



Risk Management in the Aviation Industry: Case Study of the Nigerian Aviation Industry Post Covid-19 Pandemic

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Abstract

The study investigated the management of project risks in the Nigerian Aviation Industry post COVID-19 pandemic era. Qualitative research method through inductive approach was adopted and data was gathered through a well-structured interview guide. Data was gathered from 14 airport staff of the Nnamdi Azikiwe International Airport in Abuja, Nigeria. Findings revealed that the aviation sector has multiple methods of identifying and assessing risks, which has been discovered to be a regular practice. This spans the use of specialized instruments, questionnaires and investigative analysis. Also, it was discovered that there are multiple modes of risk management in the aviation sector which includes: Comprehensive assessment, study of previous incidence, risk prevention, risk prioritization, mitigation of risk and training of safety personnel. In addition, it was discovered that the availability of fast intervention, security, and signage posts in all the project management processes in the Nigerian aviation sector further makes it easier to have an effective risk management program in the airport. Finally, it was found that risk management plays a crucial role in the aviation sector in the areas of increased profit margin, minimizing crashes, increased confidence and safety in the aviation sector. Based on the findings, it was recommended that the Nigerian aviation sector should endeavour to further invest in the acquisition of risk identification and assessment tools for more precision.

Subject Areas

Business Management

Keywords

Project Management, Risk Management, Aviation, COVID-19 Pandemic, Nigeria

1. Introduction

Nigeria's aviation sector is one of the sectors that the COVID-19 outbreak has negatively impacted. Due to the COVID-19 outbreak, the sector now faces serious issues, such as financial risks, operational and reputational risks [1]. The aviation business in Nigeria has had to deal with the fallout of the pandemic, which includes taking precautions against the loss of income and customers due to the epidemic. However, the industry's capacity to reduce these risks via efficient project management procedures and the efficacy of these efforts are also open questions [2]. Besides, to assist the Nigerian aviation sector in recovering and growing after the COVID-19 pandemic, it is important to examine and understand the important project management practices for controlling risks during the pandemic.

According to Kukoyi *et al.* [3], the worldwide COVID-19 pandemic (coronavirus) has substantially influenced the aviation industry around the globe, including the aviation industry in Nigeria. The period after COVID-19 has affected the aviation sector, resulting in great difficulty and danger [1]. These difficulties include a drop in the number of passengers, the cancellation of flights, and a decrease in income. Besides, to effectively manage these challenges, it is necessary to put in place proper project management procedures, which may assist in mitigating the risks connected with these problems [4].

In the context of the aviation industry in Nigeria, it is very necessary to investigate and evaluate efficient project management approaches that have been specially adapted for risk management in the post-COVID-19 time. The Nigerian aviation sector is subject to several threats and difficulties; this project proposal aims to explore and assess the project management approaches capable of successfully addressing these threats and difficulties. Project risk management is an extremely important process that plays a significant part in managing uncertainty and limiting the adverse effects of unanticipated occurrences. Because of the pandemic, the aviation industry in Nigeria, like many other industries worldwide, has been dealing with unprecedented disruptions. According to Wang *et al.* [1], these disruptions have led to financial, operational, and reputational risks. Implementing efficient project risk management is necessary to limit these risks and maintain the industry's resilience and recovery in the long run.

According to Simpeh and Amoah [4], to identify and effectively manage the risks associated with the COVID-19 pandemic in the Nigerian aviation industry, it is required to conduct an in-depth review of the existing body of scholarly literature as well as research on effective ways of project management. This study provides the groundwork for a more in-depth comprehension of the extraordinary challenges faced by the sector and the essential role that risk management plays in the context of ongoing initiatives. According to Simpeh *et al.* [4], the COVID-19 pandemic has caused the Nigerian aviation industry to see a significant decrease in the demand for passenger transportation and disturbances in the functioning of critical infrastructure. Flight cancellations, travel restrictions, and health and

safety concerns have considerably negatively affected the financial performance of airports and airlines throughout the country. For the industry to overcome these challenges and get back on its feet, it must quickly employ effective project management methods. Even though the industry has been through other crises, such as economic downturns and security challenges, the scale and duration of the COVID-19 epidemic have created new problems that need imaginative and adaptable solutions. Nigeria's aviation sector can draw on the discoveries made by multinational businesses about best practices and insights found in the literature on project management methodologies for risk reduction in the aviation industry during times of crisis.

Existing research acknowledges the financial, operational, and reputational concerns posed by COVID-19 outbreaks to Nigeria's aviation business. In the wake of the pandemic, however, there remains a lack of study into and understanding of key project management methods for risk control [1]. Concerns still need to be addressed regarding the overall capacity of the Nigerian aviation business to handle risks via appropriate project management standards despite attempts to mitigate revenue and customer loss.

Since the COVID-19 epidemic presents unique difficulties, it is crucial to examine specific project management approaches that might successfully address the hazards facing the Nigerian aviation area [5]. Learning about these methods might help the industry bounce back stronger than ever after the epidemic. Filling this knowledge gap may shed light on the tactics used to reduce vulnerability, improve project management effectiveness, and fortify the industry against disruptions.

Exploring the project management methods used by the Nigerian aviation industry during the pandemic would shed light on the critical factors leading to effective risk management and enable the identification of areas in need of improvement [5]. Industry stakeholders, policymakers, and project managers may benefit from this study's findings by receiving concrete advice for improving the sector's resilience in the face of future crises via improved risk management. Furthermore, evaluating the success of these PM methods in the Nigerian aviation setting may add to the body of knowledge on project management in emergencies. The results provide significant insight into best practices, lessons to be learnt, and possible adjustments suited to various settings, making them useful for other sectors and countries facing comparable difficulties.

2. Literature Review

Implementing efficient project management solutions is vital for controlling risks in the aviation business in Nigeria in light of the exceptional issues brought about by the COVID-19 epidemic. These tactics make it possible for airlines and airports to predict, evaluate, and respond to potential hazards while maintaining operations and assuring the safety of passengers and workers.

Proactive planning is an essential component of successful project management.

Better preparation for unforeseen occurrences is possible for the industry if it devises comprehensive strategies considering various situations and potential dangers [6]. This includes the creation of frameworks for risk management, the establishment of defined goals, the definition of project scopes, as well as the identification of the required resources and schedules. A proactive planning approach enables stakeholders to coordinate their actions and efficiently allocate resources to handle newly developing hazards.

Risk identification and analysis are essential components of project management in the aviation business. This requires considering internal and external elements as part of a methodical process to identify and evaluate risks [7]. Risk identification procedures, such as brainstorming sessions, expert consultations, and the study of historical data, may help discover possible hazards related to the COVID-19 pandemic. These risks include interruptions in supply chains, changes in laws, and variations in passenger behaviour. Risk identification approaches can assist in identifying these potential risks [8]. Comprehensive risk analysis enables stakeholders to prioritise risks according to the possible effect and probability of those risks, enabling them to establish suitable strategies for risk mitigation.

Another essential component of effectively mitigating risks in the aviation sector is making contingency plans. Airports and airlines may construct alternate courses of action if a disruption occurs by preparing contingency plans [9]. These plans need to include the particular activities that need to be done to respond to the risks that have been identified. These actions should include the allocation of resources, collaboration with appropriate authorities, and communication techniques. Plans for contingencies allow stakeholders to react quickly and efficiently to unforeseen occurrences, thereby minimising the impact these events have on operations and guaranteeing the continuation of the company [10].

The distribution of available resources is one of the most important aspects to consider while managing projects to reduce risk. According to Pescaroli [11], having an adequate allocation of financial, human, and technical resources is necessary when implementing risk mitigation methods. To accomplish this goal, it may be necessary to invest in health and safety precautions, upgrade technology infrastructure to enable remote operations, and educate workers to adapt to new norms and processes [12]. The efficient management of risks depends on having access to the appropriate resources, which in turn depends on effective resource allocation.

Effective communication and coordination among all relevant stakeholders are necessary for efficient risk management in the aviation business. Communication that is both clear and timely is the best way to guarantee that all parties involved are aware of any possible hazards, methods for mitigating those risks, and any changes to plans or processes [13]. Sharing information, best practices, and lessons learnt is easier when regulatory organisations, airports, airlines, and appropriate government agencies collaborate. Maintaining open communication channels helps create a group-based approach to risk management and enables various stakeholders to handle difficulties in a coordinated manner [13].

In addition, successful project management necessitates regularly monitoring and assessing the activities undertaken to reduce risk. By conducting regular monitoring, stakeholders can evaluate the efficiency of mitigation techniques, detect developing hazards, and make modifications as required [14]. Evaluation allows businesses to draw lessons from past events and enhance their risk management procedures in preparation for future disruptions.

In conclusion, implementing reliable project management solutions is essential for risk management in the aviation business in Nigeria, especially in light of the COVID-19 epidemic. A comprehensive risk management strategy should include essential components such as proactive planning, risk identification and analysis, contingency planning, resource allocation, and effective communication and co-operation [15]. The transportation sector can successfully negotiate uncertainty, maintain operating efficiency at a high level, and put passenger safety first if it implements these techniques. Effective project management makes the sector more resilient and ensures that it can adapt to changing conditions.

Having provided the background to the study and reviewed relevant literature, the primary goal is to examine the risk management techniques in the Nigerian aviation industry post-COVID-19 pandemic era. The essence is to strengthen the Nigerian aviation sector's ability to recover from setbacks after the COVID-19 virus pandemic.

The following specific objectives will be achieved at the end of the study;

- 1) To identify the ways risk assessment and identification are carried out in the Nigerian aviation sector post-COVID-19 pandemic era;
- 2) To determine the project risk management methods in the Nigerian aviation sector during post-COVID-19 era;
- 3) To identify how risk management is integrated into the overall project management process in the aviation industry.
- 4) To examine the role of risk management in the overall performance of the aviation sector in Nigeria.

3. Methodology

The study utilised a qualitative research methodology approach gathered data through survey design. Survey design was adopted because the results of this survey give useful insights into these issues, strategies, and adaptations [16]. The study, through convenience sampling technique, selected fourteen ($n = 14$) respondents with various backgrounds within the aviation industry in Nigeria. Majority of the respondents work in the safety department, hence, were not much of a high number. Other participants selected for the study were individuals in other departments. Given the special condition of the sample, a sample size of 14 is considered sufficient, following the assertion of Creswell and Creswell [17] that estimates between 10 and 50 are sufficient, depending on the type of research question. This ensures that the findings reflect various viewpoints and experiences [18]. This was also ascertained by Vasileiou *et al.* [19] and Daher [20]. Enticott *et*

et al. [21] state that when doing qualitative research, a sample size of this size is ideal since it enables in-depth analysis and the study of individual viewpoints and practices. The research aims to provide insights relevant and applicable to the local environment in Nigeria by concentrating on a particular demographic within the aviation business in Nigeria.

Thematic analysis was utilized in analysing the gathered data. Thematic analysis is a method of qualitative analysis that helps to analyse texts and transcriptions to gain insights into the gathered responses. Thematic analysis was chosen for several reasons. First is its effectiveness in determining people's views and perspectives, their level of knowledge as well and their experience regarding a subject area [22]. The study is on risk management in the aviation industry, hence, specialized individuals are considered to be the best fit for the study. Thematic analysis is also flexible in terms of the generation of themes and sub-themes based on the gathered responses [22].

Analysis of the study objectives was carried out using the thematic analysis frame designed and propounded by Braun and Clarke [23]. Specifically, the steps proposed by Braun and Clarke [23] include; familiarisation with the data and transcribed, generating initial codes, formation of themes, review of generated codes, and naming the identified codes. Atlas.ti version 9 was used as the analytical software.

During the research, the participants' rights, privacy, and physical safety are treated with the highest consideration at all times [24]. Before agreeing to participate in the study, everyone is given exhaustive information on the objectives, methods, and any dangers associated with the research project. According to Dooly *et al.* [25], participants are provided with straightforward and easy-to-grasp information, enabling them to make an educated choice regarding their involvement in a volunteer activity. It is emphasised that participation in the research is fully voluntary and that subjects can resign without experiencing any repercussions. Ethical approval was obtained from University of Northampton ethics committee.

4. Interview Guide

Instruction: Please respond honestly to the questions. There is no right or wrong answer. Be expressive with your responses as much as possible.

- 1) Are there risk identification processes in this airport, especially since post-COVID-19 pandemic?
- 2) What techniques do you use to identify potential hazards in the aviation industry after COVID-19 pandemic?
- 3) How do you assess the risk associated with each hazard after COVID-19 pandemic?
- 4) Is there any difference in how risk assessment is carried out before and after COVID-19 pandemic in the aviation industry?
- 5) How do you determine whether a risk is tolerable or not after COVID-19 pandemic?
- 6) Are there mitigation strategies, especially after COVID-19 pandemic era in

the industry? Kindly express yourself.

7) Are there other risk identification and assessment processes post-COVID era? Kindly explain.

8) Are risk management processes included in the overall projects in the airport? In what ways?

9) How has the management of project risk influenced the overall performance of the industry post-COVID-19 pandemic?

5. Result

This section presents results of gathered data on the management of project risks in the Nigerian Aviation Industry post-COVID-19 pandemic era. Data was gathered from fourteen ($n = 14$) airport workers in Nnamdi Azikwe International Airport, Federal Capital Territory (FCT), Abuja, Nigeria. Results are presented in sections.

5.1. Demographic Information

Table 1 presents results on frequency distribution according to demographic variables. It is shown that more of the respondents 57.1% were males. Age distribution shows that more of the respondents 50% were between 20 and 29 years old. Frequency distribution, according to department shows that more than half the respondents, 57.1% works in the safety department. More of the respondents 50% were permanent staff. Finally, more of the respondents 5 (35.7%) has five years of work experience, 2 (14.3%) has two years of work experience, another 2 (14.3%) has three years of work experience, 2 (14.3%) have four years of work experience, another 2 (14.3%) has eight years of work experience, while the other individual (7.1%) has six years of working experience. This implies that more of the workers in the Nnamdi Azikwe International Airport, affiliated with the Federal Airport Authority of Nigeria, have five years of work experience.

Table 1. Demographic distribution of respondents.

| SN | Variables | Response | Frequency | % |
|----|------------|-------------------------------------|-----------|------|
| 1 | Gender | Male | 8 | 57.1 |
| | | Female | 6 | 42.9 |
| 2 | Age | 20 - 29 years | 7 | 50 |
| | | 30 - 39 years | 5 | 35.7 |
| | | 40 years and above | 2 | 14.3 |
| 3 | Department | Internal control & audit | 2 | 14.3 |
| | | Safety department | 8 | 57.1 |
| | | Commercial, ticketing & reservation | 2 | 14.3 |
| | | Passenger service | 1 | 7.1 |
| | | Security | 1 | 7.1 |

Continued

| | | | | |
|---|-----------------|-------------|----|------|
| 4 | Nature of job | Permanent | 7 | 50 |
| | | Temporary | 3 | 21.4 |
| | | Contract | 4 | 28.6 |
| 5 | Work experience | Two years | 2 | 14.3 |
| | | Three years | 2 | 14.3 |
| | | Four years | 2 | 14.3 |
| | | Five years | 5 | 35.7 |
| | | Six years | 4 | 7.1 |
| | | Eight years | 2 | 14.3 |
| | | Total | 14 | 100 |

5.2. Analysis by Objectives

Analysis of the study objectives was carried out using the thematic analysis frame designed and propounded by Braun and Clarke (2006). Specifically, the steps proposed by Braun and Clarke (2006) includes: Familiarization with the data and transcribed, generating initial codes, formation of themes, review of generated codes, and naming the identified codes.

5.2.1. Risk Assessment and Identification are Carried Out in the Nigerian Aviation Sector

This section presents results on the type of risk assessment and identification adopted in the Nigerian aviation sector. The following themes were identified: Use of specialized instrument, investigative analysis and use of questionnaire (See **Figure 1**).

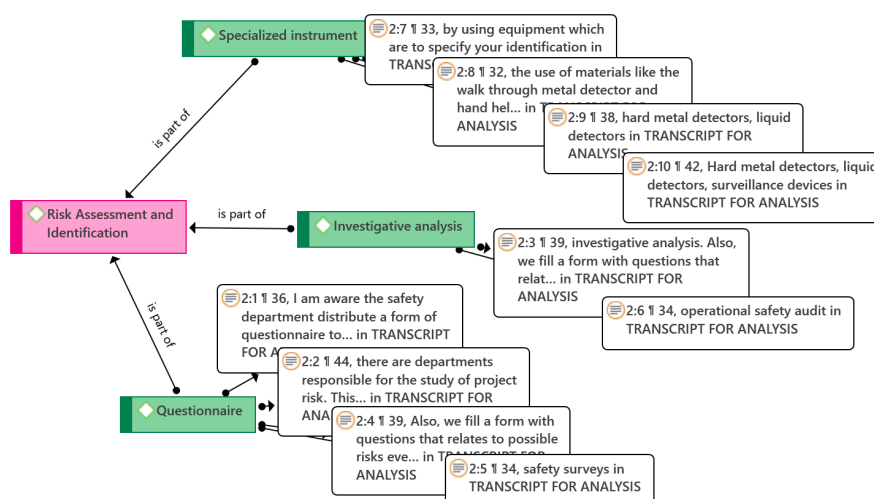


Figure 1. Risk assessment and identification (Designed by author using Atlas.ti.).

5.2.2. Specialized Instruments

One of the identified method of risk assessment and identification the Nigerian

aviation sector is the use of specialized instruments. Excerpts are presented below;

“...the use of materials like the walk-through metal detector and hand-held metal detector...” (Respondent 2)

“...by using equipment which are to specify your identification...” (Respondent 3)

“...hard metal detectors, liquid detectors...” (Respondent 8)

“...Hard metal detectors, liquid detectors, surveillance devices...” (Respondent 12)

From the excerpt, it is shown that there are existing instruments and tools used to identify risks in the airport. This includes; the use of metal detectors, liquid detectors and surveillance devices. This implies that to some extent, the aviation industry does not rely on traditional modes of risk identification, there are advanced technological advancements in risk identification to mitigate or reduce the possibility of the risk affecting people in the airport.

5.2.3. Investigative Analysis

Another method of risk identification and assessment is through investigative analysis. Excerpts below;

“...investigative analysis...” (Respondent 9)

“... by investigating each possible risk occurrence in different field...” (Respondent 5)

“...investigating possible risk...” (Respondent 9)

“...by retrospectively on previous happenings and checking possibilities of dangerous and accidental happenings...” (Respondent 2)

“...there are departments responsible for the study of project risk. This department comes periodically to carry out physical assessment of possible risks to employees as well as passengers...” (Respondent 14).

From the excerpts presented, it is revealed that investigative analysis of risk assessment and identification takes two ways. The first is gathering information on possible risks that may occur in future, while the other is learning from previous occurrences. In the former, the airport authority is identifying and predicting possible events that may be risky to current operations in the airport. This will help in immediately mitigating such risk to avoid its occurrence in the first place. However, the former indicates that there are records of previous occurrences that may have cost the airport authority in Nigeria a huge loss. Therefore, investigating the cause of the previous event(s) and analyzing it will ensure that future occurrences are avoided based on previous happenings. In addition, investigations are carried out intermittently and physically by personnel in the safety department. During these exercises, possible risks to employees and passengers are observed, identified and mitigated.

5.3. Questionnaire

One of the modes of identifying and assessing risks in the airport is the use of questionnaire, as presented in the selected excerpts below:

“...I am aware the safety department distribute a form of questionnaire to different department and unit for cataloguing risks as it pertains to each department...” (Respondent 6)

“...we fill a form with questions that relates to possible risks every six (6) months...” (Respondent 9)

“... safety surveys...” (Respondent 4)

From the extracted excerpts, it is shown that the airport safety department carries out periodic assessments using surveys or questionnaires. The use of this method ensures get updated list of possible risks in various departments within the airport. One of the respondents indicated that it is a regular exercise that is carried out every 6 months. It is expected that the identified risks, six months ago should have been addressed, before another round of surveys is carried out. This consistent survey on possible risks is further to ensure that the airport is safe, even when executing projects.

5.3.1. Project Risk Management Methods in the Nigerian Aviation Sector

This section presents results on the mode of risk management adopted in the Nigerian aviation sector. The following themes were identified: Comprehensive assessment, study of previous incidences, risk prevention, risk prioritization, mitigation of risk and training of safety personnel (See Figure 2).

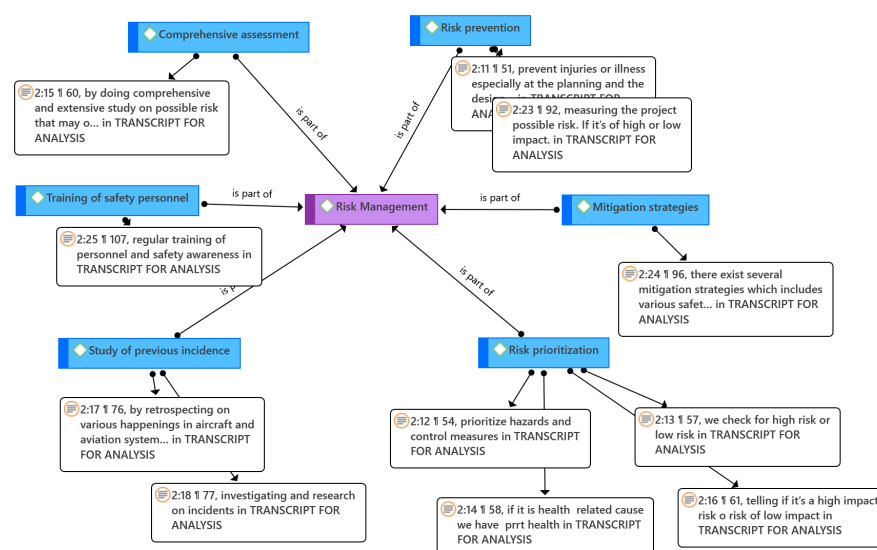


Figure 2. Risk management (Designed by author using Atlas.ti.).

5.3.2. Risk Prevention

One of the identified risk management strategies is risk prevention. Excerpts is presented below;

“...prevent injuries or illness, especially at the planning and the design stage...” (Respondent 4)

“...measuring the project possible risk. If it's of high or low impact...” (Respondent 13)

“...measuring the impact of the damage it can cause...” (Respondent 12)

From the analysis of the first objective, which presented ways of identifying and assessing risks in the airport, it was discovered that various methods are utilized. This makes it easier for the airport authority to identify and design ways of managing the identified risks, such as preventing them. From the above excerpts, it was discovered that the rate of the impact of the risk is identified and determined systematically. This helps in making a decision on the mode of management, one of which is prevention. For instance, one of the respondents indicated that they prevent risks identified to pose injuries and illness to employees and passengers in the airport. The impact of the damage which the risk can cause also makes it easier to identify how to prevent it from happening in the first place.

5.3.3. Risk Priorities

Another mode of managing risks in the airport is prioritizing the identified risks. Excerpts are presented below;

“...prioritize hazards and control measures...” (Respondent 7)

“...we check for high risk or low risk...” (Respondent 10)

“...telling if it's a high impact risk of risk of low impact...” (Respondent 14)

“...if it is health related cause we have priority for health...” (Respondent 11)

From the presented excerpts, it is revealed that the airport authority identifies what risks to manage by first prioritizing them. For instance, it is shown from the reviewed responses that the airport prioritises risks that are health-related. In other words, when possible risks are identified to affect employees or passengers' health, it is prioritized above any other risks. Further, hazards and control measures are ranked according to the extent to which they are risky. For easy identification and management, the airport authority categorizes it into high and low risk. This makes it possible to address risks that are high and need immediate attention, while low risks are considered not to pose much risks, but can only be addressed after effective management of the high risks. Overall, risk management is easier for the airport authority through first prioritizing, and subsequently making decisions on which to address first, with those affecting an individual's health prioritized.

5.4. Study of Previous incidences

Also, it was discovered that effective management of risks in the airport is done by studying previous happenings that posed huge risks and dangers to employees and passengers. Excerpts presented below:

“...by retrospectively on previous happenings and checking possibilities of dangerous and accidental happenings...” (Respondent 2)

“...investigating and research on incidents...” (Respondent 14)

From the reviewed excerpts, it is discovered that the management of risks involves the study of previous events that have cost the airport. For instance, by investigating previous events, inform the airport authority on the best way to avoid subsequent occurrences. This is considered one of the best approaches as

there is a first-hand experience of what transpired and caused the first event. The investigation will inform what was missing in the first place, and ensure its inclusion in subsequent projects executed in the airport. Similar experience from the investigation will further help in other related projects. This helps in the effective management of identified risks.

5.5. Mitigation Strategies

In the effective management of risks, the airport authority has strategies to mitigate the identified risks. Excerpts are presented below:

“...there exist several mitigation strategies which include various safety measures put in place...” (Respondent 1)

From the excerpt above, it is shown that the airport authority has different risk mitigation strategies for ensuring the safety of the airport for the employees and passengers. Although these were not mentioned, the confirmation that there are strategies to mitigate identified risks shows that the aviation industry does not only identify and assess risks but also has plans to mitigate them.

5.6. Training of Safety Personnel

Another mode of managing risks in aviation is the regular training of safety personnel. Excerpt presented below:

“...regular training of personnel and safety awareness...” (Respondent 12)

From the excerpt above, it is shown that there are training plans for the safety personnel within the aviation industry. While identification and assessment of risk do not finish the circle of managing risks during project execution and management, the need to train the personnel in the safety department is considered important. Further training of the safety personnel makes it easier to achieve the objective of maintaining safety in the aviation industry.

5.7. Comprehensive Assessment

The last identified theme in the management of risks in the aviation industry is carrying out a comprehensive assessment. The excerpt is presented below;

“... by doing comprehensive and extensive study on possible risk that may occur...” (Respondent 13)

From the above excerpt, it is shown that the aviation sector of the country in the selected airport carried out a comprehensive and extensive study on the possible risks that may occur in the airport. This includes carrying out regular checks across various departments in the airport. This further will help in not just focusing on one sector of the airport, but also ensuring that the whole airport is safe. This will also help in identifying what is needed by each department and section of the airport.

5.8. How Risk Management is Integrated into the Overall Project Management Process in the Nigerian Aviation Industry

This section presents results on how risk management is integrated into the

overall project management in the Nigerian aviation sector. The following themes were identified: Comprehensive assessment, study of previous incidences, risk prevention, risk prioritization, mitigation of risk and training of safety personnel (See **Figure 3**).

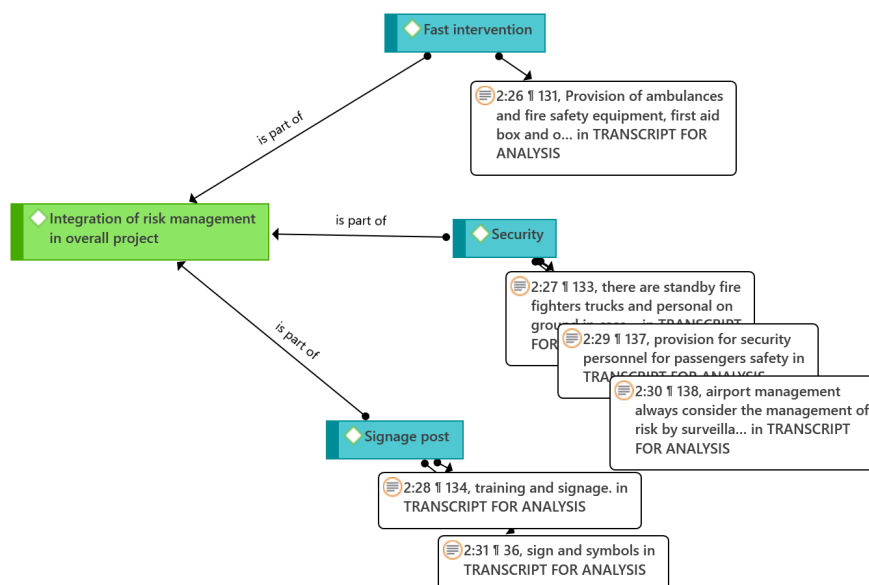


Figure 3. Risk management (Designed by author using Atlas.ti.).

5.9. Fast Intervention

The first identified theme on how risk management is integrated into the overall project management is the provision fast intervention. Excerpt is presented below:

“...Provision of ambulances and fire safety equipment, first aid box and other...” (Respondent 3)

From the excerpt, it is shown that a series of intervention, such as provision of ambulances, first aid and fire safety equipment. This implies that for every management carried out in the airport, its safety measures are considered important. Apart from ensuring the provision of these safety measures, they are also said to be available while executing projects.

5.10. Provision of Security and Healthcare

Apart from the provision of fast intervention, another identified theme is the availability of security. Excerpts is presented below;

“...there are standby fire fighters trucks and personal on ground in case of fire, security personnel intelligence, boarder patrol etc...” (Respondent 5)

“...provision for security personnel for passengers safety, provision of health workers for testing and ensuring safe health care of passengers...” (Respondent 9).

“...airport management always consider the management of risk by surveillance of activities and internal and external intelligence...” (Respondent 10).

From the excerpt above, it is shown that series of services are provided which

includes security and healthcare services. Fire fighters truck and security personnel intelligence are provided to ensure the physical safety of employees and passengers. This is in order to avoid sudden fire outbreak either within the airport or when the airplane is about to land or depart. Healthcare services are also provided and included in all project management process in Nigeria. As the health of employees and passengers were identified to be the priority of the aviation sector, healthcare services are considered in all project management processes within the airport. All these are in order to avoid risks of medical emergencies, first outbreak or threat to life by terrorists.

5.11. Signage Post

The last identified theme in this section is the availability of signage posts within the airport. Excerpts provided below;

“...sign and symbols...” (Respondent 6)

“...via signage and symbols...” (Respondent 6)

From the excerpts above, it is revealed that there are provisions of spaces for signs and symbols that mostly represent dangers for employees, passengers and the pilot when it is about to land or depart the airport. These signage are considered during project management in order to further avoid risk and manage them when the need arises.

5.12. Influence of Risk Management on Aviation Industry

This section presents results on the influence of risk management on the aviation industry. As presented in **Figure 4**, four themes were identified and these are: Increased profit margin, minimized number of crashes, increased confidence of employees and passengers, and increased safety of the passengers (See **Figure 4**).

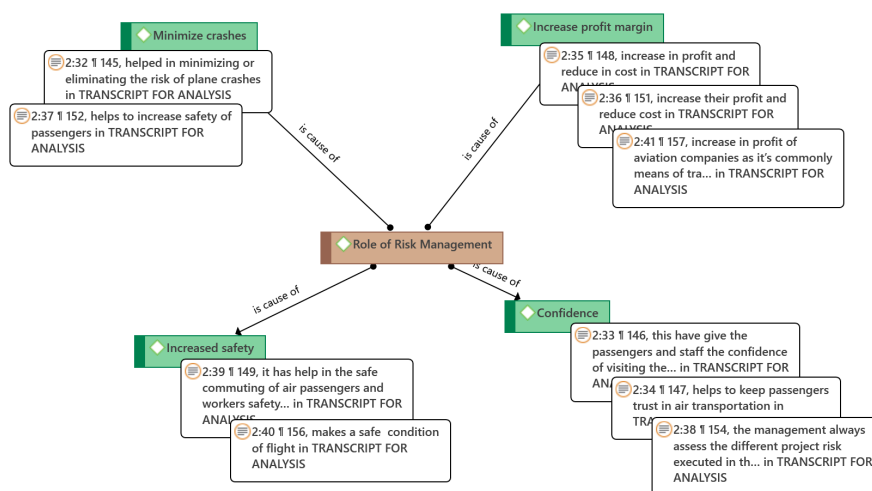


Figure 4. Influence of risk management in the aviation industry.

5.13. Increased Profit Margin

From **Figure 4**, it is shown that risk management in the aviation industry have

contributed to increased profit margin. Excerpt is presented below:

“...increase in profit and reduce in cost...” (Respondent 4)

“...increase their profit and reduce cost...” (respondent 7)

“...increase in profit of aviation companies as it's commonly means of transportation...” (Respondent 13).

From the excerpts, it is shown that the risk identification, assessment and management have contributed to the increase in profit margin recorded in the aviation industry. This is because it reduced the amount spent on management of possible unwanted event(s) that might have happened if there was no risk identification and management.

5.14. Minimize Crashes

Another identified influence of risk identification and management in the aviation industry is the minimization of crashes. Excerpt below;

“...helped in minimizing or eliminating the risk of plane crashes...” (Respondent 1)

“...helps to increase safety of passengers...” (Respondent 8)

From the excerpt above, it is shown that risk identification and management successfully contributed to increased safety of passengers, as there was reduced risk of plane crashes or actual plane crash in the airport. This further led to the next identified theme, confidence.

5.15. Confidence

Following the reduced number of recorded plane crashes and accident in the airport, passengers and employees developed more confidence in the aviation sector, which subsequently increased the patronage and profit margin recorded. Excerpt below;

“...this have give the passengers and staff the confidence of visiting the airport without fear and also have made the air transport to be the most safest mode of transport...” (Respondent 2)

“...the management always assess the different project risk executed in the aviation industry, has relatively helped in the security and confidence of travelers...” (Respondent 10)

6. Discussion

The study examined the management of project risks in the Nigerian Aviation Industry post-COVID-19 pandemic era. Four objectives were generated and answered using thematic analysis. Qualitative data was gathered from fourteen airport staff in Nnamdi Azikiwe International Airport, Abuja. From the findings of the study, a series of tools were identified to be used for risk identification and assessment at the international airport. For instance, specialized instruments such as metal detectors, liquid detectors and surveillance devices were mentioned to be used for risk identification and assessment. Also, it was found that risk

identification and assessment are also done through investigative analysis. Investigative analysis is done through identification of possible risks that may occur in future, and learning from previous occurrences. Also, it was found that investigations are carried out intermittently and physically by personnel in the safety department. During these exercises, possible risks to employees and passengers are observed, identified and mitigated. The last mode of risk assessment and identification was through the use of a questionnaire. It was discovered that the use of a questionnaire or survey in another way ensures a record of the list of possible risks as well as how they could be approached or mitigated. The record also serves as a reminder of the urgency of the risks identified and the need to address them.

Similarly, Stroeve *et al.*, [26] carried out an assessment of advanced safety management in the aviation sector in the Netherlands. It was discovered that a specialised risk identification tool was designed and found effective in risk identification and assessment. Also, the use of questionnaires was found to be effective in the risk identification and assessment processes.

It was also found that there are various means of risk management in the Nigerian aviation sector. First is the method of risk prevention. This makes it easier for the airport authority to identify and design ways of managing the identified risks, such as preventing them. Risk prevention also helps in making a decision on the mode of management, one of which is prevention. Another identified management method is prioritizing risks. It was found that the airport authority identifies what risks to manage by first prioritizing them. From the findings, the airport prioritises risks that are health-related, hazards and control measures are ranked according to the extent to which they are risky. For easy identification and management, the airport authority categorizes it into high and low risk. This makes it possible to address risks that are high and need immediate attention, while low risks are considered not to pose much risks, but can only be addressed after effective management of the high risks.

Similarly, Emmons *et al.* [12] state that the aviation sector in Nigeria must employ multidimensional solutions that include various areas to reduce risks. Establishing thorough health and safety practices that align with international standards is necessary for the operational side of things. Additionally, key stages are the diversification of supplier chains and the closing of worker skill gaps via training programmes.

It was also discovered that the aviation sector identifies and manages risk by revisiting previous incidences that could have been avoided if there had been effective risk identification and assessment. Further from the findings, there are risk-mitigating strategies in the airport, which are deployed only after identifying and assessing risks that might cost the airport, employees and passengers. In addition, the aviation sector carries out periodic training for their safety personnel which further helps in the effective practice of risk management. While identification and assessment of risk do not finish the cycle of managing risks during project execution and management, the need to train the personnel in the safety

department is considered important. Finally, it was discovered that the aviation sector carries out periodic overall assessments of the airport to identify what each department is lacking or practising that might pose a threat to the airport and the aviation sector as a whole.

Similarly, Elmabrouk [27] examined aviation risk management strategies using the case study of Dubai, United Arab Emirates. It was discovered from the study that the use of surveys and questionnaires were effective means of identifying, while this also provides better options for them in mitigating the identified risks and their effective management.

As regards how risk management is integrated into the overall project management process in the Nigerian aviation industry, three findings were reported. First is ensuring the availability of fast intervention during any project execution or management. These include the availability of first aid, fire services, and other security apparatus. This is to safeguard everyone in the airport. Also, security and healthcare service are made available for everyone within the airport. This is also made available at every stage of any project management process. Finally, there are provisions for spaces for signs and symbols that mostly represent dangers for employees, passengers, and the pilot when it is about to land or depart the airport. These signages are considered during project management to further avoid risk and manage them when the need arises.

Similarly, according to Pescaroli [11], having an adequate allocation of financial, human, and technical resources is necessary when implementing risk mitigation methods. To accomplish this goal, it may be necessary to invest in health and safety precautions, upgrade technology infrastructure to enable remote operations, and educate workers to adapt to new norms and processes [12]. The efficient management of risks depends on having access to the appropriate resources, which in turn depends on effective resource allocation.

In addition, it was discovered from this study that risk management has a series of influences on various aspects of the aviation industry. The first is in the area of increased profit margin. Specifically, because the aviation sector has a risk identification and assessment culture, it makes the airport authority prepared for any eventuality and subsequently reduces the cost of accidents or crashes as the case may be. By this, the profit margin is increased. Risk management also assists in minimizing the rate of reported crashes in the selected international airport in Nigeria. This further contributed to the confidence level of passengers and employees in the aviation sector. The feeling of safety ensures that more people patronize, and subsequently improves the reported profit margin by air service providers.

Similarly, Al-Nimer *et al.*, [28] examined the role of risk management practices in firm performance in selected private organizations in Jordan. Through the quantitative research method, it was discovered that risk management practices contribute to the overall firm performance of private organizations. This was also confirmed by Alkhyoon *et al.* [29] and Ojo *et al.* [30] who replicated a similar study in Saudi Arabia.

7. Conclusions

The following conclusions were drawn based on the findings of the study;

Firstly, it could be concluded that risk assessments such as specialized instruments, investigative analysis and the use of questionnaires were used as modes of risk assessment and identification in the aviation sector.

Also, this study concludes that risk management in the Nigerian aviation sector includes: Comprehensive assessment, study of previous incidences, risk prevention, risk prioritization, mitigation of risk and training of safety personnel.

Further, it was discovered that there is a provision for fast intervention during any project execution or management in the airport. These include the availability of first aid, fire services, and other security apparatus. This is to safeguard everyone in the airport. Also, security and healthcare service is made available for everyone within the airport. This is also made available at every stage of any project management process. There are provisions of spaces for signs and symbols that mostly represent dangers for employees, passengers and the pilot when it is about to land or depart the airport. These signages are considered during project management to further avoid risk and manage them when the need arises.

In addition, it could be concluded from this study that risk management contributed positively to the Nigerian aviation sector in the areas of: Increased profit margin, confidence of passengers, perceived safety and minimization of crashes.

8. Recommendations

The following recommendations were made based on the findings of the study:

1) It is recommended that the Nigerian aviation sector should endeavour to further invest in the acquisition of risk identification and assessment tools for more precision.

2) Also, authorities in the Nigerian aviation sector should further research the global best standard of effective management of identified risks and assessment. Much attention should be on further training of safety personnel. This will further help to offer the best service to employees and passengers.

3) It is further recommended that investment in risk management in every project management process in the aviation sector is never a waste. Rather, it contributes further to its effectiveness, thereby reducing the amount that could have been spent on settlement of debts of avoidable accidents with simple safety practices.

4) Finally, it is recommended that more studies should be carried out in this research area.

Conflicts of Interest

The author declares no conflicts of interest.

References

- [1] Wang, Y., Deng, X. and Mao, H. (2022) The Optimization of Personnel Localization Management on International Construction Projects: Cases Study from China

- Enterprises. *Engineering, Construction and Architectural Management*, **30**, 3259-3291. <https://doi.org/10.1108/ecam-10-2021-0957>
- [2] Chong, C.T., Fan, Y.V., Lee, C.T. and Klemeš, J.J. (2022) Post COVID-19 Energy Sustainability and Carbon Emissions Neutrality. *Energy*, **241**, Article 122801. <https://doi.org/10.1016/j.energy.2021.122801>
 - [3] Kukoyi, P.O., Simpeh, F., Adebawale, O.J. and Agumba, J.N. (2021) Managing the Risk and Challenges of COVID-19 on Construction Sites in Lagos, Nigeria. *Journal of Engineering, Design and Technology*, **20**, 99-144. <https://doi.org/10.1108/jedt-01-2021-0058>
 - [4] Simpeh, F. and Amoah, C. (2021) COVID-19 Guidelines Incorporated in the Health and Safety Management Policies of Construction Firms. *Journal of Engineering, Design and Technology*, **20**, 6-23. <https://doi.org/10.1108/jedt-01-2021-0042>
 - [5] Amoah, C. and Pretorius, L. (2019) Evaluation of the Impact of Risk Management on Project Performance in Small Construction Firms in South Africa. *Journal of Engineering, Design and Technology*, **18**, 611-634. <https://doi.org/10.1108/jedt-06-2018-0098>
 - [6] Fan, Y. and Stevenson, M. (2018) A Review of Supply Chain Risk Management: Definition, Theory, and Research Agenda. *International Journal of Physical Distribution & Logistics Management*, **48**, 205-230. <https://doi.org/10.1108/ijpdlm-01-2017-0043>
 - [7] Kerzner, H. (2017) *Project Management: A Systems Approach to Planning, Scheduling, and Controlling*. Wiley.
 - [8] Keers, B.B.M. and van Fenema, P.C. (2018) Managing Risks in Public-Private Partnership Formation Projects. *International Journal of Project Management*, **36**, 861-875. <https://doi.org/10.1016/j.ijproman.2018.05.001>
 - [9] Kirschenbaum, A. and Rapaport, C. (2017) Does Training Improve Security Decisions? A Case Study of Airports. *Security Journal*, **30**, 184-198. <https://doi.org/10.1057/sj.2014.39>
 - [10] Bauer, T.D., Humphreys, K.A. and Trotman, K.T. (2021) Group Judgment and Decision Making in Auditing: Research in the Time of COVID-19 and beyond. *Auditing: A Journal of Practice & Theory*, **41**, 3-23. <https://doi.org/10.2308/ajpt-2020-147>
 - [11] Pescaroli, G. (2018) Perceptions of Cascading Risk and Interconnected Failures in Emergency Planning: Implications for Operational Resilience and Policy Making. *International Journal of Disaster Risk Reduction*, **30**, 269-280. <https://doi.org/10.1016/j.ijdrr.2018.01.019>
 - [12] Emmons, D., Mazzuchi, T., Sarkani, S. and Larsen, C. (2018) Mitigating Cognitive Biases in Risk Identification: Practitioner Checklist for the Aerospace Sector. *Defense Acquisition Research Journal*, **25**, 52-93. <https://doi.org/10.22594/dau.16-770.25.01>
 - [13] Polater, A. (2018) Managing Airports in Non-Aviation Related Disasters: A Systematic Literature Review. *International Journal of Disaster Risk Reduction*, **31**, 367-380. <https://doi.org/10.1016/j.ijdrr.2018.05.026>
 - [14] Marleau Donais, F., Abi-Zeid, I., Waygood, E.O.D. and Lavoie, R. (2021) A Framework for Post-Project Evaluation of Multicriteria Decision Aiding Processes from the Stakeholders' Perspective: Design and Application. *Group Decision and Negotiation*, **30**, 1161-1191. <https://doi.org/10.1007/s10726-021-09753-y>
 - [15] Bartle, J.R., Lutte, R.K. and Leuenberger, D.Z. (2021) Sustainability and Air Freight Transportation: Lessons from the Global Pandemic. *Sustainability*, **13**, Article 3738. <https://doi.org/10.3390/su13073738>
 - [16] Pulsford, R.M., Brocklebank, L., Fenton, S.A.M., Bakker, E., Mielke, G.I., Tsai, L., et

- al.* (2023) The Impact of Selected Methodological Factors on Data Collection Outcomes in Observational Studies of Device-Measured Physical Behaviour in Adults: A Systematic Review. *International Journal of Behavioral Nutrition and Physical Activity*, **20**, 1-14. <https://doi.org/10.1186/s12966-022-01388-9>
- [17] Creswell, J.W. and Creswell, J.D. (2018) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. 5th Edition, SAGE Publications.
- [18] Roh, Y., Heo, G. and Whang, S.E. (2021) A Survey on Data Collection for Machine Learning: A Big Data—AI Integration Perspective. *IEEE Transactions on Knowledge and Data Engineering*, **33**, 1328-1347. <https://doi.org/10.1109/tkde.2019.2946162>
- [19] Vasileiou, K., Barnett, J., Thorpe, S. and Young, T. (2018) Characterising and Justifying Sample Size Sufficiency in Interview-Based Studies: Systematic Analysis of Qualitative Health Research over a 15-Year Period. *BMC Medical Research Methodology*, **18**, Article No. 148. <https://doi.org/10.1186/s12874-018-0594-7>
- [20] Daher, W. (2023) Saturation in Qualitative Educational Technology Research. *Education Sciences*, **13**, Article 98. <https://doi.org/10.3390/educsci13020098>
- [21] Enticott, G., Earl, L. and Gates, M.C. (2021) A Systematic Review of Social Research Data Collection Methods Used to Investigate Voluntary Animal Disease Reporting Behaviour. *Transboundary and Emerging Diseases*, **69**, 2573-2587. <https://doi.org/10.1111/tbed.14407>
- [22] Caulfield, J. (2019) How to Do Thematic Analysis. <https://www.scribbr.com/methodology/thematic-analysis/>
- [23] Braun, V. and Clarke, V. (2019) Reflecting on Reflexive Thematic Analysis. *Qualitative Research in Sport, Exercise and Health*, **11**, 589-597. <https://doi.org/10.1080/2159676x.2019.1628806>
- [24] Keshta, I. and Odeh, A. (2021) Security and Privacy of Electronic Health Records: Concerns and Challenges. *Egyptian Informatics Journal*, **22**, 177-183. <https://doi.org/10.1016/j.eij.2020.07.003>
- [25] Dooly, M., Moore, E. and Vallejo, C. (2017) Research Ethics. In: *Qualitative Approaches to Research on Plurilingual Education*, Research-publishing.net, 351-362. <https://doi.org/10.14705/rpnet.2017.emmd2016.634>
- [26] Stroeve, S., Smeltink, J. and Kirwan, B. (2022) Assessing and Advancing Safety Management in Aviation. *Safety*, **8**, Article 20. <https://doi.org/10.3390/safety8020020>
- [27] Elmabrouk, S. (2014) Aviation Risk Management Strategies, Case Study. 2015 *International Conference on Industrial Engineering and Operations Management*, Dubai, 3-5 March 2015.
- [28] Al-Nimer, M., Abbadi, S.S., Al-Omush, A. and Ahmad, H. (2021) Risk Management Practices and Firm Performance with a Mediating Role of Business Model Innovation. Observations from Jordan. *Journal of Risk and Financial Management*, **14**, Article 113. <https://doi.org/10.3390/jrfm14030113>
- [29] Alkhyoon, H., Abbaszadeh, M.R. and Zadeh, F.N. (2023) Organizational Risk Management and Performance from the Perspective of Fraud: A Comparative Study in Iraq, Iran, and Saudi Arabia. *Journal of Risk and Financial Management*, **16**, Article 205. <https://doi.org/10.3390/jrfm16030205>
- [30] Ojo, A., Fashola, T.M. and Aigboje, H.M. (2023) Emotional Intelligence and Job Satisfaction as Predictors of Burnout among Bankers in Ibadan Metropolis. *African Journal of Social and Behavioural Sciences*, **13**, 453-465. <https://journals.aphriapub.com/index.php/AISBS/article/view/2286>