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Spring 2011

Self Service Technology in Airports And the Customer Experience

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Repository Citation

**Self Service Technology in Airports
And the Customer Experience**

by

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Bachelor of Science, Hotel Administration
Cornell University
2004

A professional paper submitted in partial fulfillment
Of the requirements for the

Master of Hospitality Administration
William F. Harrah College of Hotel Administration

Graduate College
University of Nevada, Las Vegas
May, 2011
Spring, 2011

ABSTRACT

**Self Service Technology in Airports
And the Customer Experience**

by
Hannah Drennen

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Part One

Introduction

Self service technologies (SST) in the airline industry materialized over 20 years ago, but with limited use. SST is a world away from what the industry first experienced in the mid – 1990's and is currently in use by almost every airline (Airport-technology.com, 2008). Technology is constantly changing and new forms are placed into operation regularly, requiring the airline industry to adapt quickly and efficiently in order to keep up with the competition. Airport SST takes on many forms which include but are not limited to; information kiosks (standalone terminal that provides information, goods and services), ticketing kiosk (purchase airline tickets, check baggage and monitor flight status), CUSS kiosk (ease congestion and help reduce long lines, shared terminals with multiple airlines), retail kiosk (customers can purchase goods and services before or after a flight) (Abdelaziz, May 2010), internet bookings and through the use of smart phones or mobile devices. SST has become a relied upon service in satisfying the both customer and the airline needs. According to the International Air Transport Association (IATA) 73 million of 2 billion airline passengers used SST in 2004, while the average CUSS check-in takes 2.5 minutes opposed to 3.5 minutes at a traditional service employee counter check-in (Fiorino, 2005).

The traditional service employee check-in promoted long lines, disgruntled customers and large staffing levels to complete repetitive tasks. Today SST promotes efficiency, convenience, shorter wait times and reduced labor cost. The terrorists' attacks on 9/11 influenced major changes in airport technology due to the shifting needs of customers and the airline industry.

Purpose

      The purpose of this paper is to research the impact of self service technologies (SST) in the airline industry and understand its importance on airlines and the customer experience through a review of literature.

      Part two of the research paper will involve a review of literature to address the purpose of the paper. The selection of literature reviewed will address key issues which include; SST background, customer adoption and rejection of SST, the impact of 9/11 on SST and financial and operational effects SST has on airlines. The end goal of the paper is to understand how SST affects customers and the airline industry.

      After defining and reviewing SST's history and evolution the paper will address customer behavior. To accomplish this, the paper will address the customer encounter and experience while also discussing advantages and disadvantages. When addressing advantages the paper will look at; increased control over service delivery, convenience, reduction in wait time and flexibility in use. When addressing disadvantages the paper will look at; loss of personal information, lack of comfort with technology, fear of the unknown and customer usability.

      To gain an understanding of how the airline uses SST pre and post 9/11, the paper will address the airline industries actions such as; how the airline industry has adjusted services to meet changing demands (travel expectations have changed and airlines are forced to cut operating costs) the reduced use of service counters, the use of information kiosks, ticketing kiosks, Common User Terminal Equipment (CUTE), Common User Self Service (CUSS), mobile devices (personal computers and smart phones) and internet bookings all which play an important role in how airlines function today.

From a financial perspective, the literature reviewed will cover financial and operational effects on airlines. The literature reviewed will address how staffing cost, operational cost, retail space and miscellaneous cost have all impacted the way airlines use SST.

Justification

This paper will help the airline industry identify how SST has influences customer behavior and reactions to SST while also understanding how airlines have been affected financially by the use of SST. The material discussed will help readers understand where the airline industry stood years ago, where the airline industry stands today and where it has the potential to stand $5 - 10$ years down the road with the use of SST. The information will present both the positive and negative affects SST has on the airline industry and will assist in moving the industry forward in implanting SST changes and better serve customers and the airline industry. The results of the research could potentially play an important role in future academic research in the area of SST.

Constraints

This study strives to view multiple aspects of SST and how it affects the customer experience and the airline industry. The reviewed literature will be limited with regards to first person information, and will focus on existing research. Filtering out opinion based information from factual information will be a challenge faced throughout the literature review process. Due to time constraints, there will be no interviews completed; therefore the research will be limited to only the review of literature.

Glossary

Global Distribution System (GDS)- Worldwide computerized reservation network used as a single point of access for reserving airline seats, hotel rooms, rental cars, and other travel related items by travel agents, online reservation sites, and large corporations. The premier GDS are Amadeus, Galileo, Sabre, and Worldspan owned and operated as joint ventures by major airlines, car rental firms, and hotel groups. Also called automated reservation system (ARS) or computerized reservation system (CRS).

International Air Transport Association (IATA)- establishes global guidelines for the airline industry

Kiosk – Any of a number of freestanding electronic devices or workstations designed to facilitate various related activities such as issuing boarding passes at an airport or checking in or out of a hotel

Self Service Technology (SST)- technological interfaces allowing customers to produce services independent of involvement of direct service employee

Part Two

Literature Review

Introduction

As the service industry continues to expand, airlines have a desire to computerize processes in order to reduce operational costs, increase speed of transactions and eliminate the variability in the human service encounter. Airport self service technology (SST) is used to reduced cost and increase revenue (Fiorino, 2005) (Technologies, 2009) while also improving customer service (Beatson, 2007). The International Air Transportation Association (IATA) reported in 2004 that 80% of airline passengers checked-in with an airport ticket agent/ticketing counter, 15% used self service kiosks and 5% used off-airport technology such as personal computers or smart phone check-in. It is anticipated that in 2012 only 20% of passengers will utilize ticket agents (service employees)/counters for check-in, 30% will use self-service kiosks while 50% will complete the check-in process prior to arriving at the airport, through the use of personal technology devices (Ghee, 2011), therefore it is anticipated the 80% of all customers will being using some sort of SST in the year 2012 (Jenner, 2007).

SST provides both customers and airlines with many benefits; however there are often constraints that impose a burden upon both parties causing each user to consider how SST in airports affects the way they choose to access information and use technology. Understanding how airlines have implemented SST to benefit all users will help create an enhanced perceptive of how customers, employees and the airline industry as a whole has been affected by the use of SST.

This literature review will establish the validity and importance of SST in airports, specifically in regards to the airline industry, and its impact on the customer experience.

Self Service Technology Background

      SST are devices that have technological interfaces that enable customers to produce a service independent of direct service employee involvement (M.L. Meuter, 2000). The automation process began in the manufacturing industry and slowly progressed to the retail and service sector. In the late 1800's the telegraph, telephone and radio were all devices used to communicate with others from far (Leiner). In the late 1960's the financial industry first introduced SST with the Automated Teller Machine (ATM) (Ambrus, 2006). As technology and consumer demands changed, SST began to play a larger role in the service industry and became regularly used in gas stations, airport check–in kiosks and movie ticket kiosks (Ambrus, 2006). Prior to the airline industries introduction of SST devices, Global Distribution Systems (GDS) such as Apollo, Worldspan, Sabre, Amadeus and System One were all systems in place that airlines and travel agents relied heavily on for airline travel. In 1996, 90% of all U.S. flights were booked through GDS. The changing trends in internet usage jeopardized the airlines and travel agents use of GDS's, as customers were now able to book directly from their personal computers which eliminated the "middle man" better known as the GDS (Hospitality Net, 1996). GDS's still exist today, however much less relied upon in the travel industry.

      While the hospitality industry grew, customers became more interested in dining, entertainment and travel, this encouraged the service industry to adopt SST to maintain a competitive advantage and meet the needs of airlines and customers. During the past two decades the airline industry has progressively increased their customer/employee usage of SST. SST has been installed throughout airport facilities with the use of various kiosks that perform multiple functions. Customers are also able to use personal computers and smart phones to complete internet bookings and check-ins. Technology advances have been a motivating force in

the use of SST, influencing the variety of SST choices the airline industry chooses to use to

satisfy both the airlines and the customers (Ambrus, 2006).

In the late 1990's airlines were using information kiosks which are a standalone computer

terminal that provides information, goods and services to customers and airport operators.

Information kiosks allow customers to retrieve information about airport facilities such as

restaurants, stores, lounges and flight information. These devices also provide customers and

employees with outside information such as hotels, car rentals, tours and all other general

information (Abdelaziz, 2010). Ticketing kiosks (interactive computer terminal) were also used

to allow individuals to purchase tickets, check baggages and monitor the status of arriving and

departing flights for a specific airline. Ticketing kiosks are categorized as Interactive

Transaction Machines (ITMs), which allow customers to have direct access to an airline's

centralized customer service database, however, it does not operate as a standalone machine.

Airlines generally place ticketing kiosks close to the service counter; this allows the kiosks to

have a direct connection to an airlines information database. When a kiosk is not able to identify

or assist a customer, the kiosk directs the customer to the service counter where they can be

assisted by a service employee (Abdelaziz, 2010).

During the past 10 years the airline industry has embraced the advancements in internet

technology which has allow airlines to use these devices to gain a competitive advantage. Prior

to using SST, airlines relied heavily on travel agents and Global Distribution Systems (GDS).

This reliance on GDS has been greatly reduced by the use of SST and personal devices (personal

computers and smart phones). Continental Airlines was the first to introduce the self service

kiosks as a check-in option in 1995 and Alaska Airlines was first to introduce Web check-in, in

1999 (Stellin, 2008). In 2005 The Butler Group (British Analyst) reported that economic

prosperity in the 20th century owed its foundation to the development of SST, as self service has changed the way people and businesses operate (Hughes, 2005).

Customer Behaviors

When entering an airport, airlines have began to supply SST that has become readily available to customers in order to complete travel transactions with easy, instead of depending on the traditional service employee check-in counters. Not only are customers presented with SST at the airport but they are now able to use at home check-in and mobile devices to aid in completing travel arrangements. SST has allowed customers ease of use and convenience while saving time with quicker transactions and shorter lines. In 2010, SITA/Air Transport World Passenger Self-Service Survey reported that 70% of air passengers want self service for more steps in their journey. SITA also reported that online check-in is now at 61% while kiosk check-in is at 71% (Koumelis, 2010).   SST has begun to affect the service encounter, thus reducing the personal contact that was once created by the direct interaction between the service employee and customer. Understanding how customers are affected by SST, plays an important role, as studies show that organizations cannot survive without repeat customers. Such technology reduces personal contact between employees and customers, therefore it can have a long term affect on customer retention (Beatson, 2007). According to Parasuraman, four elements that shape customer technologies readiness include; optimism, innovativeness, discomfort and security (Parasuraman A. , 2000). These elements play an important role in how customers view the use of SST, as a certain comfort level needs to be reached for customers to feel secure with the use of SST.

While some customers have embraced SST others have found SST challenging and prefer to utilize service employees to complete transactions. SST puts the customer in the driver's seat

and allows for complete control over the travel experience. Customers are now able to perform the tasks that ticket agents were once required to do. A customer can use an airport CUSS kiosks to purchase a ticket, select seating assignments, print a boarding pass, tag luggage and complete or view a variety of other information. The passengers willingness to use such SST frees up ticket agent's to help other passengers with complex questions or needed assistances. The possibility of eliminating ticket counters and service employees will not happen anytime in the near future but there is a strong possibility that a substantial reduction in usage can and will occur. Many customers depend on the service employee to complete the check-in process as they are not familiar or comfortable with SST, yet. Currently customers are given the choice between the service employee interaction or the use of SST, however with the increased use and demand for SST these choices can be reduced or eliminated substantially as time passes.

Advantages.

As the airline industry continues to grow and the demand for SST changes, airlines have taken hold of SST and have been able to provide customers with the technology they have longed to use. Airlines are now putting the power in the customers' hands and allowing them to perform multiple tasks that once could only be completed by a service employee (Weiss, 2006). SST provides customers with various benefits that would not be possible had the customer used a service employee.   Benefits include: increased control over the service delivery as the customer is in control of the process, convenience as SST is available at almost every hour and at multiple locations, reduction in customer wait times as lines tend to be shorter and flexibility in use as many tasks can be completed in a central location for multiple airlines(Meuter, 2000).

When discussing increased control over the service delivery this refers to the control airlines and passengers gain from the use of SST. Airlines are able to control the entire SST

interaction with passengers from behind the scenes while passengers are also able to control almost every aspect of the interaction with SST. The airline has control over what information each passenger is able to access while the passenger has control of managing their travel arrangements through such devices. The customer is able to choose various service through SST from the SST, which can include changing flights, changing personal information, checking flight status, changing seat assignments, check-in, etc. all which provide customers with the feeling of control (Weiss, 2006). The control aspect benefits all parties involved in the transactions.

Convenience is another advantage that affects both the customer and airlines. SST allows airlines to provide passengers with 24 hour information and service. In the hours where staffing is at a minimum, mainly overnight, the airlines can depend on SST to act as their "service employees" to provide passengers with needed information. Convenience is also important for passengers because they are able to use these devices to gain information in a matter of seconds even when minimum or no staff is present opposed to waiting in long lines.   When a passenger is able to walk into an airport, swipe a credit card, scan a bar code or enter various personal information and the passenger is quickly identify it becomes a service that passengers become accustomed and to and an increased desire for. Passengers become dependent on the idea that SST will be easily and readily available so that they can show up with minutes to spear and quickly and conveniently access required information. With SST in place airlines are able to eliminate the unnecessary lines that once formed at peak hours, making long lines a thing of the past. Of course there are times when customers need to interact with service employees and lines may form, however SST acts as a backbone to prevent such backups and eliminate the unnecessary contact with customers that no longer need assistance. While many travelers are

now willing to use SST, the check-in process is no longer a time constraint on the fast pace

traveler. Being able to walk up to a device such as a kiosks, enter personal information or swipe

a credit card and complete the necessary check-in process has had a substantial affect on wait

time and long lines.

Flexibility is an advantage as CUSS kiosks allow passengers to check in for multiple

airlines at various locations at just about any hour of the day. Travelers no longer have to search

the airport facility for their assigned airline as they can walk up to any CUSS machine and

complete their desired transactions. Flexibility also impacts the airlines in regards to location of

devices; they can be moved frequently without service interruption, and allow flexibility in

information provided or accessible by both service employees and traveling passengers (Meuter,

2000).

Disadvantages.

While many advantages exist customers face many disadvantages as well. SST has

allowed airlines to lose a great deal of interpersonal contact that customers once had with service

employees (Beatson, 2007).   The reduction in interpersonal contact can have a long term impact

on customers' perceptions of individual airlines depending on their experience with SST devices.

Disadvantages include; possible loss of personal information (Beatson, 2007), lack of comfort

with the technology, fear of the unknown (Curran, 2003) and usability as many kiosks are touch

screen and are difficult for customers that are visually impaired or blind (IBM, 2010).

Customers who fear the loss of personal information tend to shy away from technology

that creates such vulnerability. This forces the airline industry to take extra precautions and

ensure customers that personal information is protected and will not be distributed in-voluntarily.

One major disadvantage airlines are forced to deal with is the lack of knowledge customer's have

regarding the use of such SST's.   Customers with apprehension towards the "technology age"

can experience anxiety and doubt the smooth transition when considering the use of SST

(Abdelaziz, 2010). Customers who are uncomfortable with SST often find it intimidating and

fear the loss of interaction between the service employee and themselves (Beatson, 2007).

Understanding if and when customers are willing to accept technology changes is important, as

some customers are willing accept the changes while others may resist for fear of the unknown.

According to Parasuraman and Colby, technology readiness is a factor that promotes or delays

customer's willingness to accept or reject new technology (Parasuraman, 2001). Airlines are

now focused on understanding where customers stand regarding technology readiness when

deciding how and when to use SST.

Baby Boomer's, represent 420 million people and account for over 260 million trips a

year (Association, 2006). During the next two decades the baby boomer generation is expected

to significantly increase airline usage. One industry report suggested that active seniors represent

one of four customer segments, which will have a substantial impact on the airline industry over

the next 15 years (America, 2007).   With increased use of SST service employees are able to

help those customers who have difficulties with the kiosks or need special accommodation, such

as those passengers traveling with pets, children, disabled, etc. (Abdelaziz, 2010).   As airlines

increase the use of SST devices they have began to understand the importance of providing

customers with service employees to educated and assist in the use of the devices. Many airlines

staff service employees that move about the terminal floor to offer assistance to those in need of

help, which ultimately benefits both the airlines and the customers in knowledge and processing

speed.

The newest and most controversial disadvantage customers have been faced with focuses users with disabilities. While airlines and kiosks creators (hardware and software) work to remove such barriers customers are faced with the reality that they must continue to use the service employee counter or not travel. IBM, one of the largest CUSS kiosks distributors, now includes standard features such as; audio connectors, accessible hardware controls and text to speech output which helps those travelers who are blind or have low vision or mobility impairments (IBM, 2010). These features can also assist the baby boomer generation use SST as they begin to age.

Impact of 9/11

SST emerged in the airline industry during the past 20 years; however the terrorist attack on September 11, 2001 forced airlines to bring SST more in line with the changing needs of airports and airlines. The attacks on 9/11 literally crippled the airline industry, as all United States airspace was shut down for the first time ever for four days. The shut down reportedly cost the airline industry losses exceeding $330 million a day, which caused airlines to lose their financial positions (Mullins, 2011). Passenger travel dropped dramatically post 9/11, which forced airlines to rethink ways to reduce operating cost while still providing customers with exceptional service (Conroy, 2008). Airlines began cutting back staffing levels in 2002 (following the September 11th terrorist attack) and heavily investing in SST while encouraging travelers to utilize these devices (Yu, 2006).

The industry has began to move towards a paperless check-in system that enables customers to use mobile devices and self service kiosks to perform check-in procedures that in the past could only be completed through a service employee (Brockman, 2009). In 2007, the International Association for Wireless Communications (CTIA) reported that over 250 million

Americans subscribed to a cell phone service, which represents 82.4% of the population. The usage increased by over 400% since 1997, which was 55 million subscribers (Gearlog, 2007). Smart phones have become an extremely desirable device of today and the future. Smart phones allow customers to access travel information directly in the palm of their hand while speeding up the entire process at the customer's convenience. Continental, American and Delta are testing mobile and smart phone check-ins at over a dozen U.S. Airports. Mobile devices are another self service device allowing airlines to move forward with paperless boarding passes. When customers use mobile check-in they are presented with a bar code on their mobile browser which can be read by a scanner at security and at the gate for boarding (Brockman, 2009), however these types of boarding passes are still being tested as security features are a major concern for airlines and passengers. Airlines are offering customers multiple self service devices which included:

- Common User Terminal Equipment also known as CUTE is shared between airlines to reduce equipment space and technology resources. CUTE allows airlines to make service ticketing counters common use where gates and ticketing counters are managed by the agents and are commonly used between major airlines (Abdelaziz, 2010).
- Common Use Self Service Kiosk, also known as CUSS, allows multiple airlines to rely on one kiosk (standalone machine) to help reduce congestion and prevent long lines at the ticket counters while reducing airline costs. CUSS kiosks allow customers to obtain boarding passes, check baggage and conduct multiple transactions at their convenience. The CUSS provides a one-stop-shop where customers can but are not limited to: gaining airport information, obtaining tickets

and boarding passes, check-ins, selecting seat assignments and baggage check-ins (Abdelaziz, 2010).

In 2004, CUSS kiosks usages reached 27%, in 2009 usage reached 68% and it is anticipated to reach 81% by 2014 (Jenner, 2007). Major benefits of the CUSS include card readers, boarding pass printers, passport bar code readers, 2-D barcode scanners (Howes, 2006) and bag tag printers (Kiosks, 2007) all while monitoring and maintaining public information and private information (Howes, 2006).

Las Vegas McCarran International Airport is known best for its use of CUSS. In 2006, McCarran Airport had over 80 CUSS kiosks, with 15 airlines sharing the terminal (Howes, 2006). The creation of the CUSS was to provide efficiency and profitability for all subscribing airlines. From a financial perspective the CUSS offers subscribing airlines a reduction in cost per passenger check-in, reduced check-in processing time, physical infrastructure (reduction in queuing space and counter space) and length of time of kiosk return on investment (Kiosks, 2007). The CUSS kiosk has become convenient and desirable for both the airlines and passengers that utilize such devices, as its use can be beneficial to all.

- Mobile check-in, although not a SST offered at the airport, can be completed through a handheld mobile device that provides internet access. Cell phones and smart phones have become a cutting edge technology that allows passengers to check-in from the palm of their hand (Brockman, 2009).

Financial and Operational Effects on Airlines

SST has become the norm throughout almost all US and international airports, creating financial advantages and disadvantages for the airline industry and customers. The driving financial forces behind SST are reduction in operational cost (Weiss, 2006) and increased

customers satisfaction (Beatson, 2007). Airport IT Trends (Year) reported that on average, information technology and telecommunications represents 3% of airports total revenues. The study also revealed that two thirds of airports invest more than the industry average on information technology and 54% of airlines were expected to increase their IT budget in 2008 (Jenner, 2007).

Staffing costs.

Passengers have embraced SST, which helps in aiding airlines reduce operating cost as passengers are able to complete various transactions without the assistance of airline employees. The self service aspect not only gives the customers control but allows the airlines to reduce operating cost by utilizing the "free labor" of passengers that SST provides. The passenger's willingness to use SST allows airlines to eliminate or relocate ticket agents and baggage personnel which can help reduce staffing cost (Weiss, 2006). Kinetics Kiosk, a company that manufactures airport kiosks, reported in 2004 that one self check-in machine initially cost between $6,000 to $10,000, and each kiosks can replace 2.5 ticket agents (Fishman, 2004), showing great benefits financially towards airlines bottom lines.

SST aims to change how the airline industry operators while trying to maximize their use of service employees. SST relieves service employees of manually entering information and helps eliminate the long queues that once formed during peak check-in times. SST kiosks help eliminate the need for service employees to perform repetitive tasks that customers or a machine are capable of completing (Abdelaziz, 2010). Airlines have continuously decreased staffing levels over the past 10 years as they continue to substitute SST for jobs that service employees were once needed to complete (Yu, 2006).

Four years following the terrorist attacks of 9/11 six of the largest airlines (American

Airlines, United Airlines, Northwest Airlines, Delta, US Airways and Continental Airlines)

reduced their workforce by 34% (Yu, 2006). In 2004, Kinetics (67 employees), provided two

thirds of airport kiosks that put thousands of employees out of work. Kinetics three largest

customers at the end of 2000 were Delta Airlines, Northwest Airlines and Continental Airlines

which together eliminated 37,000 employees due to the increase use of SST in the years

following 9/11 (Fishman, 2004). An industry gauge of labor productivity can be measured by

the number of available seat miles per full time employee, this percentage rose by 30% from

2000 to 2005 (Yu, 2006).

Operational cost.

Airlines operating margins are thin, thus creating a need for SST to help reduce operating

costs. SST has created substantial cost reductions in how much it cost the airlines to check-in

passenger. From a cost perspective it cost the airlines $3.86, to check-in a passenger with a

service employee, opposed to $0.16 with the use of SST kiosks (Weiss, 2006). SST has the

ability to the same plus offer additional services than your typically service employee can do in

the same amount of time. In 2004, Continental Airlines reported average check-in time, once a

customer is in front of a kiosk, was 66 seconds for customers with bags and 30 seconds for

customers without bags (Fishman, 2004). The initial investment of SST can be discouraging for

airlines however the cost benefits far outweigh the initial costs. In 2009, Newark Liberty

International Airport installed six trial CUSS, in Terminal B, with connections to ticketing

systems in four international airlines costing the Port Authority of New York & New Jersey an

initial cost of $200,000, the airlines also agreed to pay all maintenance (Faber, 2009). During the

trial period the airlines will analysis how these self service devices affect the airlines from a

financial standpoint and how they affect the customer experience, thus determining how the airline will benefit in the end if the devices move beyond a trail period.

Retail space and miscellaneous cost.

While SST is a driving force in airline travel, kiosks allow airlines to use less counter space, less rental space and reduce customer congestion at ticket counters (IATA, 2011).   SST can help airlines avoid the need to expand or renovate airline counter space; with the use of SST airlines are able to use their current space more efficiently (eliminating unused counter check-in space or reducing counter space for bag tagging) and use extra space for other airline services such as; baggage claims area or additional kiosks. If space is not needed the airlines can eliminate the excess space all together (Falconer R. , 2008), thus reducing unneeded financial expenses that airlines once had.

While SST drives staffing cost down, airlines are not completed able to eliminate all cost that come along with SST. Some airlines are finding hidden costs that relate to the maintenance of these devices which can't be ignored. Self service kiosks are connected to networks that can experience system failures and service outages, therefore airlines must have systems in place that allow strategic planning for humans, financial and equipment resource planning (Weiss, 2006). In 2004, Las Vegas, Nevada's McCarran Airport, owned and operated all kiosks located throughout the building. In order to keep SST running correctly, the airport had a team of 13 full-time employees that were available 21 hours a day (Weiss, 2006). There is a potential for lost revenue when service interruptions occur; as a result information technology team members must be onsite constantly during operating hours. Airlines that do not maintain the SST on premises are forced to contract with service providers who manage and repair the kiosks, to reduce or prevent service failures (Weiss, 2006). Although the actual kiosks do not lose revenue,

airlines typically cut staffing levels that can end up causing major havoc when self service devices "go down". When technology fails airlines must have service employees present to take over. With technology failures airlines are forces to bring in service employees to take over and compensate for the services that SST should be providing. Bring staff in can take a substantial amount of time to complete and cost the airlines a substantial amount of money. Systems downtime can cause mass confusion and cause passengers to become frustrated and disgruntled which in the end can produce additional unforeseen expenses on the airlines (Conroy, 2008). Not only do passengers become frustrated but those service employees already on duty can be faced with challenging circumstance and forced to work additional hours that add to airlines expenses.

Conclusion

The review of literature referenced throughout this paper helps gain an understanding of the affects SST has on airlines and the customer experience. There is literature that addresses how the airline industry has been affected by the use of SST and its influence on customer behavior. SST is needed for airlines to reduce cost, increase revenue and create happy, loyal and satisfied customers. SST is a driving force in how airlines operate today and in many years to come. With a change in how customer's access travel information airlines must also change to meet new demands. SST allows airlines to achieve more and change the travel experience greatly. SST is key for long-term airline success, while growing numbers of customers are using technology to produce better service outcomes (Meuter, 2000). Through the review of literature it is clear that both airlines and customers travel experiences are impacted greatly by the use of SST.

Part Three

Future Trends and Recommendations

Introduction

The airline industries use of SST has changed how airlines and customers function when it comes to travel. SST has been a driving force in the way customers interact with airlines as well as how airlines operate. The purpose of this paper was to research the impact of SST in the airline industry and understand its importance on airlines and the customer experience through the review of literature. The literature reviewed has indeed shown that SST has an significant impact on the customer experience and how airlines industry operate. The review of literature also addressed how SST has evolved, customer's behavior towards SST and the financial impact SST has had on the industry. While SST has advantages and disadvantages impacting how airlines operate, it is clear that in order to move forward and achieve more, airlines must implement and encourage customers to use SST to their fullest potential. The final part of this paper will address future trends in SST and recommendations for the use of SST in the airline industry.

Future Trends In Self Service Technology

The internet has played a significant role in how businesses operate, having a substantial impact on how and why the airline industry uses SST. The internet took the world by surprise in the early 1990's (Leiner, 1996), in the years to follow the internet became a driving force in how customers and airlines used SST. The potential benefits offered by the use of the internet greatly impacted on how companies began to use SST. The internet has provided users with endless possibilities hence the use of SST in the airline industry. The internet has allowed airlines to use devices such as CUSS kiosks to communicate a substantial amount of information

between airlines and passengers.   Additionally as technology quickly advances, customers are now able to use mobile and personal devices such as, smart phones and personal computers to complete their travel arrangements which helps make the travel process more convenient for customers.

Surveys have shown that customers want airlines to use SST to enhance the travel experience.   In 2010, NCR Corporation reported that European consumers who check-in for flights online, through mobile devices and at airport kiosks prefer to use SST to manage all of their travel arrangements. The survey reported that customers are more likely to use airlines that allow them greater control of their travel with SST (Retail, 2010). Another survey completed by Airline IT Trends in 2010, reported that 12% of travelers will check-in through mobile devices and about 70% of airlines already sell or plan to sell tickets through mobile phones by 2013 (Ltd, 2011). By implementing and encouraging the use of SST customers and airlines are both able to take part in a "fast track" system that allows for a quicker, seamless flow of travel.

What's next – future trends.

Ask yourself, what does the future hold for SST in the airline industry?   What can customers expect to see in the coming years as technology continues to develop? How will airline operations be affected by the use of SST? The possibilities seem endless, but let's look at future trends in SST, that the airline industry is most likely to see in the coming years.

Self service from home and through kiosk.

While currently customers are tagging luggage at the airport, in the near future customers will be able to tag luggage, check-in and printing their boarding pass from the convenience of their own home. Upon arrival to the airport customers will soon be dropping their tagged luggage at common bag drops. Common bag drops allow customers to tag luggage from home

or through a self service airport kiosks (Falconer, The Future for common use bag drop, 2009) and drop off at a central location in the airport, no matter what airline is being used (Ltd, 2011). From an operational standpoint airlines and airports will be able to reduce costs through fewer baggage drop counters and increased customer satisfaction, as customers will no longer need to search for a specific airline drop off counter. With the use of common bag drops airlines and passengers will be able to use a centralized area for drop off. The centralized drop off location will help reduce required space or additional space needed had airlines continued to use individual drop off locations. The centralized locations will help decrease the space or expansion space needed for individual counters, to meet demand. Airlines will be able to use service agents in other areas such as support agents, special assistance agents, training agents, etc., to better meet both the airlines and customers' needs.   From the customer perspective the common bag drops can improve service and satisfaction while providing customers with increased speed of check-in and drop off (Falconer, 2008). Airlines are able to save on real estate rental space, use employees in other areas that need more employee presents, all while increasing the speed of the luggage drop off process. Customers are able to "take ownership" of their travels by tagging and checking in from home and dropping off luggage conveniently when entering the airport. Common bag drops allow for a win-win for both the airlines and customers.

Luggage often goes missing when customers are traveling to multiple destinations, making connecting flights, delayed/changed flights or through simple airline error. To help improve the search process airlines will soon be offering missing luggage kiosks that aid in locating miss handled luggage. Missing luggage kiosks allow airlines to reduce/eliminate the need for missing luggage offices and staffing and provide customers with SST that's available 24 hours a day at a substantially reduced operating/staffing cost. Customers are able to control the

reporting process with SST terminals specifically designed to track luggage.   LF Wade International Airport was the first to install such kiosks in 2010. The kiosk is connected to the airlines global tracing system that allows passengers to scan baggage claim tags, enter personal information and remains informed until their luggage is safely returned (Airport Debuts Baggage Tracking Kiosk, 2010).

Barcode readers are becoming necessary to read the barcodes on luggage, passports and tickets. Kiosks and self service devices are now offering scanner devices that are similar to those at grocery stores. Barcode readers allow airlines to increase the speed and flow of customers as customers are able to place the barcode under a scanner, scan and move on with the check-in process in seconds. Prior to using barcode readers and kiosks customers were waiting in lines to have a service agent complete a repetitive check-in process, the barcode reader helps eliminate this step. Simply holding a document under the barcode reader allows the device to scan the barcode and verify specific information about the customer and their travel arrangements. Barcodes scanners will become more of a necessity as mobile technology begins to take over the check- in process.

Going mobile.

With a quick flip of the phone and a simply log in to the internet, customers will soon have the ability to check- in, in the palm of their hand at any given moment. Mobile check in is currently in the beginning stages as airlines move towards a paperless process, which allows customers to integrate the mobile check in process to their internet capable phones (Brockman, 2009). The mobile check-in process is soon to be the norm as this practice can improve and greatly impact both the airline and customer experience when traveling. Airlines are able to eliminate the check-in process from the counter and self service kiosks and allow customers to

take control over the check-in process from the palm of their hands. Customers are able to log online through an internet capable phone, complete the check-in process and receive a mobile boarding pass that includes a two dimensional barcode, passenger name and flight information all within seconds. The two dimensional barcode, can be scanned by a TSA employee with a hand held device that verifies authenticity of the boarding pass. This type of mobile check- in is currently being used at airports with one central TSA security check point and soon to expand to others, however security measures are currently a concern (Nunziata, 2009).

Mobile phones can also be used to transport ticket information, such as confirmation numbers in e-mails, which allow customers easy access to their information in one hand while using the other hand to input necessary information into the self service kiosk, this helps reduce the need for additional information carries such as planners, paper ticket confirmations, black books, etc.

Biometric technologies.

Did customers ever think that technology would be able to electronically identify who they are by physical or behavioral characteristics? Most likely not, but today as technology continues to improve it's a matter of time before SST devices are in place to identify peoples physical and behavioral characteristics. While still in testing stages some airlines are currently use iris recognition, fingerprinting, facial recognition, hand geometry and signatures as a way of interacting and identifying travelers and service employees identification (International Biometric Industry Association (IBIA), 2001).

Iris detection allows for identification of personal patterns of the iris which help in the identification process. The Charlotte/Douglas International Airport was the first to install iris recognition devices, which have been used to control access points for airline employees

(International Biometric Industry Association (IBIA), 2001). With the future use of fingerprinting and hand geometry, customers and employees will be able to move quickly through security access points throughout airport locations. Fingerprinting systems have moved from the old school paper and ink technique to electronic in nature which can be easily scanned, read and analyzed in seconds through technological devices. Fingerprinting not only can be used to control access points but can improve the flow of travelers when traveling to foreign countries, through international airports when used for security measures (International Biometric Industry Association (IBIA), 2001).

Radio frequency identification devices (RFID) will allow sensory technology to be used in air travel in the coming years. Airlines and customers will be able to attach sensory devices or smartcard/chips to passenger luggage that will help airlines identify the location of such items. Knowing the every step a piece of luggage takes, can help airlines better track the location of both luggage and guest. If a guest is expected to arrival at the airport and their bag(s) are tagged, the airline can know locate the item or customers immediately. If a piece of luggage traveling to New York ends up on a plane to Nevada the airline can quickly locate the luggage and make corrections immediately. RFID and global positioning systems (GPS) can act as a communicator to inform airlines when customers have arrived, checked -in or moved about the airport or other airport facilities. Although this type of technology can provide many benefits for airlines some customers might shy away as they could feel that the device violates privacy laws and interferes with their personal travels. Privacy concerns could challenge airlines, in regards to RFID, which will encourage them to find ways to ensure privacy concerns to get passengers on board and feel comfortable with such devices.

Social networks.

If passengers are able to connect with other passengers that they know from social networks then why not use social networks to make the traveling process easier and more enjoyable? Almost 148 million internet users, 63.7% of all internet users, were reported to have accessed social networks in 2011 (Williamson, 2011). With the use of such networks airlines will be able to unite those passengers that are connected through social networks. This can be beneficial in seating assignments, which can connect individuals so the travel process becomes more comfortable than being assigned a seat next to someone the passenger does not know. The feeling of not knowing who will be sitting next to you when traveling can be eliminated with the help of social networking.   Being able to choose someone you know to sit next to on an airplane could be an added perk that once was not possible. Additionally friends and family can be connected easier through social networks, instead of having their name used on the airports announcement systems, to communicate with each other while traveling throughout the airport facility.

Both the airline industry and customers can benefit greatly with the use of the listed future technologies. Self service technology is consistently changing and future trends are sure to improve the way the airline industry and customer experience are affected.

Recommendations

The airline industry must embrace SST's as they continue to develop and change in order to remain a player in the SST world. Knowing the impact SST has on the industry and individual airlines is import to control how airlines and customers are affected by the use of SST. It is important for airlines to know how customers are affected by SST and which technologies

work best for future success in the industry. With the review of literature and future trends in mind the following recommendations can be suggested:

- Airlines should study and review the impact SST has on airlines and customers prior to selecting specific technologies to put in use.

- When studying and choosing SST, airlines should explore user friendly SST that works best for the airlines and customers.

- Training employees to know the "in's and outs" of how to use the SST which then results in improved customer use.

- Communicating effectively between airlines, workers and customers can help improve the SST experience and implementation.

- Communicating effectively can also aid in customer training costs.

- Survey customers to know how they feel (fear or happiness) when faced with the choice of using SST.

- Study the customer experience and learn what works best for the customer and what encourages customers to choose SST over the service employee interaction.

- Use more cost efficient SST devices to meet budget guidelines and help reduce customer costs.

When making recommendations for customers/passengers it comes down to communicating effectively. If the airlines don't know what customers want or dislike then it becomes harder for them to know how the customer feels about SST. If customers are not willing to communicate with the airlines, the airlines have a difficult time knowing how to meet the customers need and wants. In regards to recommendations, it's important that customers take the time to inform the airlines about their feelings towards SST, including both positive and

negative information. Completing customer satisfaction surveys and providing personal letters

regarding experiences can all impact how the airlines choose what SST they use and how they go

about introducing it to the customer/passenger. By providing feedback the airlines can better

understand the customer experience and work hard to meet the needs of those traveling

passengers.

While the provided recommendations aim to help change the way airlines and customers

view and use SST, it is important for those individuals to act and do what's best for the industry

as w hole. Working together to move forward with the use of SST can help improve the travel

experience while potentially having a positive effect on the future exists of SST. Using the

provided recommendations can help improve the airline customer experience when it comes to

the use of SST and help make great improvements in the way the travel industry uses SST.

Conclusion

SST has taken the airline industry beyond what anyone could ever imagine when it comes

to the use of technology. The airline industry has been able to take full advantage of these

devices to gain a competitive advantage in an ever growing marketplace that is continuously

looking for growth and change. The purpose of this paper was to research the impact of SST in

the airline industry and understand its importance on airlines and the customer experience.

Through the review of literature the paper shows that SST impacts both airlines and the customer

experience while traveling. Advantages such as increased control over the service delivery,

convenience for airlines and customers, reduction in operating cost and flexibility (service hours

and location) have all played an important role in how SST impacts airlines and the customer

experience.   While the airline industry continues to grow and move forward, SST will play a

vital role in the way airlines and customers operate in the future. The airline industry is sure to

see great changes that will positively affect how the airline industry operates in the years to come.

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