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Original Research Article

Significance of Aviation Safety, Its Evaluation, and Ways to Strengthen Security

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Abstract

Numerous studies have demonstrated that human factors are the primary cause of deadly air incidents and accidents involving passenger flights. Human error is defined as mistakes and flaws in the way a human component of a system performs a predetermined action or refrains from performing an activity that is forbidden or that needs to be completed within a given amount of time, with a specific degree of precision, or both. Vision error, measurement units, radio communication, language, aircraft warning system design, psychological stress, pilot selection and qualification, pilot flight qualification, fatigue, aging, human performance, flight crew coordination, modifications to the Course of Cadin course, and human factors in aircraft design are the typical categories into which such errors are divided. Based on international norms and indications, the investigation's findings demonstrate that the Civil Aviation Organization's supervision in the sensitive area of ISI has been appropriately followed. This matter is significant because, since 2010, the Civil Aviation Organization has complied with its standards optimally based on international audits. This is because, among domestic experts, compliance with international standards has always been a top concern in increasing safety and productivity in this field. However, determining if this issue is sufficient to establish safety and prevent accidents is crucial. In this research, we examine the risk method for flight safety, the performance evaluation index of safety, security, and flight safety by passengers, and the most important golden tips to save from plane crashes.

Keywords: Aircraft; Safety management; Accidents; Solutions; Engine; Flight safety risks.

1. Introduction

Human error is a major cause of accidents and monetary losses in many industries, including aviation [1]. defines human mistake as "any individual within a group of human behaviors that surpasses certain thresholds of acceptability; it is an action outside of tolerance, where the system establishes the bounds of acceptable performance." Human error has become a significant factor in aviation accidents, as evidenced by the fact that flight crews were involved in 66% of hull-loss incidents between 1992 and 2001 [2]. In general aviation, human error has considerably greater consequences. Pilot mistakes, for instance, were cited as the cause of 79% of the fatal accidents in the US in 2006 [3]. Aside from safety concerns, human error can cost the airline business significant money in fuel expenses, destroyed equipment, and scheduling changes like delays. For example, human error accounts for 92% of the crashes between airplanes and ground vehicles or structures at airports; these figures exclude taxiway operations and result in yearly costs to the airline sector of over $10 billion worldwide. Therefore, it is crucial to comprehend how human error plays a part in aviation mishaps and accidents [4]. The primary cause of fatal accidents is in-flight loss of control (LOC), and the overall accident rate has declined. According to the Boeing statistics summary of commercial jet aircraft accidents, 20 (out of 87) fatal LOC accidents globally between 2001 and 2010 claimed 1841 lives, or almost 37% of all deaths [5]. Based on an analysis of the National Transportation Safety Board (NTSB) accident database, incidents involving large commercial aircraft (LOC) account for over 10% of all US-based airline accidents and over 50% of all fatalities

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during the previous 20 years. Moreover, data from the LOC accident reports points to human error as the primary cause of causality [6, 7].

Over the years, numerous sources have contributed to improvements in safety. The advancement of technology in engines, avionics, and aircraft has improved the aviation safety record. Improved flight data recorders and cockpit voice recorders have benefited accident investigations. For aircraft fitted with them, the development and application of ground proximity warning sensors have virtually prevented a mishap known as controlled flying into terrain [8]. Engines in aircraft are more dependable and experience fewer failures. In fact, fewer accidents involving equipment failure have occurred as a result of advancements in aircraft components [9]. The employment and development of advanced flight simulators in initial and recurrent pilot training have improved pilot training. The increased knowledge of human factors and applying that knowledge to regulations and training has also been extremely beneficial to pilot training. Flight safety has also increased due to advancements in air traffic control and navigational aids [10]. Enhancements in weather prediction and comprehension of meteorological phenomena like wind shear and downdrafts have also been beneficial [11].

Thoroughly examining previous incidents to ascertain what caused them and what has to be done to keep them from happening again has also significantly contributed to a better safety record.

In order to prevent accidents from happening, it is necessary to prevent the formation of chain links in these incidents. For this reason, airline industry owners and air traffic management theorists are trying to increase flight safety and health factors. These efforts have led to significant improvements in flight safety and health. Due to the growth of air traffic, the need to provide more efficient and effective air services and increase the safety and health of flights has also become more noticeable. The increase in accidents and incidents in the aviation industry has caused the loss of dignity in human lives, high financial losses, negative effects on the country's political, economic, and international components, and the spread of topics related to the aviation industry. The guidance and control of this extensive system is one of the main challenges of the world aviation industry. There is a need for a safety management system to implement the safety program activities in an integrated and coherent format with safe guidance [13].

The article is arranged as follows: First, we wrote the key literature in the introduction, then we will examine the safety performance evaluation index and the most common safety and security risks related to aviation operations. In the following, the research and the method used for the passengers during flight and landing are mentioned, and in the last stage, we discuss the results.

Compliance Requirements: Analyzing the provisions involves understanding the requirements outlined in the regulations and directives. This includes identifying mandatory actions, standards, and best practices that aviation entities must adhere to to ensure safety.

Risk Assessment: Assessing the provisions involves evaluating aviation operations' potential risks and hazards. This includes identifying possible safety concerns, assessing their likelihood and potential impact, and determining the mitigation measures outlined in the regulations.

Problem: The problem discussed in the study is evaluating safety performance and identifying common safety and security risks in aviation operations. The study aims to highlight the key factors that can impact flight safety and security, potentially leading to accidents or incidents. It focuses on understanding the challenges and risks faced during a flight, including both the airborne and landing phases, and seeks to contribute to enhancing safety measures in the aviation industry.

Hypothesis**:** By thoroughly analyzing safety performance evaluation indices and identifying and addressing common safety and security risks in aviation operations, it is expected that the overall safety of passenger flights can be improved, leading to a reduction in accidents and incidents.

2. Main Method

1. Literature Review: A complete review of available literature, research articles, and regulatory guidelines for evaluating aviation safety performance and identifying safety and security risks has been done.
2. Selection of evaluation criteria: Based on the literature review, the criteria should cover various aspects of safety and security, such as regulatory compliance, crew training, maintenance procedures, incident reporting, and emergency response protocols.
3. Data collection: The appropriate data collection methods selected in this article include a combination of sources, such as interviews with aviation experts, airline surveys, and analysis of incident reports (May Day documentary) that happened.

3. Index for Safety Performance Evaluation

It serves as a benchmark for gauging how close to an acceptable level of safety has been reached. It should:

- Indicators for performance evaluation are defined differently depending on the industry, field, and kind of activity.
- Basic indicators are what we need.
- Indicators ought to be connected to the primary sections of the safety protocol.

4. Safety performance objectives

Quantitative goals are defined based on an acceptable level of safety, measurable, acceptable by legal authorities and safety helmsmen, and compatible with the safety plan. Having only one goal is not enough; multiple goals and indicators make it possible to reach the expected level of safety. There are several key aspects to consider:

5. Safety concepts

- Serious occurrences.
- Remaining clear of risk, danger, and everything that could cause harm
- A collaborative safety culture is in place.
- Achieving a risk level that is acceptable concerning other risk levels
- The presence of procedures for risk identification and management
- The requirement for control over accident-related damages (financial, environmental, and life) [14].

6. Safety Management

If overlooked and not appropriately and promptly managed, safety-related occurrences that are infrequent in the system reinforce methods to raise the incidence of catastrophic accidents and produce uncontrollable problems and challenges. Accidents and events are costly, which means they significantly negatively impact the commercial and economic spheres and diminish credibility internationally. The ability of the aviation sector to maintain its reputation and inspire passenger confidence in the availability of safety during travel is essential to the sector's survival. Establishing a sustainable air business may require safety management first [15].

If safety management is not appropriately implemented in the aviation sector, several problems can arise:

- Increased Risk of Catastrophic Accidents: Without effective safety management, catastrophic accidents can increase. These accidents can result in loss of life, property damage, and severe financial implications.
- Uncontrollable Problems: Neglecting safety management can lead to accumulated unnoticed problems and challenges within the system. Over time, these issues may become more complex and difficult to manage, potentially jeopardizing the overall safety and stability of the aviation sector.
- Financial Impact: Accidents and safety-related occurrences can significantly negatively impact the commercial and economic aspects of the aviation industry. The costs associated with accident investigations, legal proceedings, compensations, and potential damage to reputation can be substantial.
- Reputation Damage: The aviation sector relies heavily on maintaining a good reputation and inspiring passenger confidence in air travel safety. Failure to prioritize safety management can result in a tarnished reputation, leading to decreased passenger trust, reduced demand for air travel, and potential loss of international credibility.
- Regulatory Concerns: Inadequate safety management can attract increased scrutiny and regulatory intervention. This can result in stricter regulations, audits, and inspections, imposing additional costs and administrative burdens on the industry.

7. Flight safety risks

7.1 Lightning

Even though lightning may strike aircraft, its potential hazards were not fully recognized until 1999, when a strong, positively charged lightning bolt struck a glider aircraft. Ever since, there has been constant emphasis on the possibility that a positive-charge lightning strike caused Pan American Flight 214 to crash in 1963. Since the effects of aircraft exposure to lightning were unknown when the flight standards were developed, airplanes are still constructed following the same fundamental requirements. They are not designed to survive lightning strikes [16].

7.2 Airplane engine failure

Even though modern aircraft are built so they can still fly even if one of their engines fails, they may also lose their second engine, which could fail on the same side of the engine. Firstly, a serious situation will undoubtedly arise if they lose. Imagine that the same aircraft experiences a complete engine failure, as was the case with the Dominican Airlines DC-9 flight that resulted in this catastrophe. The plane's engines failed due to the fuel's impurities and contamination. For this reason, it is crucial to ascertain the backup airport before the flight in an emergency landing. Similar dangers can also arise from wear and tear and molecular deformation of the metal components of the aircraft generated by constant pressure on the aircraft. One of the strangest aviation mishaps that resulted in the downing of American Airlines Flight No. 191 happened when the pilot's injuries and the engine's separation from the fuselage left him unable to control the aircraft [17].

7.3 Wear of metals

Sometimes, wear on metal components results in engine failure (as in the 1989 Kegworth aviation tragedy) or structural issues (as in the 1953 and 1954 Haviland,

Delaware, USA disasters), which ultimately cause the aircraft to crash. Since metal wear is now widely recognized to pose a risk, significant and in-depth studies and non-destructive testing are being conducted to find any associated issues and risks [17].

7.4 Fire

The materials that are used to build airplanes and the conditions in which fire safety procedures must be followed are invariably governed by safety rules. These specifications are often established through the necessary tests. These tests demonstrate the smoke produced by the fire's flammability and toxicity. When the preliminary tests fail, they do not occur in an actual airplane; rather, they only occur in a laboratory, where there is no risk to actual humans [16].

These arrangements do not always work, and many accidents have happened and do happen as a result of the fire that started in the cockpit and the release of harmful gases. An electrical spark on Canadian Airlines flight 797 that year started the fire. Of the 46 passengers on the flight in question, 23 died as a result of it in 1983.

This incident served as an excellent illustration of how to swiftly remove the plane's occupants who were in contact with the smoke produced by the fire by drawing on prior experience in similar circumstances. The Manchester Air Disaster occurred today, in 1985, two years after this incident. A fire that broke out in the aircraft and on the runway at the airport caused this incident.

53 people died as a result of it, 48 of them from smoke inhalation brought on by the fire. The 90-minute requirement for the emergency evacuation of the planes involved in the accident was seriously questioned by this tragedy. As a result, the anti-smoke system and smoke evacuation routes were developed, but none of these were ultimately authorized. The incident led to several changes, including a minor enlargement of the gap between the seats near the emergency exit door, as well as modifications to the earlier procedures for using the emergency exit doors on the top of the aircraft, which were introduced and utilized in specific aircraft [18].

The following text explains the difference between an incident and an accident for a deeper understanding.

Incident: An incident refers to an event or occurrence that affects or could potentially affect the safety of an aircraft operation. It includes equipment malfunctions, communication errors, or deviations from standard operating procedures. Incidents do not necessarily result in damage to the aircraft or personal injury, but they are incidents of concern that require investigation to prevent potential future accidents.

Accident: On the other hand, an accident is an event involving the operation of an aircraft that typically results in substantial damage to the aircraft or injury or death to occupants, ground personnel, or people in the vicinity. Accidents are more severe incidents that have the potential for significant consequences and require thorough investigation to determine the causes and implement preventive measures.

7.5 Bird collision

The term "bird strike" in aviation means the collision of birds with flying planes.

This problem is one of the common threats to reducing the safety of flying planes, which has led to countless fatal air accidents [19]. For example:

1. Hudson plane crash: In 2009, a plane carrying 155 passengers crashed into a flock of birds above the Hudson River in New York. Fortunately, no one was killed in the accident, and all passengers and crew safely exited the plane.
2. Airbus plane crash at the statue: In 1995, an Airbus with 290 passengers crashed into a flock of birds on top of the statue in Paris, France. In this accident, three people were killed, and 50 people were injured.

7.6 Human Factors

Another genuine risk of human error is human factors, and pilots are not immune to it. Paul Fitts and Alphonse Chapais made significant strides in applying human factors to enhance aviation safety during World War II. However, throughout aviation history, numerous advancements in safety have been made; one such advancement is the establishment of the pilots' checklist, which was created in 1937 [20]. An Eastern Airlines 401 crashed in 1972 due to the pilot's incorrect and delayed assessment of the flying instruments. One of the contributing causes could be any mistakes made during takeoff and landing on the airport runway. Effective in generating aviation mishaps, he cited the Munich air catastrophe in 1958 AD when taking off from the runway in inclement weather and the Pinaire Flight 191 air disaster during landing that same year (1972). By looking at the Munich air accident, it can be inferred that other elements, such as the weather, will also contribute to the incidence of such accidents and human causes, including the pilot's error. Accidents can happen on the ground (the Te Neh Rif accident in 1977) or in the air (PSA Flight 182, 1978). In both cases, the pilots were at fault.

On the other hand, pilot error is not the only cause of air mishaps. The crash of Turkish Airlines flight 981, which resulted in the loss of this aircraft, was caused by an improperly closed cargo door; however, subsequent investigation revealed that the cargo door's incorrect design was also responsible for this mishap. It has had a significant effect [20].

7.7 Aircraft tires' importance to flight safety

According to a report by the US National Transportation Safety Board, some technicians operate aircraft with dangerously underinflated tires because they are unaware of the appropriate intervals for checking tire pressure. This council brings up the Learjet-600 crash, which it believes was caused by improper tire care and

maintenance. According to the National Transportation Safety Board, the tires had not been tested in roughly three weeks before September 19, 2008, when the plane crashed in Columbia, South Carolina. When the plane lifted from the runway, the pilot was obliged to abort the takeoff due to tire faults (extreme underinflation); however, the plane passed the runway's safe zone and experienced an accident. The plane was destroyed, the two passengers and the crew perished, and two more passengers suffered critical injuries. According to an accident inquiry, the four main landing gears had been fitted in December 2007 and had made twenty landings before the tragedy. The tires have an air pressure of more than 220 PSI, as they used to. The allowable daily reduction in tire pressure is around 5%, according to the tire performance criteria mentioned in pertinent publications, such as the American Civil Aviation Organization. The tires on the downed airliner experienced a 2.2% daily pressure reduction, according to testing conducted at the Goodyear tire factory. According to the accident investigation, the aircraft had flown five days out of the twelve days before the incident, according to Learjet's maintenance journal. During that time, none of the staff interviewed for any aircraft accident investigation center reported making any requests or repairs. The primary landing gear had not been overhauled. Subsequent examinations revealed that the original landing tires were underinflated by roughly 36%. The airplane maintenance and repair handbook highlights that the tire can be replaced with a pressure reduction of 15% or more, according to the National Transportation Safety Council report [21, 22].

7.8 Injuries caused by high heat

The tires produce heat as they rotate due to the friction that forms when the impact on the ground deflects slightly. When the tires are not overloaded and are inflated regularly, they function well. Nevertheless, the tires will deviate over the permitted limit if overloaded or underinflated. According to the ensuing study, excessive sidewall flex causes the tire's fibers to wear down more quickly than when properly inflated, raising internal pressure. It ruins things and will do irreversible harm. Many aircraft maintenance manuals and tire care documents guide daily tire pressure reviews; the accident report also refers to these guidelines. According to reports, the professionals in the maintenance department are responsible for monitoring the air pressure in the tires of the Learjet-60 aircraft. Naturally, access to the tires is required in this instance, and the Global Executive Pressure Company pilots state that the Learjet-60 aircraft's flight instructions are unambiguous. He was unaware that tires needed to be inspected every day, that the company's pilots were not checking tire pressure, and that no request had been made to do so. The main landing gear's wheels, tires, and brakes had to be inspected by the flight crew on the day of the accident, as per the pre-flight instructions and the aircraft's flight instructions. Only one pilot stated that underinflated tires are difficult to detect with the eyes, according to the experts' accident report, which states that before takeoff, the general conditions of the tires, such as severe wear, protruding tire walls, or visible fibers of the tires, must be reviewed with the eyes. As stated in his interview, only one of the Learjet-60 pilots stated that the maintenance department is responsible for checking tire pressure, and they were not trained to perform this task. The manager of Global Executive Company's repair and maintenance division admitted to the accident investigation officers that he was unaware of how frequently tire pressure was checked [21]. Table 1 shows the flight safety risks in general.

Table1. Flight safety risks

Flight safety risks
Lightning
Airplane engine failure
Wear of metals
Fire
Bird collision
Human Factors
Aircraft tires' importance to flight safety
Injuries caused by high heat

8. Flight safety and security by passengers

8.1 List of important prohibited items

The following things are restricted from being carried by passengers in order to adhere to safety and security guidelines (carrying the following items is normally prohibited on a passenger plane):

- any form of explosive, quickly flammable, or incendiary material
- kinds of capsules and pressurized chemical sprays, including liquid gas, anesthetic, tear gas, and self-defense.
- Any and all caustic and acidic materials, including vinegar and acid, AND...
- It is forbidden to bring the following items into the airplane cabin:
- types of firearms, such as shotguns, military, and hunting weapons
- kinds of cartridges for sports, hunting, and warfare

- Various items and instruments for cutting, including razor blades, bottles, glass, knives, scissors, clippers for nails, surgical blades, claw boxes, and other similar items
- Various tools, including wires, ropes, hammers, wrenches, and screwdrivers
- kinds of play weapons that resemble actual weapons in a very close way [23].
- Entry check

Finding the seat number within an aircraft is done in all airline sales offices and while visiting the ticket office located at the airport for management. After giving your ticket to the officials, please safeguard both your ticket and your boarding card so they can assign your seat number and issue your boarding permit. Take a seat in the designated area of the aircraft. All domestic and international flights are smoke-free. On international flights, passenger acceptance closes 45 minutes before takeoff, while on domestic flights, it closes 20 minutes before takeoff. For this reason, we advise you to arrive at the airport at least three hours before departure for international travel and one and a half hours in advance for domestic travel [24].

8.2 Health regulations

Travelers from specific regions may need to provide a specific health and immunization card while entering certain nations. Knowing the laws of your target country is preferable to making travel plans and purchasing a ticket. Plants, livestock, and live animals are all subject to the rules above. This knowledge will be extremely important and helpful if traveling with a live animal, flower, or plant [21].

8.3 Health and quarantine section at the airport

Patients: Sick passengers who fall under one of the following groups must submit their medical form to the relevant airline company after completing and confirming it with a doctor before purchasing a ticket.

- Blood diseases
- cardiovascular diseases
- Patients with heart attacks undergoing treatment
- patients undergoing treatment after surgery
- any kind of bone fracture
- Lung diseases such as asthma (shortness of breath), etc.
- Infectious diseases such as acute sinusitis or contagious diseases (measles, etc.)
- Nerve diseases (such as epilepsy)
- Brain diseases and paraplegia
- According to the doctor's diagnosis, Burns and infections are caused by patients who need artificial oxygen and a companion (a nurse and doctor).
- Pregnant women

Pregnant women may travel domestically and for brief periods up to 32 weeks as long as they have a valid medical certificate and can pinpoint the approximate start of their pregnancy. The required medical certificate attesting to the fact that pregnant women can travel without difficulty must be authorized for long-haul and international flights by the relevant airline company's medical department.

Learning the essential advice for avoiding plane crashes

8.4 Wear long pants and comfortable, sturdy shoes with laces.

Of course, you may like to seem elegant or comfortable during the flight, but wearing high heels or sandals makes moving fast among the debris impossible. Clothing that is loose or complicated runs the danger of tearing when it gets caught in obstructions in the cramped interior of the aircraft. If you know that the flight will take place in a chilly climate, wear proper clothing and a jacket covering your upper body. If you fall, you must keep yourself warm. The better protected you are, the less probable it is that you will hit the ground severely burned or hurt, even if you don't need to pay attention to this cold air. Clothes of wool and linen are better since they don't catch fire. Wool clothing is better than linen when flying over water because it retains more insulating qualities when damp.

8.5 Get the right seats for yourself.

There is a better chance of survival during the initial moments of the impact. How fast you exit the aircraft determines whether you survive a crash. Close to the escape doors as possible is ideal for seating arrangements, with middle-row seats especially desirable. Aim to seat toward the rear of the aircraft as well. Those seated in the second section of the aircraft have a higher likelihood of survival than individuals seated in the front rows.

8.6 Read the flight safety card.

Attend the pre-flight safety briefing. As much as you've heard it a million times and have never required it if you wear headphones during the pre-flight briefing, you will lose information crucial to you in the event of a crash if you disregard safety. Don't assume that you already understand everything. There are specific safety guidelines for every kind of aircraft. Check the door if you are seated in an exit row to ensure you can open it. The flight attendants will normally open the door, but if they are hurt or dead, you will have to open it yourself.

8.7 Always fasten your seat belt.

You'll be happy that you were wearing your seatbelt if a plane disaster occurs while you're asleep. Either way, before taking off, ensure your seat belt is securely fastened around your torso. It ought to fit. Ensure the belt

is tightened because even a centimeter of slack might increase the G-force applied to you in a fall. Additionally, tighten the belt to the closest possible distance from your pelvis, such that the top of your pelvis is felt above the belt's border. If your seat belt is pulled across your stomach, you run the risk of causing major internal injuries because the pelvis is a powerful structure that effectively controls force.

8.8 Brace yourself for impact.

Adjust your chair to an upright posture and a couple of firm positions. Put your palm on the back of the chair in front of you, place your other palm in a cross position on the first hand, and rest your forehead on your hands if the chair or the wall in front of you are close enough. (Avoid cropping your fingers.) Additionally, placing your fingers behind your head and resting your head straight on the front seat are recommended in some situations. Stack your upper arms on either side of your head. Lean forward, position your head between your knees, and rest your chest on your thighs if the chair is not in front of you. Hold your ankle firmly in your hand and pass your wrists in front of the leg as if knocking on someone's door. Because you require your feet to be able to safely depart the aircraft after a crash, in such a scenario, the soles of your feet should be put on the plane's floor and under your knees to minimize injury to your feet and soles.

8.9 keep calm

It can be simple to ascend in the pandemonium that soon follows a fall. You have a better chance of successfully exiting the aircraft if you remain composed. Recall that there is a chance of survival even in the worst-case scenario of wreckage. By being strategic, you can increase your chances.

8.10 Use an oxygen mask.

You've undoubtedly heard this on all commercial flights, but it bears repeating: you have a maximum of 15 seconds to breathe through the mask before passing out in a dangerous cabin situation (typically less if you smoke or have cardiovascular or respiratory issues). If you are seated next to an elderly person or your children and feel driven to assist them first, remember that you will not be useful to anyone if you lack intelligence.

8.11 Protect yourself from smoke.

Smoke and fire are major contributors to fall fatalities. Cover your mouth and nose to prevent breathing in the heavy, extremely deadly smoke that can be found inside a burning airplane. For added protection, use a moist cloth if at all possible.

8.12 Get off the plane quickly.

The time you take to leave the aircraft in the event of a smoke or fire emergency is crucial; often, you have less than two minutes. After the fall, pay attention to the directions given by the attendants. Sometimes, the attendants cannot follow instructions in an emergency following a collision. Work together to improve others' chances of surviving. Never attempt to salvage your possessions. Everything will only slow you down, so leave it alone. Verify the safety of the output you select. Peer through the window. If there is a fire or other danger outside the aircraft, leave the central section of the aircraft or use one of the other exits.

8.13 Stay at least 150 meters (50 feet) from the aircraft in the wind direction.

Waiting for rescuers near the aircraft is normally preferable, but not too close if you're stranded in a remote place. Keep some distance between you and the aircraft, as flames or explosions could break out at any time following the crash. Swim as far away from the wreckage as the crash occurred in the water.

8.14 Don't forget the wet cloth.

You can use your urine if you don't have anything to wet the cloth (to prevent smoke inhalation). Lack of politeness in such cases is completely acceptable.

8.15 Synthetic fibers are prohibited.

Avoid wearing synthetic fabrics (synthetic fibers) when traveling by plane. If the cabin catches fire, these materials will melt and stick to the skin.

8.16 Alcohol is prohibited.

Avoid drinking alcohol before and during the flight. Alcohol affects a person's ability to react quickly and rationally during the fall and exit of the plane.

8.17 Never put small children on your lap.

Although this is cheaper than buying another seat, there is no guarantee that it will save children's lives if they are held by the hand. Get a seat for your child and use a suitable system to secure him.

8.18 Sit on the floor of the plane.

If smoke is in the cabin, stay low, but never on the floor. You may be kicked or injured by other passengers trying to exit the plane.

8.19 Do not push others.

An orderly exit increases everyone's chances of survival. If you are scared and push others, you may face a retaliatory reaction from them.

9. Conclusion

Based on international norms and indications, the investigation's findings demonstrate that the Civil

Aviation Organization's supervision in the delicate safety area has been appropriately followed. This issue is significant because, since 2010, the Civil Aviation Organization has achieved its criteria based on international audits. Conforming with global standards has long been a top concern for domestic specialists seeking to boost safety and productivity in this field. Follow and utilize the intended level. However, determining if this issue is sufficient to establish safety and prevent accidents is crucial. In order to achieve a high level of flight safety today, new safety management systems with a preventive approach and the development of regulatory measures, while they aid in improving the safety situation, call for particular all-around attention and the development of the nation's entire aviation complex, which in and of itself needs It has the necessary financial and legal backing. In this context, it is possible to strengthen the index by highlighting some of the most crucial requirements for achieving the objectives of the Vision Document 2025 and the Fifth Five-Year Plan in the field of air transportation: bolstering the nation's air fleet, an educated and skilled labor force, and the aviation industry's management system. These goals were attained by significant individuals in this field. In order to reduce the likelihood of human error during the development of these goals, it is also possible to increase national supervision as a separate component of the aviation services body, renew the air fleet, establish an appropriate platform for interaction with the businesses that manufacture aircraft and their parts, and provide ongoing training to the current workforce.

It should be noted that in addition to assisting in lowering the time and cost of maintenance and raising the safety factor, it is possible to reduce flight delays and, as a result, increase passenger satisfaction by upgrading and improving the quality of training provided to experts in the field of aviation safety and maintenance and attempting to increase their job satisfaction through proper management. This report aims to provide top officials with a more seamless and transparent decision-making framework by providing a greater understanding of safety standards, indicators, and the role that safety plays in social and economic growth and advancement. The growing problem of the air transportation industry with the approach of cargo and passenger transportation was another significant strategic issue that was addressed. The neighboring countries of the Persian Gulf area are making significant investments and policy decisions to build and consolidate infrastructure to attract tourists and increase business by improving the airport system, facilitating services, etc., to become the Middle East's hub. As a result, Iran should give the 1404 vision careful consideration, bolstering the administration, coordination, and cooperation of all executive and policy-making branches in order to strengthen and advance its position. This point also has to be brought up. Like how many parts of a system must coordinate to provide air transportation services, all industry participants must take a methodical approach to guarantee flight safety. In the interim, a crucial idea that can aid in the growth and promotion of this expanding industry is making use of the insights and important scientific discoveries provided by academics and researchers, as well as drawing in the private sector to participate in various industry-related fields. In order of significance, the following elements were shown to be the most significant contributors to accidents and fatal air occurrences on passenger planes: 1. human factors; 2. The aircraft's flight qualification; 3. terrorist attacks; 4. mistakes and flaws in the delivery of air traffic control services; 5. environmental elements, including the state of the weather.

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