



A Pre-Flight Safety Demonstration

HRISHAV KUMAR DHALI

Department of Masters of Business Administration (MBA) in Aviation Management,
Hindustan Institute of technology and Science, Chennai-603103

Abstract: It is a safety demonstration to the passengers on board by the crew members before every take-off. It has been noticed that most of the passengers on board doesn't pay enough attention. So, the study of passengers' perception toward safety instruction provided on board is quite important in increasing the safety awareness for the travelling of public in commercial aircraft. It was found that watching the cabin safety demonstration before aircraft take-off was believed to be very important for passengers. However, the attention to the safety demonstration remained low because the safety briefings were not good enough in terms of clear communication, particularly in the recorded audio demonstration and the live safety demonstration methods of briefing.

Keywords: in-flight safety information; characteristics; attitude; customer satisfaction; customer trust; safety behavioural intention, its benefits and limitations.



1. Introduction

In the aviation sector, safety is the first and foremost matter and it is also related to profit, and to accomplish their sustainable planned goals. Safety is given priority because in most of the aircraft accidents/incidents, occurs due to carelessness due to which many lives are lost. Since the amount of damage caused by an aircraft accident/incident as per recorded is high, safety is given first priority. As the safety is most important issue for airline operations, the Federal Aviation Regulations require that all air carriers should provide a safety demonstration to all passengers before the aircraft takes off. The basic

method of presenting the cabin safety demonstration is a live safety demonstration, which is performed by flight attendants orally briefing and demonstrating the safety procedures, which everyone had experienced while flying. A safety card is also provided in every seat to those who are confused in live demonstration.

These methods attract the customers/passengers in different ways. Even though passengers receive the pre-take-off safety demonstration, several accidents have shown that passengers cannot protect themselves in emergency situations because of lack of attention during safety demonstration. Passengers' attention toward cabin safety demonstration still remains limited. Therefore, air carriers should provide an effective safety briefing that attracts passengers' attention and can be understood easily, so as to increase passengers' interest in listening to the safety demonstration on board. The International Civil Aviation Organization (ICAO) has prepared international safety standards and standards for navigation safety and accident prevention and recommends that 193 contracting countries follow them (ICAO, 2016). This provision reflects the implementation of the aviation Safety Management System (SMS) to improve overall safety management and aviation safety in airlines' management plans. It also includes safety risk management for the sustainability of the aviation industry.

All of companies are undertaking diverse attempts to achieve sustainable development, and these efforts are being evaluated in various aspects. Special assessments are/may be added depending on the industry. According to source, the average number of casualties from commercial air travel incidents/accident is dropping.

According to ICAO, "safety" is a state in which the level of risk that can cause personal injury or property loss is maintained below an acceptable level through risk management (ICAO, 2013). Airline accidents not only cause financial loss to airlines and a decrease in productivity of workers, but also indirectly cause distrust and anxiety about safety in society as a whole. This eventually damages the company's sustainable development. Airport safety is critical for the sustainability of the aviation industry, therefore risk tolerance and negligence that can cause accidents must be reduced to prevent accidents. Airline accidents have a significant impact on the level of safety awareness of airline users and change their preference for other modes of transportation.

An aircraft accident causes anxiety and distrust of domestic/foreign passengers and the loss of airline's reputation and image, and it also lowers the international safety grade evaluation of the relevant country. This brings down the value and competitiveness of the relevant airline in long term, which is working as a factor threatening the sustainability of management.

As per the National Transportation Safety Board it was reported that 96% of passengers survived from freight aircraft accidents, and in 46% of severe accidents, the survival rate was 80% for last 20 years. **They also stated that the survival rate could become much higher if the passengers were fully aware of flight safety demonstration and rules.** Thus, for the survival from aircraft accidents, the importance of passenger to escape route from an aircraft in case of accident was rising up, and through the results of research, the in-flight safety for several years, people started perceiving the necessity of passengers' interest in the provision of in-flight safety

information and communication of information. In the results of examining the factors affecting the survivability in survivable accidents, the improvement of passenger perception of emergency escape method is a major factor.

To reduce the violation of regulations and avoidable risks while traveling by an aircraft, it is essential to acquire the in-flight safety information. Considering that the emergency coping method could be smoothly performed simply when the passengers pay more attention to the in-flight safety demonstration and carefully read the safety briefing card, the importance of communication is more emphasized. The method of provision could be largely classified into in-flight safety information, in-flight safety announcement, and in-flight safety briefing card located behind every seat while the time could be divided into: before departure, all times during flight, before landing, and after landing. This includes the emergency landing instructions for the survival in case of emergency.

As the prior in-flight safety information about safety functions of passenger aircraft, the in-flight safety briefing that comprehensively expresses all these types is provided in the form of live briefing performed by in-flight attendants/crew members/air hostess. Furthermore, this must be performed under the regulations that should be related to "before take-off". Civil Aviation Authority (CAA) explained when the passengers know what to do in the emergency, the possibility to survive could increase, and the safety briefing and safety information card provided nearby seats provide such important information about the location of emergency exit and equipment. The safety equipment generally includes life jacket, oxygen mask, seat belt, floor lamp, emergency exits etc.

As the emphasis on the in-flight safety information was increasing, many research on its effects have been performed, and most of them focused on the effects on the knowledge of development of in-flight safety information, such as emotional responses to in-flight safety information image and perception of safety information education. Similarly, there have been researches on the effects of in-flight safety information contents on the behavioural intention, so the analysis on responses to the characteristics of in-flight safety information could attract more attention.

Literature Review

Almost in all research many Aircraft accident/incident occurs and sometimes one small mistake can make a lot of lives in danger. For example,

On April 1, 1973, a Lockheed L-1011 experienced a loss of pressurization, and during the emergency descent, most oxygen masks automatically deployed in the cabin. Several passengers, however, placed those masks only over their mouths instead of over their noses and mouths. Flight attendants had to assist passengers with the use of their oxygen masks, and also deal with passengers who were hyperventilating or suffering from an ear blockage due to the rapid change in cabin pressure. The flight attendants indicated this was difficult to accomplish while they themselves were breathing oxygen (National Transportation Safety Board, 1985). From this situation, it can be seen that panic can cause passengers to be unable to help themselves, and lack of attention to the crew safety briefing can lead to inappropriate actions of passengers.

In 2008, a Boeing 747-438 from Northwest Manila had to make an emergency descent; many oxygen masks dropped automatically from the compartment, but passengers did not know how to use those oxygen masks. Some grabbed a mask and held it over their mouth without securing the elastic strap, while other passengers donned a mask and forgot to pull it down so as to activate the oxygen flow. This resulted in flight attendants making an announcement again about how to don and activate the oxygen masks. After the incident, all of the passengers survived, but some received injuries. It was reported that one passenger smashed a panel of the ceiling to attempt to gain access to the mask.

From these examples, it has been seen that cabin safety briefings are necessary for passengers to respond to emergency situations correctly, increase survival rate after aircraft

accidents, and improve the understanding of passengers about the safety equipment and emergency procedures (National Transportation Safety Board, 1985).

Therefore, the Federal Aviation Administration (FAA) and airlines have tried to find ways to educate passengers about the safety equipment on board. It has repeatedly been found that providing good safety briefings can increase the survivability of passengers.

Safety Procedures on an Aircraft

The Cabin Safety Team provided guidance for airlines in establishing the safety procedures on the plane. The duties and responsibilities of the crew start with the pre-flight check procedures and end with the post-flight phase duties. There are many duties which should be done by flight attendants before boarding of passengers. Not only is the pre-flight check about safety and security, but they also prepare food and beverage for serving passengers. The Flight Safety Foundation stated that excessive allocation of responsibility to cabin crew can cause reduced safety briefing effectiveness. When it is time for boarding passengers, flight attendants have to pay attention to passengers and their baggage because storing baggage in an improper location could result in risk and accidents. Before departure, verbal instructions and safety demonstrations are provided to passengers in order to help them have knowledge about on board safety instructions, and know how to behave during the flight. A safety demonstration will advise passengers with specific information to prepare and guide them in the event of an emergency. The safety briefings should be related to safety in any circumstances. The Cabin Safety Team mentioned that the safety instructions should consist of the restrictions of using electronic devices while taking-off till landing and smoking, how to fasten the seatbelt, how to use the oxygen mask, how to wear a life vest where it is located and how to fill air in the vests, in case of an aircraft landed in water, locating the all emergency exits and to use nearest emergency exits, putting a seat back into an upright position, as well as indicating the seat pocket where the safety card is located.

In "Cabin Safety: Information about the safety measure you will need to follow while on board", Director of Flight Standard Service, mentioned the Federal Aviation Regulations Part 121 about the procedures and details of safety briefings as follows:

- Before take-off, each passenger should be briefed about prohibited smoking on the plane, permissible times, conditions, and limitations to use portable electronic devices, the use of safety belts, compliance with lighted passenger information signs and cabin crew instructions, the location of emergency exits, and the type, location, and use of required flotation equipment. Moreover, crewmembers have to advise and explain the location of survival equipment such as the use of oxygen equipment, and supplemental information such as the location of the safety cards that contain additional safety information on the plane. Besides, if the flight involves extended overwater operations, flight attendants must brief passengers about location and operation of life vest, life raft, and slide/raft.
- After each take-off, flight attendants will make an announcement that passengers should keep their seatbelt fasten. "Cabin Safety" (2013) described that passengers are recommended to keep the belt fastened throughout the flight and when the seat belt sign is on in order to protect themselves from injury.
- Before landing, passengers need to fasten seatbelts, secure tray tables, set seat backs in fully upright position, and stow carry-on baggage to prepare the cabin for landing.

After landing, passengers will be briefed to remain seated with seatbelts fastened until the “seatbelt” sign has been turned off. This is for passengers’ safety and the safety of those seated around them. In addition, they will be reminded by flight attendants to use caution when opening the overhead bin.

Equipment for Doing the Cabin Safety Demonstration

Before an aircraft take-off, passengers should understand the basic safety instruction provided by crew members so as to help themselves in case of emergency. The safety demonstration will be presented by flight attendants in order to explain the safety equipment, which are necessary items to know during the flight. This equipment consists of:

- Seat belt
- Oxygen mask
- Life Vest
- Emergency exits
- Safety Card

(1) SEAT BELT



Passengers need to comply with the safety rule that wearing a seatbelt during take-off and landing can protect themselves from injury. They should notice the fasten seatbelt sign located above their heads. If it is lighted, passengers have to fasten the seatbelt until the seatbelt sign has been turned off. Moreover, in case of an emergency, even if passengers cannot see the illuminated signs, they can also hear the need to fasten their seatbelt from the announcement of the pilot.

In addition, keeping the seatbelt fastened during the entire flight is advised to the passengers for their safety. Emergency situations can happen without warning; sometimes airplanes have to confront bad weather or mechanical problems. Therefore, wearing the seatbelt during the entire flight is a passengers' best protection against any unexpected aircraft movements.

(2) OXYGEN MASK



Oxygen mask is used in case of lack of oxygen or when the cabin becomes depressurized, a sudden leak or hole into the fuselage can cause depressurization. Passengers and crew would not be able to breathe properly until lower altitudes are reached. In this case, the oxygen masks will drop automatically over their head in order to provide the required oxygen needed due to the event of a loss of cabin pressure as it is demonstrated by the crew members in beginning. Passengers need to pull down the oxygen masks to activate the oxygen flow, then place the oxygen masks on over their noses and mouths and secure them with the elastic band as stated by the crew and the crew also says that "First put on your own mask and then help with others in using mask". If passengers are traveling with children, they should place the mask on themselves first before helping their children. As the cabin pressurization could change at any time during the flight, it is necessary for passengers to know how to use the oxygen mask in unexpected situations.

(3) LIFE VEST



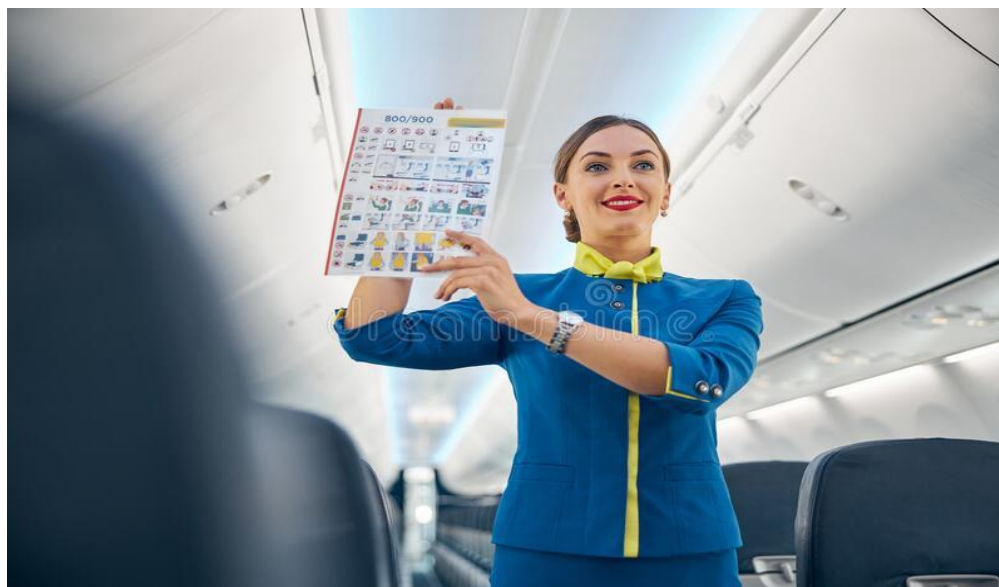
For international air transport, the International Air Transport Association (IATA) created rules and regulations that airplane traveling over longer distances or over sea, must include life jacket equipment in case of water emergencies. Life jackets and floatation devices serve as safety equipment to improve survival chances. The location of life vests is specified depending on an aircraft seat. Life vests are usually located under every seat or in the armrest. Besides, the passenger seat cushion may be detached to use as a personal floatation device. When it is time to use one, passengers have to wear the life jacket over their heads and secure the strap behind their back to keep their upper body above the water. Then, when passengers are about to leave the plane, passengers have to pull down the inflation tag to inflate the vests. Passengers are strictly warned not to blow air in life vest inside the aircraft. If lifejackets do not inflate, passengers have to blow into the inflation tubes. Moreover, each vest has a rescue light on the shoulder for night use, which is activated automatically when it is in contact with water. For a floatation device, the passenger can use the seat cushion as he holds onto the cushion to keep his head above water.

(4) The emergency exits locations



It is necessary to identify the locations of emergency exit to passengers because it could increase their survival chances. Normally there are 4 emergency exits for the passengers. Passengers have to locate emergency exits both in front and behind them as well as count the rows between them and the nearest front and rear exits. During the safety demonstration, flight attendants will be the person who introduces the information on the locations and operations of emergency exits, as well as the emergency path light leading to the exit doors. The locations and operations of exit doors depend on the aircraft model. Moreover, especially for passengers who sit in the exit row, an explanation from the flight attendant about how to open the emergency exit will be received because they sit in the nearest exit location. Passengers who sit there will be briefed on how to open the door, evacuate other passengers fast and correctly, and to grab the safety equipment from that area to help passengers after evacuation ("Plane exit row seat is a responsibility," 2005).

(5) The safety-card



To provide more knowledge and answer to the questions of passengers about safety on the plane, reading the safety information card before the aircraft take-off can improve travel safety. The safety card is located on the seat pocket in front of passenger's seat. It contains a lot of useful information to remind passengers on how to use all safety equipment when an aircraft confronts unexpected events. Therefore, to protect passengers from harm that may occur during the flight, reading the safety information card is necessary.

Accident/Incident Reports

FAA's Aviation Standards National Field Office maintains a database of accidents and incidents officially reported to NTSB (National Transport Safety Board) and reports filed by FAA (Federal Aviation Agency) field inspectors. NTSB admits that it does not collect all relevant data because reporting requirements omit some types of evacuations (i.e., those in which no serious injuries occurred). According to NTSB staff, a significant number of occurrences are not monitored because of a shortage of personnel, variability in reporting efforts, and an emphasis on fatal accidents. The performance of evacuation systems has not been the focus of accident investigations.

METHODOLOGY

(Secondary data)

In a way to understand the passenger perception towards the safety demonstration on board in an aircraft, a study was involved by qualitative and quantitative research methods. The qualitative method had allowed the researcher to examine the general level of passengers' perception and satisfaction, whereas the quantitative method had allowed the researcher to analyse and interpret data from a rating scale survey.

The Middle Tennessee State University (MTSU) faculty/staff, MTSU Aerospace students, and MTSU international students, who had travelled on an airline in 2013, were said to participate in the survey. Because *they were people who had experienced by watching the aircraft safety demonstrations in different ways*, they could remember the safety information presented in an airplane to answer the survey questions. The Passengers' perception was dependent variable whereas the type of passenger briefing received was independent variable in this study. The live

safety demonstration was the second independent variable that could affect passengers' perception, the video safety demonstration was the third type of independent variable.

Participants

The sample for the study was selected from the total population of MTSU faculty and staff, MTSU Aerospace students, and MTSU international students who have travelled in the year, 2013. The total population of 1,970 people (N = 1,970) was considered in this study (in which 780 MTSU faculty/staff, 640 Aerospace students, and 550 MTSU international students were involved.).

When compared with the table of Krejci and Morgan, 320 surveys need to be collected from MTSU faculty and staff, MTSU international students, 29 and MTSU Aerospace students. After distributing the survey, there were 308 people gave a response to this study, but there were 5 people who did not meet the criteria of the study because they had not flown in the last year. Therefore, the information from 303 respondents was used to analyse data.

Questionnaire Design

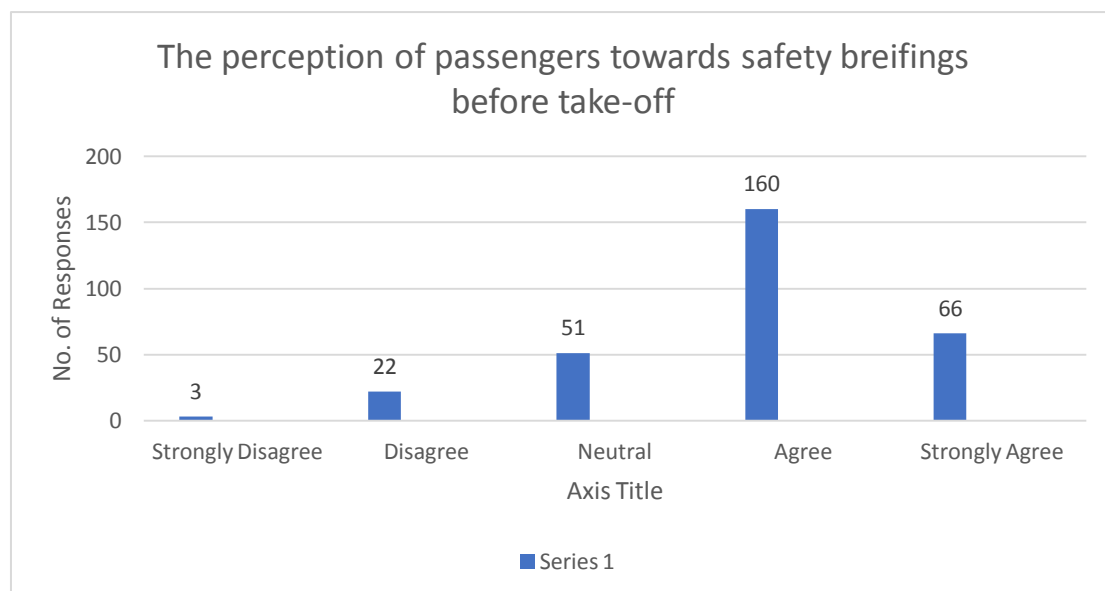
To collect data for this study, a web-based survey instrument was created utilizing the online survey collection service. Participants were first presented with a consent blurb (see Appendix A) which allowed them to accept the terms of the survey before proceeding. Participants who accepted the terms were taken to the first survey page. All responses were collected anonymously, and all data was stored electronically for later analysis.

ANALYSIS OF RESULTS

The instrument for the survey used in this study was sent to the participants on September 5, 2014 and the last response was received on September 25, 2014. From the total population of MTSU faculty/staff, international students, and Aerospace students in this study, a total of 308 responses were received. However, the information from 303 respondents was used to analyse and answer the research questions because they were people who had travelled in the last year.

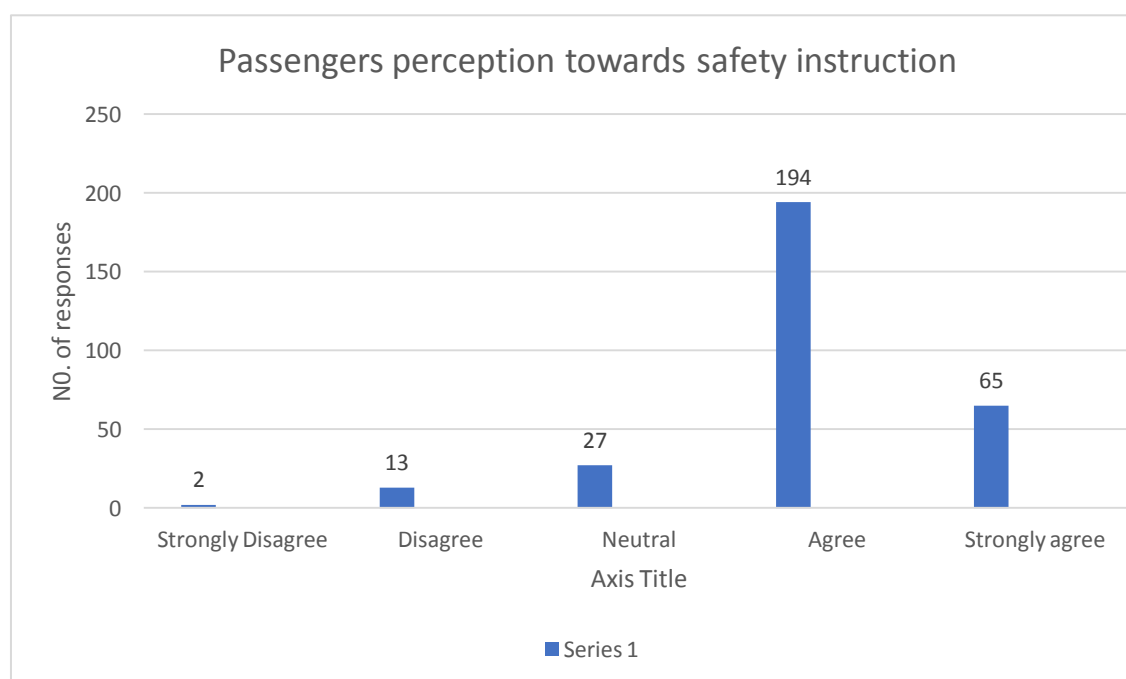
The Importance of Safety Demonstrations

In this part, there are five types of question which were used to analyse the importance of safety demonstration. The individuals were said to classify their level of importance of the safety demonstration on the Likert Scale of 1-5 rating, in which 5 is strongly agree with the importance of safety briefings and 1 is strongly disagreeing with their importance. After that, the Chi-square method was used to analyse each question and test statistical hypotheses. In the Chi-Square method of each question, those that "agreed" or "strongly agreed" were compared to those that "disagreed" or "strongly disagreed" The first question asked to the respondents was about the importance of the safety demonstration before aircraft take-off. An average response of 3.87 was obtained, which is between "Neutral" and "Agree." of the 302 respondents, 36 226 people replied "Agree" or "Strongly Agree" that watching the cabin safety demonstration before the aircraft take-off was important for passengers, while 25 respondents indicated "Strongly Disagree" or "Disagree" for this statement. After using a Chi-square test, the difference between those that agreed and those that disagreed was considered to be extremely statistically significant. The Chi-square equalled 245.185 with 4 degree of freedom and the P-value was less than 0.001. This analysis indicates that the majority of respondents (74.83%) agreed that by watching the cabin safety demonstration before aircraft take-off is important.

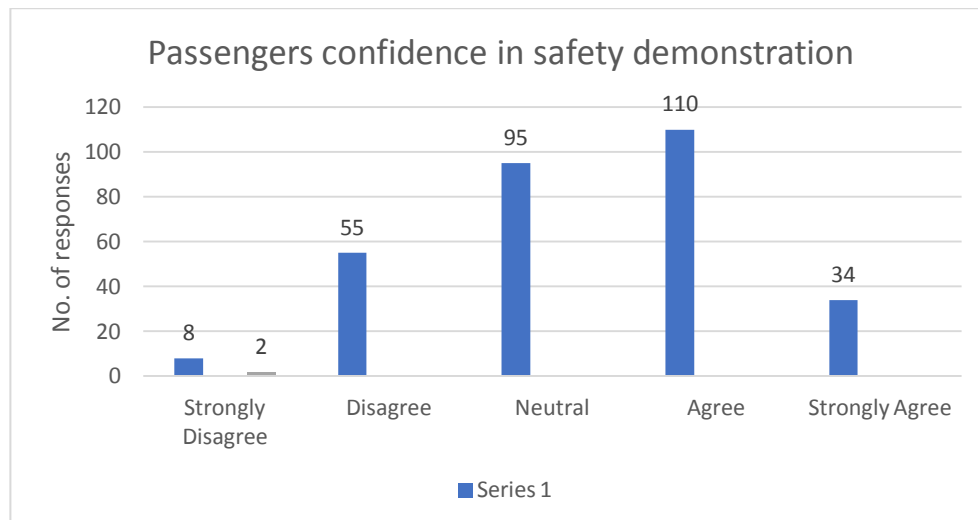


The next question according to the survey was asked, whether watching the cabin safety demonstration would help the passengers follow the safety instructions correctly. An average response of 4.02 was obtained, which is between “Agree” and “Strongly Agree.” from the 301 respondents, 259 people indicated “Agree” or “Strongly Agree”, while 15 people reported “Strongly Disagree” or “Disagree”. Therefore, the majority of respondents (86.04%) saw the importance of safety demonstration because it would help them to follow the safety instructions correctly. However, there were 15 respondents (4.98%) who did not believe that watching the

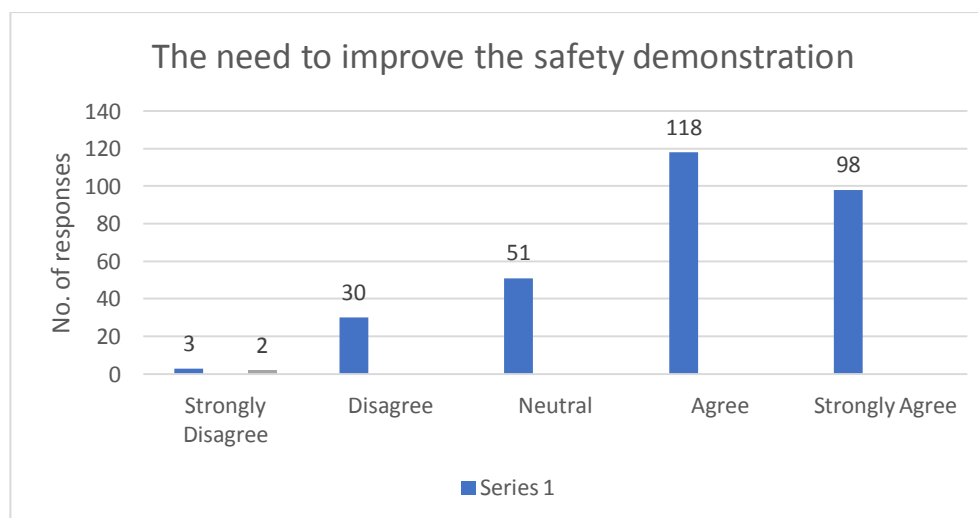
cabin safety demonstration was important. After using a Chi-square test, this difference between those who agreed versus those that disagreed was considered to be extremely statistically significant. The Chi-square equalled 409.349 with 4 degree of freedom and the P-value was less than 0.001.



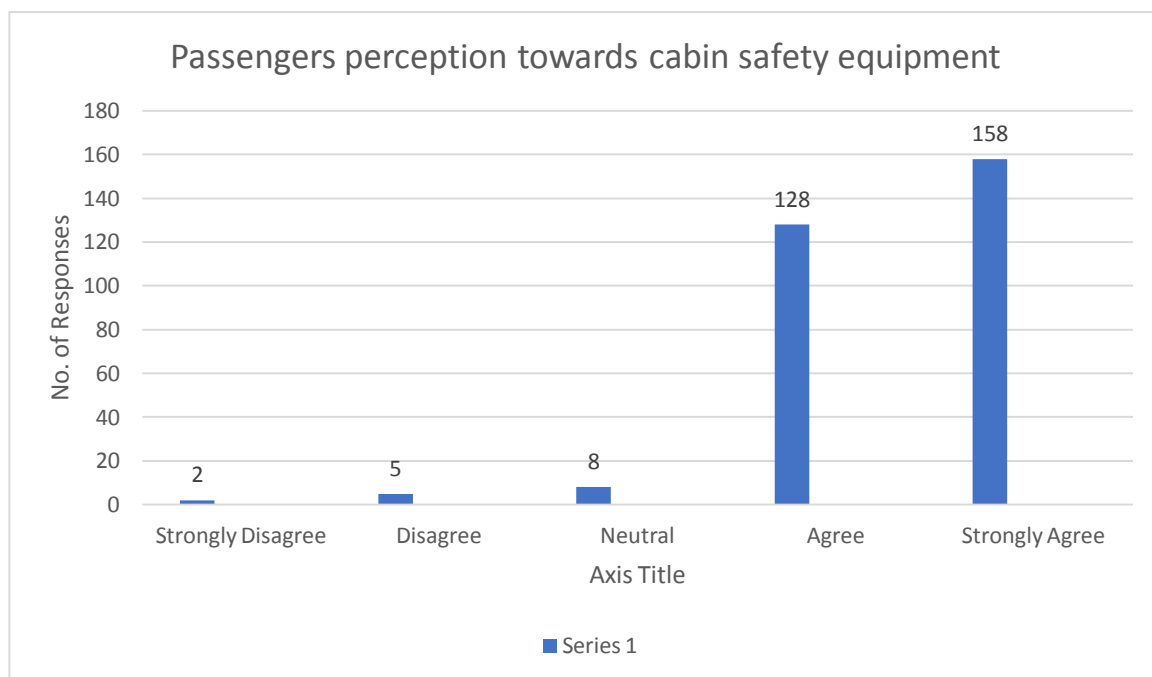
The third question was whether the cabin safety demonstration would increase passenger confidence in the aircraft's safety. An average response of 3.35 was obtained, which is between "Neutral" and "Agree." of the 302 respondents, 144 individuals (47.68%) responded "Agree" or "Strongly Agree" to this survey question. These results states that the passengers still see an importance in the cabin safety demonstration. After using a Chi-square test, the difference between those agreed and those that disagreed was considered to be extremely statistically significant. The Chi-square equalled 118.033 with 4 degree of freedom and the P-value was less than 0.001.



In the next question, the respondents were asked whether the cabin safety demonstration should be improved in order to attract passengers' attention. A mean response of 3.93 was obtained, which is between "Neutral" and "Agree." There were 216 respondents (72%) from 300 people who responded either "Agree" or "Strongly Agree" regarding improving the way cabin safety briefings are presented. Chi-square test indicated the difference between the agrees and those that disagreed was considered to be extremely statistically significant. The Chi-square equalled 150.633 with 4 degree of freedom and the P-value was less than 0.001.



The last question was asked about how importance was it that the passengers should know and understand the cabin safety briefings. An average response of 4.45 was obtained, which is between "Agree" and "Strongly Agree." Of the 301 respondents, 52.49% of people answered "Strongly Agree" that passengers need to know and understand how to use the safety equipment, ranked next were 128 people at 42.52% agreed to this statement. The Chi-square equalled 387.389 with 4 degree of freedom and the P-value was less than 0.001.



Conclusion

An aircraft's evacuation capability is one of important safety issues. The Federal Aviation Administration (FAA) reviews before the aircraft is permitted to enter service. Evacuation equipment is one of a long line of measures Intended to improve passenger safety in the event an emergency occurs aboard an aircraft. However, technology alone does not ensure that a passenger escapes the cabin under adverse circumstances. The abilities and actions of flight attendant way of conveyance and the passenger attitude towards the rule themselves factor greatly into the success of an evacuation.
