Toward Zero Faults In Passenger Flights: A Proposed Framework

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ABSTRACT

The purpose of this paper is the creation of a new framework for airlines to implement information technology systems that will aid in the prevention of service failures and passenger complaints during air travel. This framework can lower the amount of service lapses and subsequent customer complaints, helping to improve service quality and the airline's reputation through proactive monitoring of the services provided to passengers and avoiding failures. The proposed system is based upon IT systems that are used extensively to continuously monitor the airline's service infrastructure in the following ways: 1) detecting and preventing service lapses, 2) notifying passengers of malfunctions, and 3) following up with customers. The value of implementing these systems is illustrated through various scenarios that are likely to occur on commercial flights and typically result in complaints from - and discomfort for - travelers.

Keywords: Passenger Flights; Service Failures; Customer Complaints; Information and Communication Systems; Customer Satisfaction

INTRODUCTION

*D*ue to the increase in worldwide air travel and the airline industry's subsequent growth, the establishment of qualitative and punctual flight services is more important than ever in both the economic and commercial sectors (Kim and Lee, 2009). Nowhere is the operation of services more complicated and challenging than in the airline industry, which is used daily by millions of people traveling to and from destinations throughout the world. Air transportation also necessitates the use of a wide range of resources, procedural standards, and stringent safety regulations.

Because they are constantly striving to reconcile the need for improved qualitative services with consistent customer service, airlines must continually increase their spending, which decreases their profit margins within air travel's highly competitive environment. Reducing the resources used for the operation of service can lower operating costs, though this may cause the passenger to suffer, resulting in reduced customer loyalty and decreased revenue and market shares (Duffy et al., 2006). Airlines, amongst other industries, are therefore seeking improved service models that will reduce their operating costs while maintaining consistent service quality.

According to academics and experts in the field, customer complaint management has become more important than ever in recent years. When customers' expectations of service are not met, they are dissatisfied. However, this dissatisfaction differs from individual to individual due to the heterogeneous nature of personality and preferences. Studies in this area have shown that customers are more likely to complain when their disappointment in service is due to some discomfort they experienced or damage done (Schoefer, 2008; Gustafsson, 2009; Tronvoll, 2011). The Service Gap model (Parasuraman et al., 1985), however, insists that complaints can also be the result of customers' expectations not being met by the service provided, even if the service is not necessarily subpar.

Despite the easy accessibility of complaint management representatives capable of efficiently solving problems, most customers will simply leave their service providers instead of vocalizing their complaints (Cronin and Fox, 2010). This makes it almost impossible for companies to correct the issues causing the dissatisfaction or put preventative measures into place, rendering them incapable of regaining consumers' confidence (Chebat et al., 2005; Sharma et al., 2010).

Customer complaint management, though useful, focuses only on rectifying dissatisfactions when they arise, whereas preventative service management is designed to solve problems *before* they arise, eliminating customers' discomfort. Moreover, when customers' satisfaction levels decrease, they become less willing to spend money on the offered service, leading to a decrease in profits for the service provider. To prevent this, maintain their reputation, and improve their revenues, a company must identify and eliminate possible problems *ex ante* (Anderson et al., 1994; Rust et al., 1995; Loveman, 1998; Gupta and Zeithaml, 2006).

Other business in the scientific and engineering sectors (e.g. logistics, mechanical engineering, electrical work) have always emphasized the importance of preventative measures designed to predict and thwart problems within systems operations, but the body of literature written on the tourism industry focuses mainly on post-failure problem-solving.

THEORY

The main goal of preventative service management is ensuring customer satisfaction and preemptively eliminating factors that could lead to consumer dissatisfaction as a result of malfunctions in human-based and automated systems. Failure prevention has been examined in the airline industry with specific regard to maintenance and safety policies (see, for example, Liou et al., 2008; Netjasov and Janic, 2008). However, little research has been done on preventative measures that could possibly improve the overall customer experience, which this paper aims to remedy by proposing a toolset and methodology to implement preventative service systems in commercial airlines.

Barkai and Harison's (2011) framework helps to improve service quality through the implementation of information systems designed to monitor, over time, the service provision infrastructure and therefore prevent failures in service before they arise. The authors expand upon preventative services' benefits in terms of avoiding service failures through the identification, monitoring, and prevention of the various factors and incidences that can result in problems and a lowered customer approval rating. By implementing these systems, airlines can improve their service without inconvenience or high recovery costs.

This framework and corresponding methodology has been designed to reduce the frequency of service failures through the establishment of a model to address the entire range of service-related procedures and organizational methods based on the four main stages of detection, prevention, notification, and follow-up (see Figure 1).
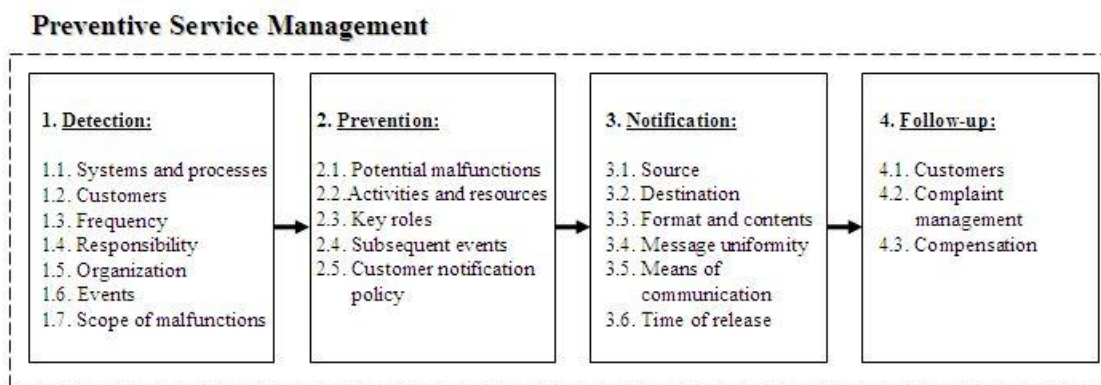

Figure 1: Stages Of The Preventive Service Management Process

Detection refers to the process of continually monitoring service procedures in order to eliminate the possibility of events that could cause possible dissatisfaction. An airline company may, for example, keep constant tabs on all aircraft maintenance issues, both major and minor, using real-time monitoring systems that can cover the

services in international destinations while keeping labor costs low. The systems of information and service activities carrying out the detection process need to address the following concerns:

1. All operations, processes, and systems related to service that require constant monitoring by the airline, the scope of which correlates directly to how important each type of operation is, as based upon customers' opinions of its significance (Liou et al., 2011)
2. The number of customers in each category (e.g. business, frequent fliers, all passengers) who will be taking advantage of the early detection
3. How often the detection process operates (e.g. services being monitored hourly, daily, weekly)
4. The party responsible for the various detection services and operations
5. The methods by which the detection operations are organized and undergone, and the information sources and airlines chosen for use
6. The definition of "service malfunction" as it relates to dissatisfaction within the airline

Prevention refers to any steps the airline takes to actively eliminate the factors contributing to the success or failure of their service quality. During this stage, the airline should engage in activities to preemptively impede failures in service quality; for example, within emergency and contingency plans - in the case of service outages and maintenance issues, specifically preemptive measures, include organizing back-up plans to shorten the duration of malfunctions and service shortages, thereby minimizing negative financial impact.

The framework presented here consists mainly of the following preventative steps:

1. Pinpointing places where failures of service may occur and finding ways to resolve them before they become problems
2. Allocating and prioritizing the resources and processes necessary for the prevention of service failures based upon economic factors; i.e., companies may choose to invest only in averting the events in which repairing the damages caused would cost more than the prevention resources (not taking into account the cost of reduced service quality and the airline's reputation thereof)
3. Informing key players (e.g. the CEO, technical experts, customer service managers, and other major stakeholders) in the company of the prevented service failures
4. Preventing further negative events that could occur after a service failure

Notification refers to the delivery of information regarding service lapses to the customers most likely to be affected by it or customers deemed important enough to warrant an early warning, delivered either in conjunction with preemptive measures or after the preemptive stage has been completed in its entirety. The framework proposed here suggests an automated notification system that would enable the company to address many customers at once should the service failures be widespread. Furthermore, firms are urged to create *active* notification systems that can contact customers in case of expected delays or other detected service lapses that may or may not affect the customers' plans. Should a company choose to implement these notification systems, the following aspects need clear definition:

1. Any organization units or personnel charged with notifying customers of potential or current service failures. Depending on the type of event, this duty can be shared by several organizational units or assigned to one department (e.g. customer care).
2. Each message's format and content included in it
3. Uniformity amongst messages, ensuring all passengers receive the same notifications (e.g. business class versus economy, passengers flying alone versus those traveling with children)
4. Mode of communication (SMS messages, emails, or phone calls)
5. Timeframe for providing notifications

Follow-up is the final step in the prevention cycle and refers to the continued support of customers through the delivery of detailed information about any incident about which inquiries are made, the addressing of complaints, and the offer of assistance when service recovery poses an inconvenience, either through compensation or apology (Maxham, 2001). Additionally, the results of this stage can provide valuable insight to help analyze prior

service malfunctions and prevent similar occurrences from happening in the future. When discussing the follow-up stage, a company needs to consider the follow things:

1. After any service failure, the customers that were notified of it are contacted again to make sure they did not suffer any damages or inconvenience. Alternatively, an airline can opt out of this notification should the service failure have been prevented successfully.
2. As part of complaint management and the general customer care process, an airline must handle issues as they arise, then evaluate the documented claims as a means of improving service.
3. Initiating compensation programs, either financial or non-financial (a review of different compensation methods can be found in Maxham and Netemeyer, 2002)

METHODOLOGY

ELAL, the Israeli national airline, and Arkia, the privately-owned airline offering scheduled passenger flights from Israel to many international destinations, were the companies chosen for this study. With a case study approach applied in order to identify some scenarios considered by passengers to be failures of service as based upon the analysis of 1,200 relevant passenger complaints during commercial flights with both airlines between January 2011 and June 2012, a comprehensive set of data was compiled. This information was then distributed to the proper parties based upon the eleven categories of prior service studies conducted within the airline and tourism industries (Gilbert and Wong, 2003; Khan, 2003; Harris and Goode, 2004; Kim and Lee, 2011) - see Table 1 for the distribution of passenger complaints.

Over a period of four months, a series of interviews were conducted amongst 25 airline employees working in senior service, operations, and IT management. These interviews were then compiled and analyzed for new information regarding the provisions of airline services, the quality of air travel, and passengers' experiences. The completed analysis and accompanying framework were proposed to and reviewed by operations and service representatives from both airlines to confirm the accuracy and whether or not it was sufficient with regard to their flight service operations.

APPLICATION OF THE PROPOSED FRAMEWORK IN AIRLINES

This section describes how airline companies can apply preventive service methodology to passenger flights in particular. The scenarios presented here aim to neutralize the sources of potential service failures and thereby eliminate the occurrence of customer complaints.

Listed below are the most frequent sources of customer complaints (Weber and Sparks, 2004; Kim and Lee, 2009):

*   Airline punctuality and convenience of flight scheduling
*   Food quality and attention paid to dietary needs (requests include vegetarian, Kosher, gluten-free, children's meal)
*   Complete and correct delivery of checked baggage at the destination
*   Check-in service
*   Cabin service

To prevent a great number of service failures and malfunctions, airlines need only implement a few proactive measures to monitor and correct these errors, thereby preventing them for happening in the future. Service begins when customers order their tickets, which means the opportunity for problems begins at the same time, ending only once those same customers have collected their luggage at their destination. There are three main groups into which these lapses in service generally fall:

1. A lack of streamlining between the airline's various information systems that collect and analyze data about passengers or airplanes, which can result in the mistreatment of customers, despite information about their booking preferences being available. For example, a malfunctioning seat that has been logged in the

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airline's maintenance information system may not be removed from the ticketing system before it has been repaired, forcing the unlucky passenger who purchased that spot to be moved by the crew to a different seat prior to takeoff.

2.   Limited knowledge of passengers' flight habits and needs, despite information provided via booking websites or agents, which could ensure a smooth booking process. For example, passengers purchasing children's tickets should be unable to choose seats in the emergency exit rows, as children cannot open the doors in case of a crisis. This causes delays and inconvenience when crew members are forced to displace other passengers in order to reseat the family in an appropriate row, all of which could have been avoided with proper preemptive measures.

3.   Inferior services are given to passengers when mistakes are made due to a lack of attention on the part of the service provider, which automatic tracking of the problems could have prevented them from happening more than once. For example, should a passenger with special dietary needs forget to note these requirements while booking, a frequent flier system can use that passenger's booking history to ensure their needs are met by contacting the customer prior to the flight to validate his or her choice.

Table 1 provides a summary of the events that could cause lapses in service to occur throughout the process of providing these services to passengers during commercial flights. These service areas (and therefore the failures therein) are not mutually exclusive, so an airline can choose to implement all or only some of the suggested resolutions.

One of the common service failures that could easily be prevented by airlines is a discrepancy between the meal ordered for a passenger and the meal requested by him or her (seventh category in Table 1), which is often the result of an error in online booking or an oversight on the part of a travel agent. This can be a source of inconvenience for any passenger whose dietary restrictions (either medical or religious) prevent them from consuming the standard meals ordered by the airline. Figure 2 shows how to prevent such a mistake by connecting the airline's different information and data collecting systems, thereby ensuring passengers' meal preferences are logged in flight records and honored accordingly. Should no discrepancy be found, the passenger will receive a confirmation of flight and meal details via SMS. In the case of a mismatch, the passenger will be contacted by an airline representative who will verify that the meal choice was the correct one and, if it is not, makes the necessary changes.
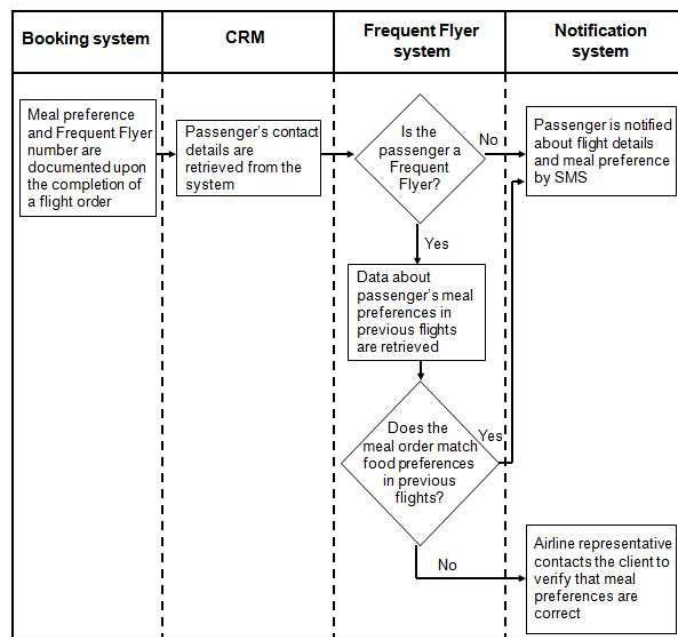

Figure 2: Preventing Mismatch Between Meal Orders And Passenger Preferences

Table 1: Potential Service Failures In Passenger Flights And Activities To Monitor And Prevent Them

	Service Failure Description	Proposed Solution	% Of Complaints
1	Unplanned flight delay - Delay of arrival to the destination and possibility of missing connection flights	Notification of passengers upon the event, the expected delay and instructions what actions should be taken. Preparation of dining and sleeping arrangement, if needed, including passenger transportation.	32
2	Arrival of passenger luggage to a wrong destination	Receipt of contact details and address from passengers reporting luggage claims. Update of passengers via SMS or phone upon finding the luggage and coordinating its delivery. Installation of additional barcode readers in baggage compartments of airplanes to prevent wrong loading.	26
3	Meals do not fit preferences of passengers (vegetarian, Kosher, etc.) due to travel agents' mistakes or passengers forgetting to specially order them	Automatic review of Frequent Flyer history can reveal mismatch between passengers' meal orders in the presence and in the past. Then, a company representative will call the passengers to ensure the accuracy of their present meal order.	10
4	Planned flight delay - Delay of arrival to the destination and possibility of missing connection flights	Notification to passengers about planned flight change (via SMS or phone). Rental of aircraft and crew, if needed. Frequent update of passengers.	9
5	Ticketing and seat allocation - Improper allocation of seats for babies, children and disabled persons by the ticketing system	Allocation of baby and parent seats by the ticketing system upon completion of a booking. Child seats would not be permitted next to emergency exits. Disabled persons ordering wheelchairs would not be seated next to emergency exits. Unavailability of seats due to technical problems requires notification of maintenance, temporarily removal from the ticketing system for upcoming flights and automatic allocation of alternative seats if purchased.	6
6	Flight time brought forward – Inconvenience and loss of Duty Free shopping time	Passengers are notified via SMS or by phone	4
7	General or specific seat malfunctions in the media system	Reporting the malfunctions to maintenance. Distribution of media players to passengers.	4
8	Reduction of pre-flight waiting time	Luggage collection from the passenger's house (as a premium/standard service).	3
9	Confusion about the flight time due to mistakes and lack of attention	Redesign of the electronic ticket to highlight the flight date and time. Delivery of SMS with the flight details the day before.	3
10	Animal transport – Lack of passenger's knowledge can impede the check-in process or would not allow transporting the animal.	Delivery of an email few days before the flight stating the procedures and requests in detail, including contact details of the airline's advisory veterinarian**.**	2
11	Flight manifest inaccuracies - Passengers do not appear in the manifest despite purchasing and receiving their flight tickets	Before flights automatically examining that the manifest and the passenger ticket purchases are identical. If mismatches were revealed, passengers would be provided with alternative seats.	1

CONCLUSIONS

Unlike the current body of research literature about the relationship between customer and service, which focuses mainly on preserving customer satisfaction by addressing complaints as they arise, this paper has taken the opposing approach - improving service quality through preventative measures with a management framework based upon monitoring service provisions to eliminate failures of service before they occur. Illustrating these preemptive measures within the airline industry, specifically, was a choice made due to how closely related quality of service and gross revenue are within air travel. Moreover, airline operations have a certain level of sensitivity to failures of

service on many levels (e.g. technical malfunctions within the aircraft cabin systems, lost luggage, extended wait times due to delays, etc.).

Though the current methodology suggests the majority of companies providing a service to customers, such as airlines, are reactionary when confronted with service malfunctions, the most effective way to reduce the negative consequences of service failures and maintain customer loyalty and satisfaction is by taking measures to prevent problems from ever arising in the first place. This methodology also calls for an extensive utilization of information and communications systems that can positively affect the communication between the airline and its customers - e.g. notifying passengers immediately regarding changes in their flight schedules or unexpected delays. It also allows them to collect and compile data sets on the habits of their customers, thereby preventing occurrences, such as accidentally overlooking dietary needs or ticketing broken seats. Automatically processing information and preparing for potential failures of service through the use of information and communications systems allows airlines to enhance the quality of their service while simultaneously economizing the labor and recovery costs.

Though this conceptual framework presented in this paper offers new ideas for the installation of preventative service measures in the airline industry with specific regards to commercial passenger flights, the methodology, as discussed above, can be implemented in other capacities to achieve the same effect – e.g. enhancing service quality in ground transportation or cargo service. This framework can be built upon with additional theoretical and empirical research to create programs for the prevention of service malfunctions in other areas of the air transport and tourism industries.

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