"

While following the questionnaire crafted below, good use of the technique requires that I adjust, modify and adapt the tool as the need arises in order to elicit the most data rich conversations. The criteria of inclusion mean require respondents were selected on based on their familiarity with self service check-in technologies.

Following an incident will be required to meet the following 4 criteria:

1. Involve technology-customer interaction.
2. Be very satisfying or dissatisfying from the passenger's point of view.
3. Be a specific and preferably recent episode

Have sufficient detail to be visualized by the interviewer.

I had the opportunity to witness the use of traditional check in as well as those who used or attempted to use the kiosks. Also, there may be some opportunity to glean the response of various parties to the presentation of a boarding pass printed at home after checking in on-line. Formally, I followed noted the observation data sought by in his airport SST research:

Agents per position (Queue Manager, Station Manager, Bag Handler).

Passenger in line.

Passenger arrivals per 3 minute interval.

4.1 Expermint Description

The research was initiated with an understanding that there is a need for a tool to estimate the resources required to see can we convert from CUTE system to CUSS Kiosk System at Terminal Building 2 or not necessary .The CUSS kiosk are seen as a positive move and it has been believed that it improves the check-in process and reducesd those using CUSS kiosks.

In experimental research validity I collected and compared additional sources of information, including the research study, "the main idea is to triangulate or establish convergence lines of evidence to make findings as robust as possible". Data Triangulation in this research is done using existing aeronautical manager's anticipation and SST Industry and Passenger impressions.

4.2 Hypothesis and Expermint Variables

The research was initiated with an understanding that there is a need for a tool to estimate the resources required for the changing technology of counter or not. The passenger surveys showed some positive results and it was seen that self-service is a positive move by passengers. The passengers were ready to take control of the process and more than happy to check-in themselves. Most of the passengers also showed the inclination to use the self-service rather than normal check-in if both took the same time.

In order to change or redesign the check-in process at Cairo International Airport, an experiment or trial period of the new process needs to occur .This experiment is the first phase of the research effort .An experimental plan was designed to test a number of parameters of the new process. These included the impact of queue management agent presence on kiosk

utilization, agent to machine ratio impact on system throughput, and queuing style impact on machine load balancing .The proposed timeframe to conduct these experiments was in November and December of 2009. The sections that follow will provide an analysis of the case study conducted.

Table 1: Independent and Dependent Variables

Independent Variable	The System being used (CUTE System & CUSS Kiosk System)
Dependent Variables	1 Convenience of Usage 2 Change/Select seat at Flight 3. Processing Time 4. Queuing Time

4.3 Results

The interviews produced one set of rich data. The results of the case study regarding the passenger satisfaction, processing times and queuing time were particularly interesting it is evident from the table that the total processing time for the kiosk plus bag drop is far more than the normal check-in process.

I will measure in this research the passenger satisfaction, time processing and queuing time.

Table 2: All times are in Minutes per Passenger for Egypt Air Airlines,

	Total No. of Passenger	Process Faster,Easy to understand					Change/Select Seat and/or Flight				
		Strongly Disagree 0% to 49%	Disagree 50% to 64%	Somewhat Natural 65% to 74%	Somewhat Agree 75% to 84%	Stongly Agree 85% to 99%	Strongly Disagree 0% to 49%	Disagree 50% to 64%	Somewhat Natural 65% to 74%	Somewhat Agree 75% to 84%	Stongly Agree 85% to 99%
CUTE	158	23.42%	18.99%	25.32%	21.52%	26.86%	0.00%	0.00%	0.00%	0.00%	0.00%
CUSS	50	0%	0%	8%	24%	68%	0.00%	0.00%	0.00%	8.00%	92%

	Average Time	Maximum Processing Time	Minimum	Standard Deviation	Maximum Queuing Time	Average Time	No. Of Pax
CUTE	3.470254777	6.15	0.58	1.792477895	7.34	1.74	158
CUSS	1.242244898	4.43	0.43	0.864619769	0	0	50

MSR Check-in counters were used by MSR (is the IATA code of Egypt Air Airlines) and there were a maximum six counters open at the time of observation. The average time of processing per passenger is 3.47 minute with a deviation of 1.79 minutes. It could be seen that the average processing time is smaller than kiosks but has a huge standard deviation. This is a result of the efficiency of the check-in agent and the interaction with the customer. This human element causes significant variations in check-in times. Passengers without bags were processed faster and took 22 to 34 seconds to complete the transaction.

4.3.1 Convenience Of Usage

That is means the passenger satisfies with the process of self-service check-in using CUSS Kiosk, which is faster, accurate and easier to understand. As was mentioned at section 1, self-service puts control into the hands of the customer.In the airline industry, this control comes in the form of enabling the customer to select their own seat, request an upgrade, or change flights. As Table 2 shows, an overwhelming majority of the customers either strongly agreed or agreed with the statement.

4.3.2 Processing Time

These passengers using kiosks need to go to baggage drop-off if required to check in bags. The processing time for each process is shown in Table 2. The characteristics for each method are discussed in detail in this section. The average processing per passenger at the kiosk was 2.24 minutes standard deviation of 1.31with a minutes, while the average processing time at the bag drop-off was 2.23 minutes with a standard deviation of 1.11 minutes.

As seen from Table 2 the processing time for the kiosk is 1.24 minute with standard deviation of 0.86 minute per passenger against the belief that it takes less than a minute for the kiosk. Further to this, the following was observed at the airport

- The minimum time was 0.43 minutes and on average it took at least a minute to complete a transaction and print a boarding pass.
- The processing times for the passenger who had some experience of using a kiosk was significantly less than average.
- Most of the passengers needed assistance in completing the process and there were two roving agents helping passengers.

The location of the kiosks made them very accessible and easily visible before the passengers could see the check-in counters. It could be seen that the average processing time is smaller than kiosks but has a huge standard deviation. This is a result of the efficiency of the check-in agent .This human element causes significant variations in check-in times. Passengers without bags were processed faster and took 30 to 45 seconds to complete the transaction.

4.3.3 Queuing Time

The other important aspect that was observed in the process is the waiting times for each passenger. The maximum and average queuing times for each techniques of check-in are shown in Table 2.

The results of the observations are shown in Table 2. It was observed that there were no queues for the use of the kiosks on the day of the observation. There were some queues at the bag drop-off but not significantly long and the average wait time per passenger was 2.27 minutes, Further to this, the following was observed at the airport:

- It is quite evident from the comparisons that the kiosks though processing a greater number of passengers wait times are lower.

- The maximum number of passengers waiting for the services is 0 for kiosks against 5 in the case of check-in counter.

Thus, the passenger using both needs to spend more time in the system for two reasons: more processing time and more waiting time in the queues for two processes. To maintain passenger comfort it will be necessary to maintain lower wait times at both the services, implying the need for more resources

From this research I deduced the results of Usage of CUTE 75, 2%, Usage of CUSS 23, 8% and other 1.0% is shown in "Fig. 9", doubtless contributing to the preference is that nearly 95% reported high to very high satisfaction about select or change a seat location with self-service kiosks. But 93% of those studies thought self-service kiosks would be faster, and would shorten lines. 60 % believed self-check-in would be more queues free. 52% liked the greater control of the process; about the same number liked the privacy.

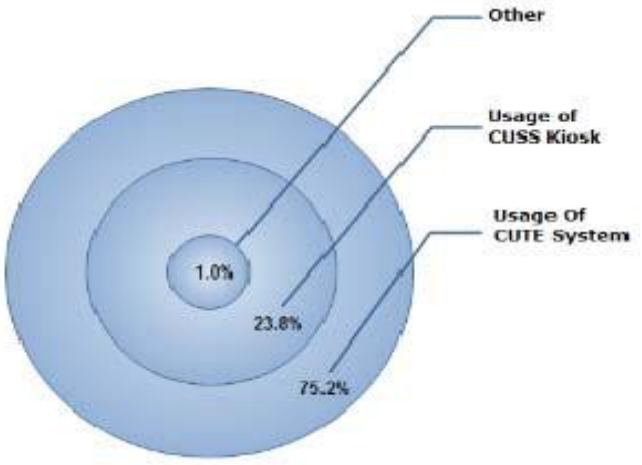

Fig. 10: The Usage Of all check-In techniques at this case study in Cairo International Airport.

5. RELATED WORKS

This Case Studies all Types of Self Service Kiosk at Airports: Vancouver Airport has increased throughput by 250% by installing CUSS. The airport has seen now employs 30% fewer check-in staff. Thus has been able to postpone the expansion plans until 2012 [16]. Another example is Las Vegas McCarran Airport, which has installed 100 CUSS kiosks at the airport and installed some off airport as well [8]. McCarran airport claims to be a 100% common use airport. It has invested $1-2 million in CUSS, which saves the airport from a building expansion of $20 million [16]. And this table which appears all advantages of different case studies of All Types of Self Service Kiosk at Airports. I had chosen these factors based on all types of kiosk are involved in all self-service technology and almost the differences between these systems and some very small.

All Factors of Kiosk Comparison:

- Financial Cost
- Temporary Cost
- Increasing accuracy
- Return on Investment
- Easy To Manage
- Flexible payment options

This is due to business rules that are created from the design of the system which is compatible to work in different environments such as airports environment or stores or in banks or other environments that use various self-service technology.

Table 3: Sample of Self-Service Airport Kiosk

Area Of Research	Application Domain	Financial Cost	Temporary Cost	Increasing accuracy	Return on Investment	Easy To manage	Flexible payment options
SITA's Electronic Ticketing in Aairnes Electronic (ET)-ticketing can simplify internal procedures, offering further scope for the permanent removal of costs, also of areas provide yet more opportunity for cuts in costs and improvements to passenger service and these establish at Zurich Airport	1-Ticketing Kiosk	1-Reduction in Employees.	1-Reduction in transaction costs. 2-Self-service ticket purchases through kiosks during peak traffic activity reduces congestion in lines	Reduction in unauthorized access to confidential information and other protected Assets	increased ticket sales	Convenience of self-service kiosks offer a competitive advantage over traditional manned ticket window or box office locations	Ticketing kiosks offer ticket dispensing, credit card & cash acceptance options for fast transactions
The review system Automated-ticketing systems "review," an innovative dining program at JetBlue Airways' new Terminal 5 at JFK International Airport in New York City. • Passengers can order food, pay with a credit card and have it delivered to the gate area. •Touchscreen monitors display flight information and a food and beverage menu.	2-Retail Kiosks	1-Airline travelers can use the this system to order food or check flight information without leaving their seat at the gate. 2- Reduction in Employees	Reduction in waste time	There is no any confidential data	Studies show an average of 7% increase in incremental sales when kiosks are added	Easy to make order	
Friendly flights info terminals at CAI The passenger can find his flight details and other facilities such as restaurants, shops, lounge and etc. over these terminals including location information, maps to look at, Data to printout and to request further information.	3-Information Kiosk	1. Reduction in employees. 2. Reduced costs for basic service events 3.Reduces instances of error in approval process	Reduces waste of time if passenger want to go any since and he doesn't know any the ways of places	There is no any confidential data	Improves the ROI of the sponsors such as food and beverage company (Advertising) at CAI	one screen site have an easy graphical interface with multilingual support (Arabic, English and other languages as required)	
Vancouver Airport CUSS Check-in Kiosk The CUSS will be used by self-service passengers to check-in, seat allocation, boarding pass printing, and baggage check-in in a common use environment.	4 Check - in Kiosk	Reduction in Employees.	1-Reduction in transaction costs. 2-Reduction in waiting queues by up to 30%.	Camera devices and scanners create digital records for accuracy and protects against fraud	Increased throughput by 250% by installing CUSS.	Self-service passengers to check-in, seat allocation and boarding pass printing.	

6. CONCLUSION

While the plans for this experiment have been outlined and passed on to Cairo International Airport for future implementation, it was agreed that another valuable research focus would be an in-depth station comparison. The intent of the station comparison would be to look at both operational and organizational metrics and determine what impacts if any of these have on the acceptance of self-service at the stations. This learning could then be combined with the, observations, research, and eventually the experiment to ensure that all aspects of the changing or re-engineering effort are in place to ensure success. The research results reviewed that the passengers are responding positively to self-service deployment and generally understand the process. However, the acceptance of this relatively new technology within Egypt Air's own workforce depends to a large extent on the type of

station at which the employee works. Thus the sample size (210) of passengers observed was small and the results could not be accepted confidently, so in future I will present more credible result within a big number of passengers but I believe that the self-service will cater for most of the passengers in the near future; so the case studies show that there are significant variations in the results depending on the profile or operations of the airport. It can be observed that the queuing at the airport is affected by three aspects namely.

- Schedule of Flights (Departure)
- Processing Times
- Queuing Time

The key parameters will be used as inputs for the simulation model to be developed. The simulation model will be validated against the existing situation and industry standards wherever they exist. This validated simulation model can be used for various experiments to explain the behavior of the check-in system as a whole and provide the airport planners with a tool to estimate requirements for check-in systems.

REFERENCES

[1] Kiosk Information System Inc., "http://www.kis-kiosk.com", accessed Septmeper 25, 2009.

[2] Murphy, Samantha. "Kiosk 411" Chain Store Age, January 2007: 68.

[3] Maras, Elliot. "Self-serve kiosks address a changing customer." Automatic Merchandiser, March 2006: 20

[4] Freimut Bodendorf," Self-Service e-Transactions for Citizens Concept and Case Study ", IEEE Computer Society, Third International Conference on Digital Society, 2009.

[5] Oliver,R.J.,(1997), Satisfaction: A Behavioral Perspective on the Customer, NY: McGraw-Hill.

[6] Gatingon, H. and Thomas S.R. (1991),"Innovative Decision Processes," in Handbook of Consumer Behavior, Thomas S.R. and Harold. H. Kassarjian.eds. Englewood Cliffs, NJ: Prentice Hall, 316

[7] Jacob Bennett "Opportunities emerge for self-service in retail and hospitality," White Paper, published by Net World Alliance and sponsored by NCR Inc., © 2009.

[8] 12] Anitsal, I. (2005), "Technology-Based Self-Service: From customer productivity toward Customer value", Doctoral dissertation, The University of Tennessee, Knoxville

[9] Tricia Ellis-Christensen," What Is a Retail Kiosk?" White paper, Conjecture Corporation, 2003-2009

[10] Conway, Peter. "Common vision." Airline Business, January 2006

[11] IATA website," CUSS Airport Readiness Interactive Map"

[12] (http://www.iata.org/stb/maps/cuss.html)