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A Qualitative Study on Security Challenges of Somali Civil Aviation Industry in the Post-conflict Era

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APPROVAL

The jury members certify that the study confirms the acceptable standards for scholarly presentation and is fully adequate in scope and quality as a dissertation for the Master of Science in Aviation Management degree.

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DECLARATION

I hereby declare that this is my original work and has never been presented for a degree or any award from any university or academic institution for higher learning. It is the result of my own efforts, and guidance I have received from Assist. Prof. Dr. Cengiz Mesut BÜKEÇ.

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DEDICATION

This thesis is dedicated to my dear brother Mohamed Nur Ali, who provided words of encouragement and prayer, which enabled me to achieve my academic goals. additionally, I extend my gratitude to other members of my family and friends who supported me throughout the process and ensured that I exerted all the necessary efforts to complete my thesis.

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ABSTRACT

Since 1991, Somalia has lacked a stable government system. Following its independence in 1960, a military coup in 1969 led to an authoritarian regime under General Siad Barre. Over time, the military regime became more authoritarian and opposition militias emerged to overthrow it. After the overthrow of the military regime in 1991, Somali civil aviation suffered severe destruction, as clan militias destroyed airports and infrastructure. The national carrier ceased operations and the country lost airspace management, resulting in the suspension of international flights due to civil war and political instability. The emergence of the Islamic Movement in 2006 worsened civil aviation disruption in its attempt to destabilize the government and isolate it globally. Somalia is still recovering from prolonged political chaos and insecurity, which has severely impacted its civil aviation facilities. This thesis aims to reveal the security challenges of Somali civil aviation industry in the post-conflict era. Semi-structured in-depth interviews were conducted with Somali civil aviation stakeholders including aviation security inspectors, advisors, airport managers, and air traffic controllers associated with the Somali Civil Aviation Authority. Participants were recruited through snowball sampling and interviewed using Zoom. Manual Thematic analysis was employed to analyze the data. The findings indicate that the Somali Civil Aviation security situation has improved in recent years by attracting a number of well-known international carriers but still faces multidimensional security threats, including political instability, terrorism threats, poor technological infrastructure, lack of sufficient employee knowledge, regulatory deficiency, lack of security awareness, and lack of sufficient budget. These findings align with those of studies conducted by the African Development Bank, the Somali Ministry of Planning, Investment, and Economic Development, and the Ministry of Public Works, Housing, and Reconstruction. This study recommends that the Somali government, Somali Civil Aviation Authority, and other stakeholders focus on training and capacity building, resource allocation, policy and collaboration, technological upgrades, and strategic implementation and monitoring.

Key words: Security Challenges, Somali Civil Aviation, Post-conflict Era

ÖZ

1991'den bu yana Somali'de istikrarlı bir hükümet sistemi bulunmuyor. 1960'taki bağımsızlığının ardından, 1969'daki askeri darbe, General Siad Barre yönetimindeki otoriter rejime yol açtı. Zamanla askeri rejim daha otoriter hale geldi ve onu devirmek için muhalif milisler ortaya çıktı. 1991 yılında askeri rejimin devrilmesinin ardından Somali sivil havacılığı, klan milislerinin havaalanlarını ve altyapıyı tahrip etmesi nedeniyle ciddi bir yıkıma uğradı. Ulusal taşıyıcının faaliyetlerini durdurması ve ülkenin hava sahası yönetimini kaybetmesi, iç savaş ve siyasi istikrarsızlık nedeniyle uluslararası uçuşların askıya alınmasına yol açtı. 2006 yılında İslami Hareket'in ortaya çıkışı, hükümeti istikrarsızlaştırma ve onu küresel olarak izole etme girişiminde sivil havacılığın aksamasını daha da kötüleştirdi. Somali, sivil havacılık tesislerini ciddi şekilde etkileyen uzun süreli siyasi kaos ve güvensizlikten hâlâ kurtulmaya çalışıyor. Bu tez, çatışma sonrası dönemde Somali sivil havacılık sektörünün güvenlik sorunlarını ortaya çıkarmayı amaçlamaktadır. Somali Sivil Havacılık Otoritesine bağlı havacılık güvenlik müfettişleri, danışmanlar, havaalanı yöneticileri ve hava trafik kontrolörleri dahil Somalili sivil havacılık paydaşlarıyla yarı yapılandırılmış derinlemesine görüşmeler gerçekleştirildi. Katılımcılar kartopu örneklemesi yoluyla işe alındı ve Zoom kullanılarak röportaj yapıldı. Verilerin analizinde Manuel Tematik analiz kullanılmıştır. Bulgular, Somali Sivil Havacılığının güvenlik durumunun son yıllarda bir dizi tanınmış uluslararası taşıyıcının ilgisini çekmesiyle iyileştiğini, ancak hâlâ siyasi istikrarsızlık, terörizm tehditleri, zayıf teknolojik altyapı, yeterli çalışan bilgisi eksikliği, mevzuat düzenlemeleri gibi çok boyutlu güvenlik tehditleriyle karşı karşıya olduğunu gösteriyor. eksikliği, güvenlik bilincinin olmayışı ve yeterli bütçenin olmayışıdır. Bu bulgular Afrika Kalkınma Bankası, Somali Planlama, Yatırım ve Ekonomik Kalkınma Bakanlığı ve Bayındırlık, İskan ve İmar Bakanlığı tarafından yürütülen çalışmaların bulgularıyla uyumludur. Bu çalışma Somali hükümetinin, Somali Sivil Havacılık Otoritesi'nin ve diğer paydaşların eğitim ve kapasite geliştirme, kaynak tahsisi, politika ve işbirliği, teknolojik iyileştirmeler ve stratejik uygulama ve izlemeye odaklanmasını önermektedir.

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ABBREVIATIONS

ACLED: Armed Conflict Location and Event Data Project ---------- 58
AIM: Aeronautical Information Management ---------- 52
AMISOM: African Union Mission to Somalia ---------- 58
ANO: Abu Nidal Organization ---------- 36
AOSP: Aircraft Operator Security Program ---------- 54
ASA: Air Services Agreement ---------- 46
ASP: Airport Security Program ---------- 54
ATC: Air Traffic Controller ---------- 71
ATM: Air Traffic Management ---------- 52
ATS: Air Traffic Services ---------- 72
BASAs: Bilateral Air service Agreements ---------- 46
BBC: British Broadcasting Corporation ---------- 63

CHAPTER 1

INTRODUCTION

Since the collapse of the central government in 1991, Somalia has faced ongoing conflict and insecurity, which remains a significant global concern. This led to a destructive civil war with clan rebels competing for the control of the nation's resources. The central research questions this thesis examines are how the civil unrest impact to the Somalia civil aviation. This chapter introduces the study background, focusing on the origins of Somalia's insecurity and its repercussions on the civil aviation sector. After introducing the research question and hypothesis, the introduction presents the argument and the research significance by implying the contribution of the thesis to the existing literature. This might be bringing an update to the existing studies. The chapter also provides a brief overview of the differences between aviation security and safety concepts and then concludes the thesis structure.

1.1 Background of the research

Air transport is intimately connected to globalization, heightened international trade, and expanded cultural and social exchange, which in turn influences international migration, commerce, and tourism patterns (Budd and Ison, 2017). This intricate relationship makes air transport highly vulnerable to man-made disasters, as both positive and negative domestic and international changes can significantly impact it (Kiraci, 2018). Wars, terrorist attacks, and crises can have profound consequences, and the stability of states and government policies is essential for the continued growth and sustainability of the air transport industry (Abeyratne, 2011). Civil unrest and violence also severely impact air transport, leading to numerous flight cancellations (Abeyratne, 2011). The conflict and insecurity in Somalia have been a persistent global concern since the dissolution of the central government in 1991. The absence of a functional central authority has resulted in a destructive civil war, with various clan-based rebel groups vying to control the nation's resources (Shıre, 2019).

In 1960, Somalia attained independence and established a parliamentary system of governance, accompanied by relatively stable civil institutions. However, this stability was disrupted in 1969 when a military coup ousted the civilian government, ushering in an army regime led by General Siad Barre, which lasted until 1991. Although the security sector remained stable under Barre's

rule, civil services became increasingly focused on supporting the survival of the military government. Barre's regime gradually evolved into an authoritarian one, prompting the rise of opposition militia groups like the United Somali Congress (USC), Somali Salvation Democratic Front (SSDF), and Somali National Movement (SNM). Eventually, these opposition forces succeeded in overthrowing Barre's regime in 1991.

Following the collapse of military rule in 1991, Somalia experienced a fragmentation of power, leading to a series of civil conflicts. In an effort to promote civilian governance, the international community intervened with the United Nations Operation in Somalia (UNOSOM) in 1993. The primary goals of UNOSOM were to facilitate a peaceful transition to civilian authority, foster reconciliation among rebel factions, and support institution-building (Abdulahi, 2022). However, UNOSOM failed peaceful transition to civilian authority and withdrew from Somalia in 1995 without effectively addressing institutional weaknesses. This failure exacerbated political instability in Somalia, paving the way for the emergence of warlords and extremist groups like Al-Shabab. Subsequently, the focus shifted towards bolstering national security through increased surveillance and targeting of groups such as Al-Shabab and Al-Qaeda, diverting resources away from strengthening state institutions (Abdulahi, 2022).

This ongoing civil unrest in Somalia has led to the disruption of air transport, with many airlines suspending scheduled flights due to the destruction of aviation facilities caused by clashes between anti-government groups and security forces. Furthermore, the blockade of airports and other essential infrastructure by clan militias, who ousted the legitimate government, added to the turmoil. The emergence of the Islamic Movement in 2006 (Chigudu, 2021) has exacerbated the disruption of air transport, becoming a focal point for those aiming to destabilize the government and isolate it from the global community. The civil war has also ravaged government institutions directly or indirectly responsible for the development and safeguarding of the aviation industry. Somalia is frequently cited as an example of a fragile state, where Decades of civil conflict have resulted in the collapse of the state and weakened institutions, fostering an ideal environment for violence (Solomon, 2014).

The security situation within Somalia remains precarious, with ongoing conflict primarily driven by competition over limited resources and their accessibility. Al-Shabaab, an extremist group

affiliated with al-Qaeda, has been a prominent actor in Somalia for more than a decade. Their objective is to overthrow the Somali government and establish an Islamic state. Al-Shabaab exploits local tensions to reinforce its agenda against emerging governmental structures in Somalia. The group's influence significantly impacts the security landscape, with a majority of security incidents linked to their activities (Shay, 2021; Ministry of Planning, Investment and Economic Development, 2020). According to the 2024 Global Terrorism Index, Somalia ranks among the top ten countries most affected by terrorism, with Al-Shabaab being responsible for 434 fatalities resulting from terrorist acts in 2023.

This insecure environment hinders the development of Somalia's civil aviation sector, and there is an urgent need for an in-depth study of how this prolonged political and security instability has affected the industry. Scholarly investigations have generally overlooked the vulnerability of civil aviation to both internal and external conflicts. Studies of the Somali conflict typically focus on external and internal factors as the primary causes of state collapse, social disintegration, civil warfare, and the ongoing fight against terrorism. After the state collapse, research primarily focuses on internal civil strife, often overlooking the specific impact of the conflict on the country's air transport sector. Therefore, this study aims to close this gap by examining the security challenges of Somali civil aviation industry in the post-conflict era.

1.2 Research Problem

The establishment of a secure air transport service significantly enhances economic, tourist, political, and cultural ties among nations (Zhang and Graham, 2020). In the background of the study, it is noted that Somalia is a fragile developing country that is still recovering from a prolonged period of political chaos and insecurity, which has severely impacted the country's civil aviation facilities. Protracted instability has left the industry in disarray, with inadequate physical infrastructure, a lack of aviation professionals, and a weak regulatory policy framework, all of which are essential for industry development (African Development Bank, 2016, pp. 94–98). The Somali National Development Plan 2020–2024 and the Somali National Infrastructure Strategy 2019–2063 emphasize that Somalia's aviation sector lags behind other African and global standards. Reports further state that the sector experiences minimal commercial activity due to political instability, security concerns, the absence of cohesive policies and regulatory frameworks,

an inadequacy of skilled labor, and a lack of significant budget allocations for infrastructure maintenance (Ministry of Planning, Investment and Economic Development, 2020).

The persistent security problems have led to the disregard and devastation of historical infrastructure, which is vital to the aviation sector. The airports have not undergone enough rehabilitation throughout the post-conflict period and are still in poor facility condition. Existing studies in Somalia have primarily focused on the adverse effects of political unrest on overall security (Agbiboa 2014; Maystadt and Ecker 2014; Afriyie 2019; Chigudu 2021; Farah 2022), leaving a research gap in understanding the specific impacts on the air transport sector, despite civil aviation being highly susceptible to conflicts and a primary target for terrorist organizations. It's evident that air transport and terrorism are fundamentally incompatible concepts, symbolizing life, travel, and leisure versus death, terror, and destruction. Safety is paramount in aviation, and individuals avoid places unable to guarantee their safety from threats such as terrorism, natural disasters, and war (Maditinos &Vassiliadis, 2008; Adhiambo, 2016).

Due to the limited attention given by previous studies how the civil unrest impacted to the Somali civil aviation, this research aims to address this significant gap in existing literature concerning the security challenges facing the Somali civil aviation industry in the post-conflict era.

1.3 Research Purpose

As previously indicated in the background section of the thesis, Somalia did not have a functioning state since the overthrow of its military government in 1991. The inability to establish an inclusive government is due to the personal interests, power dynamics, and economic ambitions of warlords, which have prevented the resolution of perceived social, economic, and political injustices inflicted by the previous regime (Magan, 2016). The protracted civil war has unfolded in different phases, resulting in the loss of hundreds of thousands of lives through various means, prompting a significant exodus of individuals seeking peace and stability elsewhere. Amid lawlessness, warlords and clan militias are actively engaged in fierce battles for power, vying for control over valuable resources. This turbulent environment has adversely affected peaceful coexistence and impeded progress towards sustainable development objectives for both the Somali community and the nation. The primary factors contributing to political instability are the government's lack of

effectiveness, the fragility of national institutions, and inadequacies in the enforcement of the rule of law (Adan, 2020).

The civil unrest has led to the disruption of air transport. Following the overthrow of the military regime, Somali civil aviation suffered severe destruction as clan militias destroyed airports and infrastructure. The national carrier ceased operations, Somalia lost airspace management, and international flights were suspended due to the civil war. The emergence of the Islamic Movement, who capitalized on the political vacuum, exacerbated civil aviation disruption, aiming to destabilase the government and isolate it from the rest of the world. The country is still recovering from this prolonged period of political chaos and insecurity, which has severely impacted the country's civil aviation facilities. This thesis aims to explore the security challenges of Somali civil aviation industry in the post-conflict era.

1.4 Research Objectives

- To identify the security challenges facing the Somali civil aviation industry in the post-conflict era
- To determine how do security challenges impact the Somali civil aviation industry
- To propose the strategies that can be implemented to mitigate these security challenges

1.5 Research Questions

To achieve the research objectives, this thesis was guided by the following research questions:

- What are the security challenges facing the Somali civil aviation industry in the post-conflict era?
- How do security challenges impact the Somali civil aviation industry?
- What strategies can be implemented to mitigate these security challenges?

1.6 Research Significance

The threat landscape is constantly changing globally, making aviation security more challenging (Klenka, 2021). The vulnerabilities and security weaknesses of a country's aviation industry can pose significant risks to the global sector owing to its interconnected nature. This study focuses on

civil aviation security threats in Somalia, where state institutional deterioration has led to the collapse of aviation infrastructure over the past three decades. Therefore, this study provides valuable insights into the pressing security challenges resulting from the absence of state institutions and contributes to the existing body of knowledge on the security challenges confronting the Somali civil aviation industry in the post-conflict era since 1990s.

The findings of this study are valuable to national and international stakeholders in the aviation sector, such as government agencies, airlines, airports, and international organizations. This study aims to offer substantial insights to policymakers, practitioners, and researchers involved in revitalizing Somalia's aviation industry. Tackling the precise challenges confronting Somalia's aviation sector provides crucial information to shape policies and strategies for improving aviation security, both within the country and globally.

1.7 Security and Safety in Aviation

Although this study focusing on aviation security, it's vital to differentiate between two key terms: security and safety. Security involves protecting civil aviation from illegal interference using measures and resources as defined by the International Civil Aviation Organization (ICAO) Annex 17: Aviation Security Manual (ICAO, 2022). According to Mohammed (2017), an aviation expert, aviation security refers to legal and regulatory measures, as well as human and material resources, designed to safeguard civil aviation from unlawful interference. Aviation security covers a broad range of areas within the flight experience, including airport and baggage security. The 17th annex of the Chicago Convention, established in 1944, outlines various situations that could endanger civil aviation security (Adıgüzel, 2020).

These threats include the seizure of aircraft, causing harm to operating aircraft, hostage-taking incidents, armed intrusions within airports, carrying weapons or dangerous devices with illicit intent, utilizing aircraft to inflict harm or damage to the environment, and spreading false information to jeopardize the safety of aircraft, passengers, ground personnel, or crew (Adıgüzel, 2020). However, confining civil aviation security risks solely to these stipulations is inadequate due to technological advancements and evolving security challenges. Therefore, amendments to the 17th annex are necessary, as it forms the fundamental framework for aviation security regulations that member states must adhere to. Mohammed (2017) observed that aviation security

threats encompass diverse scenarios, including the smuggling of individuals and contraband, theft of baggage and cargo, and aircraft hijacking. While some actions are specific to civil aviation, others constitute general criminal activities such as theft and assault.

On the other hand, Safety within the realm of aviation pertains to the condition wherein the hazards linked to activities involved in or facilitating aircraft operations are mitigated and managed to a satisfactory extent. It is crucial to understand that in aviation, safety does not denote the total elimination of risk but rather encompasses the adept management of risks to mitigate potential hazards (ICAO, 2018; Wipf, 2020).

The concept of intentionality distinguishes these two aspects of aviation in terms of the types of undesirable risks they face. In the realm of safety, the aim is to prevent accidents through maintenance, training, and strict adherence to detailed procedures and practices. The methods employed to achieve safety goals are relatively straightforward as there is a substantial body of knowledge regarding cause-and-effect relationships. Accidents in aviation, such as those caused by errors in maintenance or procedures, such as doors detaching in-flight or landing gear malfunctions during runway landings, are predictable and explainable to some extent (Olsvik, 2015, p.5). Furthermore, these accidents provide opportunities to learn and improve construction, maintenance, and procedures to prevent similar occurrences in the future.

The concept of security is based on distinct principles. Unlike safety, security involves a higher degree of uncertainty and unpredictability as it pertains to intentional acts aimed at harming the aviation system. Essentially, security incidents are the result of malicious intent, and security attacks are designed to inflict harm. If an incident occurs accidentally, it is considered to be a safety issue rather than a security concern. For instance, terrorism falls under the category of intentional incidents, which is why security concerns are typically less tangible and manageable than safety issues (Olsvik 2015, p.5). Airport passenger searching and screening are primarily related to security measures, whereas safety involves passengers fastening their seatbelts during takeoff and landing (Adıgüzel, 2020, p.14). Aircraft accidents are categorized under "air safety," while incidents such as aircraft hijacking and terrorist activities within both terminal and aircraft premises are classified as "air security."

In regulatory contexts, attaining comparable levels of control over safety and security is exceptionally challenging due to the distinct nature of the risks involved. According to Normal Accident Theory (NAT), organizational accidents are unavoidable and must be anticipated. Enhanced procedures, regulations, and training can aid in maintaining an accident-free or minimally accident-prone state, yet achieving a flawless 100% error-free record is impossible (Olsvik, 2015, p. 7). Olsvik (2015) notes that in safety-focused industries like petroleum, reaching a milestone of 100 consecutive days without accidents is a result of well-designed procedures, efficient operations, and vigilant personnel. In contrast, in the realm of security, the same milestone might not carry the same significance. A period of 100 days without security incidents could reflect the effectiveness of the security system or simply indicate the absence of breach attempts, underscoring the inherent differences between security and safety. This thesis is specifically concerned with aviation security, addressing the unique security challenges of Somali Civil Aviation in the post-conflict period.

1.8 Structure of the Thesis

This thesis is organized into five chapters, with each chapter focusing on a specific part of the thesis. The introductory chapter serves as a foundation for understanding the following chapters, starting with the central research question of how the civil unrest impact to the Somalia civil aviation. It then addresses the research background and problem of the prolonged period of political chaos and insecurity affecting the country's civil aviation facilities as well as the current industry situation. It also outlines the research’s purpose, objectives, and questions. It also emphasizes the significance of this study for national and international stakeholders in the aviation sector, including government agencies, airlines, airports, and international organizations. Furthermore, this chapter distinguishes between two key aviation terms: security and safety.

The second chapter, comprising seven sections, focuses on literature review. It begins by contextualizing the thesis within scholarly discourse and exploring debates on security concepts. Subsequently, it delves into the historical evolution of aviation security and the development of Somalia’s civil aviation industry. It also examines airport infrastructure, operating airlines in Somalia, regulatory bodies, and security regulations in Somalia while addressing security challenges and their impact on the aviation industry. Finally, the chapter identifies the research

gaps that necessitate further investigation. The third chapter explains the research design and methodology, detailing the in-depth interview method, data collection tools, analytical techniques, and ethical considerations.

The fourth chapter presents the analysis and discussion of the collected data through thematic analysis, and presents the study findings. The findings reveal that the Somali Civil Aviation security situation has improved in recent years by attracting a number of well-known international carriers but still faces multidimensional security threats, including political instability, terrorism threats, poor technological infrastructure, lack of sufficient employee knowledge, regulatory deficiency, lack of security awareness, and lack of sufficient budget. This study opens a new chapter by exploring an area that previous researchers have not sufficiently addressed, which is the security challenge of the Somali civil aviation industry in the post-conflict era, and contribute these findings to the existing literature which may utilize both national and international stakeholders in the aviation sector, such as government agencies, airlines, and airports information to shape policies and strategies for improving aviation security, both within the country and globally.

Finally, the fifth chapter concludes the study by summarizing previous chapters, presenting recommendations, and offering an overview of the study's findings. The chapter highlights research limitation stating the inherently delicate nature of the topic being investigated and how can influence participants' opinions and feelings.

CHAPTER 2

LITERATURE REVIEW

This chapter explores the scholarly discourse and discussions relevant to the study, beginning with an examination of the overarching debates on security concepts. It then delves into the historical context of aviation security, followed by an analysis of Somalia's civil aviation industry development. Additionally, it scrutinizes airport infrastructure and operating airlines in Somalia, along with civil aviation regulatory bodies and security regulations. Furthermore, it addresses security challenges in Somalia and their impact on the aviation industry. Finally, it identifies research gaps requiring further investigation.

2.1 Security Notion

Security concepts change with time, location, and circumstances, driven by technological advances and evolving conditions. In ancient times, people used fire, stones, and sickles for protection. Adıgüzel (2020) traces the term "security" back to the 16th century, derived from the French and Latin terms "securete" and "se-curus," which imply a state of “Freedom from care."

Scholars have proposed various definitions of security. The traditional perspective emphasizes safeguarding a nation's territorial integrity and core interests against external threats. Buzan (1991), a leading scholar in international relations, conceptualizes security as the effort to achieve freedom from threats. He posits that it encompasses the capacity of states and societies to preserve their distinct identity and operational coherence in the face of perceived hostile forces of change. Arnold Wolfers (1952), a scholar specializing in security studies and international relations, also describes security as the absence of objective threats (the actual danger) to established values and the absence of subjective fear (the feeling of being in danger) regarding potential attacks on these values.

In Somalia, it is evident that the country has failed to uphold and enforce security measures. The collapse of Somalia's central government during the civil war in 1991 left the country's borders unguarded, leading to significant security challenges. This power vacuum made Somalia susceptible to transnational crimes, with extremist groups such as Al-Shabaab and ISIS taking advantage of the instability. The global focus on Somalia intensified following the 9/11 attacks in

2001, highlighting the country as a potential haven for transnational extremist terrorist organizations, including Al-Qaeda and its affiliates (Ahmed, 2020).

The notion of security has evolved over time, is influenced by societal characteristics, values, cultures, and geography, and has played a critical role in resolving conflicts and fostering peace among individuals, groups, and states. In the Middle Ages (5^{th}- 15^{th} century), security primarily entailed protection against predators and invaders and was not a subject of political discourse. The earliest organized pursuit of Security dates back to the Hittite establishment of the first monarchy in the sixteenth century BCE. The Kadesh Treaty in 1340 BCE marked the initial written agreement addressing border security concerns between Egypt and the Hittites following the Kadesh War (Adıgüzel, 2020).

Sovereignty conflicts emerged during the Neolithic era (10000BC-2200BC) as societies adopted settled lifestyles and accumulated surplus resources. Individuals seek dominance over their fellow humans and the natural environment to secure and protect surplus goods. The discovery of subterranean resources (somewhere between 5000-3000BCE) has significantly impacted the progress of civilization and sovereignty disputes, affecting economic, social, and political aspects. For example, the discovery of iron had a profound impact on agriculture, introducing new tools such as slings and sickles that increased productivity, leading to the emergence of the first stable agricultural communities (Adıgüzel, 2020). Moreover, the discovery of iron deposits has contributed to economic growth, providing a means to manufacture more advanced weaponry, resulting in a substantial shift in global military dynamics and the development of warfare techniques.

The historical evolution of security has witnessed significant development. In its early stages, security primarily revolved around conflicts aimed at safeguarding surplus resources. With the emergence of monotheistic religions (is belief in a single creator. The three most popular monotheistic faiths are Islam, Christianity, and Judaism.), a distinct security dimension emerged, characterized by religious conflicts such as jihad and crusades centered on religious beliefs. Over time, religion continued to play a pivotal role in international security, particularly through interreligious and sectarian conflicts in regions like Eastern Europe and Africa (Estrada & Costa, 2019).

The 20th century was marked by significant conflicts over sovereignty, including World War I (1914-1918), World War II (1939-1945), and the Cold War (1947-1991). These conflicts exemplify how nations, driven by the quest for resources, can engage in extreme cruelty. This continuous struggle created global instability, affecting even those nations not directly threatened by ideological spread. The World Wars underscored the necessity for nations to embrace international cooperation, acknowledging that no single entity could achieve absolute dominance. In the aftermath of World War II, the concept of security transformed, encompassing both the security of individual nation-states and broader global security issues (Adıgüzel, 2020, p. 8).

Security issues are illuminated through discourse, allowing the public to gauge the levels of security or insecurity (Buzan, 1991). In the past, state actors used political discourse to craft American security policies. These discourses, like Woodrow Wilson's Fourteen Points in 1918, shaped the country's security strategies, integrating concepts like democracy and freedom and justifying interventions in other states' affairs (Adıgüzel, 2020, p. 8).

Following World War II, the global power structure became bipolar, dominated by the United States (US) and the Union of Soviet Socialist Republics (USSR). Throughout the Cold War, ideological differences were pivotal in defining and communicating security threats and policy measures. The disintegration of the Soviet Union in 1991 marked the transition to a unipolar world and accelerated the pace of globalization. This shift expanded the concept of security to include a variety of concerns such as terrorism, drug trafficking, and environmental hazards, moving beyond its traditional focus on military threats (Cuterela, 2012; Adıgüzel, 2020).

In contemporary security discussions, two predominant perspectives prevail: traditional realism and emerging security paradigms. Traditional realists assert that the international system operates in a state of anarchy (the absence of a supreme authority); emphasizing the centrality of state and military-based security. In contrast, advocates of new security approaches argue that globalization is broadening the concept of security beyond its conventional military focus. Five key elements in this approach include the identification of threats and their sources, development of appropriate response strategies, assignment of responsibility for ensuring security, and scope of what is considered under the security umbrella (Miller, 2014). According to the traditional security approach, states are the primary sources of threat, often portrayed as revisionist actors dissatisfied

with the current status quo. In this view, the lack of central authority in the international system creates an anarchic environment in which states are uncertain about each other's intentions (Waltz, 2015). Consequently, states continuously invest in military capabilities to safeguard their security interests. Contrary to traditional security perspectives that assign the responsibility of national security exclusively to the state, modern security frameworks argue that security is a collective responsibility involving all individuals and achievable through mutual dependence (Kıyıcı, 2012). The rise of global threats and the shifting perceptions of security underscore the critical role of interconnectedness and international collaboration, marking a departure from conventional security practices (Buzan, 1991).

Following the Cold War, capitalism became the prevailing global economic system as interdependence and globalization intensified. This shift led to a transformation from a traditional equilibrium of military power to a new balance centered on economic interests (Özkan, 2008). The increased interdependence among global actors poses a significant challenge within the international system. Barry Buzan, in his influential book "People, States, and Fear," was instrumental in broadening and deepening the concept of security. Buzan argues for a reexamination of security that goes beyond its traditional confines, which have primarily been state and military-focused. He advocates for a more comprehensive understanding that includes military, political, social, economic, and environmental dimensions (Buzan, 1991). This expanded view incorporates a state-centric approach while also recognizing that threats are not limited to military concerns alone. The integration of economic and environmental issues into the security paradigm contributes to its "expansion," whereas acknowledging the security of individuals and society, alongside states, signifies its "deepening" (Paris, 2001).

How do the aforementioned security concepts impact aviation security? Aviation security has evolved over time, initially serving primarily military purposes, before gaining commercial significance due to globalization. The Chicago Convention of 1944 was crucial in establishing international standards and protocols for the safe navigation of airspace, forming the basis for civil aviation security. Before the event of 9/11, aviation security was predominantly viewed through the prism of national security or law enforcement, as noted by Szyliowicz (2004, referenced in Salter, 2008, p. 245). However, the aftermath of 9/11 saw a transition towards broader regional or

supranational security measures. This shift is exemplified by the adoption of the European Union (EU) Security Regulation No. 2320/2002, reflecting a new approach to aviation security.

2.2 Aviation Security: History and Context

The concept of security, generally defined as a state of being free from fear and danger (Çağrı, 2001), holds significant importance in the realm of aviation. Aviation security comprises a variety of activities and approaches aligned with the general definition of security (Adıgüzel, 2020, p. 14). Its primary goal is to thwart acts of violence targeting international civil air transport, airports, and associated facilities, which could compromise safety, interrupt air services, and undermine global trust. Such hostile actions are directed against aircraft, crew members, passengers, civil aviation staff, and infrastructure related to international air travel. This preventive measure is known as safeguarding international civil aviation from unlawful interference, encompassing acts like sabotage, hijacking, and the exploitation of civil aircraft for terrorist purposes (Kaunert et al., 2022). Before the two World Wars, in the early 1900s, aviation was predominantly used for military purposes, but its commercial value surged with globalization (Adıgüzel, 2020, p. 14). In most areas, aviation security is often perceived through the lenses of national security or law enforcement. However, after the terrorist attacks of 9/11, there was a significant shift towards considering regional or international security measures (Olsvik, 2015, p. 6).

Before 9/11, non-binding regulations were widely accepted, with a security discourse emphasizing consensus and cooperation among states. After 9/11, shock and fear led to a perceived need for stronger regulations and harmonized security rules. In response, organizations such as the EU pursued binding rules and recognized the policy window opened by 9/11. As a supranational policy entrepreneur, the EU pushed for involvement at the EU level (Kaunert& Léonard, 2021). The EU Council addressed aviation security at the community level through Regulation (EC) No. 2320/2002, translating the recommendations of the European Civil Aviation Conference (ECAC) into EU law. This regulation formally made optional common standards mandatory, with the EU emphasizing the need to protect Europeans from unlawful interference in civil aviation (Kaunert et al., 2022). Aviation terrorism is a global threat that has prompted shared interest in aviation security. The next section provides a comprehensive overview of terrorism and its relationship

with the aviation industry, as aviation security risks are primarily associated with terrorist activities.

2.2.1 Aviation Terrorism Challenges

The concept of "terrorism" remains a contentious and heavily debated topic among academics, primarily because there is no universally agreed-upon or objective definition established by international law (van der Walt & Solomon, 2014). This lack of consensus presents a considerable obstacle to any serious anti-terrorism strategy. As noted by Ganor (2002), numerous scholars contend that achieving an objective and universally accepted definition of terrorism is impossible. This is due to the widely differing perceptions of what constitutes a terrorist; the phrase "one man's terrorist is another man's freedom fighter" aptly illustrates this subjective perspective.

However, Ganor (2002), a well-known scholar in the field of terrorism, proposed a definition intended to facilitate international cooperation against terrorism. He defines terrorism as the deliberate use of, or threat to use, violence against civilians or civilian infrastructure to achieve political goals. This definition hinges on three essential components: the nature of the act, its objectives, and its targets. Firstly, terrorism inherently involves violence or the threat thereof; actions devoid of violence, such as peaceful protests, strikes, and tax revolts, do not fall under this definition. Secondly, the intent behind the act must be political, aiming at objectives such as regime change, changing leadership, or modifying social or economic policies. Without a political motive, an act cannot be deemed terrorism. Lastly, terrorism specifically targets civilians, setting it apart from other forms of political violence like guerrilla warfare, which typically targets military installations, or civil uprisings. Terrorism exploits civilian vulnerability, using the widespread fear and significant media coverage resulting from attacks on civilians to achieve its aims (Ganor, 2002).

Since its inception, the aviation industry has been a primary target of terrorist attacks for several reasons, as per the Global Terrorism Database (GTD) and Omweno (2022) reported that 1,363 attacks on airplanes and airports worldwide from 1970 to 2016. Mohammed (2017) and Osiecki et al. (2022) highlight several factors that contribute to the aviation sector's vulnerability to terrorist threats. They asserted that aircrafts and airports, as concentrated hubs for people within enclosed spaces, are susceptible to terrorism. The impact of a single terrorist or explosive device can be

profound, leading to catastrophic depressurization, structural failure, mid-air disintegration, and loss of lives. Additionally, aircraft, particularly those affiliated with a national flag carrier, are symbolic targets. Terrorists often target flights associated with a specific country to harm its citizens, viewing the attack as an assault on the nation itself. This symbolism aims to provoke a response and undermine the identity of the targeted country. Aircraft also represent freedom and mobility, embodying qualities sought by individuals or groups fleeing persecution or seeking asylum abroad (Quddus ,2017). Furthermore, acts of terrorism involving aircraft achieve global publicity, with continuous coverage by 24-hour news channels heightening public awareness and instilling fear. This fear, in turn, results in reduced consumer demand and long-term adverse economic impacts on travel, trade, and tourism (Duchesneau & Langlois, 2017).

Historically, aviation terrorism can be categorized into four phases. The initial wave comprised a series of aircraft hijackings, with the earliest recorded instance occurring in 1930, when Peruvian rebels commandeered an airplane to distribute propaganda leaflets (Arasly, 2005). Over the next three decades, hijackings increased steadily and peaked in the 1960s. During this time, terrorists utilized passengers as hostages to ensure their safe arrival in sympathetic states. In the US, there were 12 hijackings between 1961 and 1967, which increased to 22 incidents in 1968 (Omweno, 2022). These acts serve dual purposes, as both criminal actions and tools for advancing political objectives, pressuring governments to acknowledge terrorist causes, and disseminating propaganda (Alemán and Thomas, 2008). One notable example is the July 1968 hijacking by the Popular Front for the Liberation of Palestine (PFLP) of an Israeli airliner, El Al Flight 426. The insurgents demanded the release of captive group members, marking the first instance of seizing an aircraft to coerce a state into complying with political demands. The resulting security implications prompted states to recognize the need for international cooperation, leading to collaboration under the ICAO. In response to these challenges, the Tokyo Convention of 1963 and the Hague Convention of 1970 were established (Abramovsky 1974). The next sections detail these conventions.

During the early 1970s, the aviation industry experienced a second wave of terrorism, which shifted towards ground attacks targeting airports, facilities, or aircraft during taxiing, takeoff, landing, and flight (Duchesneau, 2015; Omweno, 2022). The first recorded airport attack occurred on February 10, 1970, at Munich airport in Germany, where members of the PFLP attacked a bus

with firearms and grenades (Duchesneau and Langlois, 2017). In May 1972, another incident occurred at Lord Airport near Tel Aviv, Israel, where Japanese Red Army operatives used assault rifles and hand grenades, resulting in a significant loss of life (Horvitz 1976). Perpetrators smuggled weapons into airports within their luggage (Tominaga, 2017). The evolution from hijackings to ground attacks requires a broader perspective to secure the aviation industry. States and security officials must extend their focus beyond safeguarding aircraft and passengers to include the security of airports, installations, and individuals as well as passengers, staff, or business personnel. Ground attacks present a distinct challenge, leading to the imperative need to screen passenger baggage and carry-on items before entering airport premises or boarding an aircraft. This proactive measure aims to prevent the introduction of hazardous weapons into aircraft, and reflects the adaptive response of security protocols to evolving threats in the aviation landscape (Omweno, 2022). Terrorist ground attacks led to the creation of the Montreal Convention in 1971.

During the late 1970s and throughout the 1980s, a third wave of terrorism emerged, characterized by a series of acts of sabotage within the aviation sector, including lethal mid-air assaults using explosive devices. One particularly significant incident during this era was the destruction of Air India Flight 182 in June 1985, resulting in the tragic loss of 329 lives (Seshia, 2012). Notably, the Abu Nidal Organization (ANO) orchestrated the initial coordinated airport bombings on December 27, 1985, specifically targeting the check-in counters of Trans-World and El Al airlines at the Rome and Vienna airports. These attacks resulted in 20 fatalities and 120 injuries (Szymankiewicz, 2022).

The fourth wave of aviation terrorism, which began in the 1990s, involved suicide missions in which individuals or groups intentionally endangered their lives to damage aircraft or aviation installations. This wave aimed to inflict political, psychological, and material damages. Terrorists used aircraft as weapons, targeting preselected targets; the most devastating example was the 9/11 attack in 2001 in the US. Coordinated terrorist offensives resulted in 2,977 fatalities, more than 25,000 injuries, and inflicted an estimated $10 billion in harm to infrastructure and property (Omweno, 2022). In response to these incidents, the international aviation security paradigm has transitioned from a responsive stance to one characterized by proactive measures (Omweno, 2022).

Recent airport attacks, such as the Brussels Zaventem Airport attacks on March 22, 2016, and the Istanbul Atatürk Airport attacks on June 28, 2016, have underscored the ongoing threat posed by aviation terrorism (Maguire & Westbrook, 2021). The Atatürk Airport attack involved three terrorists armed with explosive vests and firearms, causing 42 casualties and 238 injuries. Brussels Airport, on the other hand, resulted in 32 fatalities and 320 injuries (Wolniak, 2019). These incidents not only resulted in tangible losses but also highlighted the emotional and psychological dimensions of such events. Aviation terrorism continues to be a significant security concern for many countries, and preventing and mitigating its occurrence remains a top priority.

2.2.2 Major Aviation Security Incidents and Their Preventive Measure

In the early stages of civil aviation, no security measures were in place that allowed passengers to board planes without undergoing checks. The introduction of metal detectors and X-ray machines at airports in the 1970s marked the establishment of airport security checkpoints (Leung 2021). The first aircraft hijackings occurred in the 1930s; however, hijacking became a significant problem in the 1960s and the 1970s. Dawson's hijacking of four aircraft in September 1970 had a profound impact on aviation security. X-ray machines were introduced to screen hand baggage for weapons and metallic objects (Quddus, 2017).

As security measures for cabin baggage tightened, terrorists found other vulnerabilities. In June 1985, a bomb placed in an unaccompanied suitcase on Air India Flight 182 exploded, killing 329 people (Blumenau & Müller 2023). In response, the ICAO established an Aviation Security Panel to develop security rules and guidelines. However, the attempted bombing of El Al B747 in April 1986 and the successful bombing of Pan Am 103 in December 1988 over Lockerbie, Scotland exposed vulnerabilities in unaccompanied baggage. These incidents have led to the implementation of stronger measures to prevent unaccompanied suitcases from being loaded on flights (Ushynskyi, 2009; Shiels, 2020).

According to Mohammed (2017), the global aviation security regime presupposed that terrorists would not be willing to sacrifice their lives until 9/11. On that fateful day, four commercial aircraft were hijacked by suicide terrorists, two of which deliberately flown into the Twin Towers of the World Trade Center, another into the Pentagon, and the fourth crashed in Pennsylvania after passengers tried to subdue the perpetrators. These attacks have resulted in the loss of over 3,000

lives and prompted the implementation of various security measures, including enhanced pre-departure screening, deployment of armed air marshals on high-risk flights, and reinforcement of flight deck doors (Mohammed, 2017). Post-9/11, restrictions on prohibited items, such as sharp objects and knives, were significantly tightened (Leung, 2021).

Security challenges persist despite these measures. In December 2001, a passenger attempted to detonate explosives hidden in their shoes, leading to the requirement for passengers to remove their shoes during security checks (Wood and Raj, 2021; Juvan et al., 2021). The liquid bomb plot of 2006, involving explosives hidden in soft drink bottles, resulted in global restrictions on carrying liquids, aerosols, and gels (LAGs) onboard. While some LAGs are now allowed in transparent plastic bags for screening, restrictions remain (Mohammed, 2017).

The underwear bombing attempt in 2009 highlighted the need to improve explosive detection capabilities, leading to the deployment of advanced screening technologies (Adámek, 2020; Lewis et al., 2020). A passenger's attempt to destroy a Northwest Airlines aircraft in 2009 using an explosive device concealed in his underwear prompted the introduction of millimeter-wave and backscatter X-ray scanners at major airports capable of detecting concealed items under clothing.

In 2016, a laptop bomb detonated mid-flight, leading to the implementation of measures requiring passengers to remove laptops and electronic devices for separate screening in many countries. This event occurred when a suicide bomber detonated an explosive device on board a Daallo Airline flight in Somalia, resulting in an emergency landing in Mogadishu. The blast creates a hole in the pressurized cabin, causing the bomber to be sucked out of the aircraft (Zeballos et al., 2023; Nzau, 2023). Airport employees are seen in a video released by Somali authorities handling a laptop that may have concealed the explosive device used in the assault (Nzau, 2023).

The objective of aircraft hijacking has evolved over time, as outlined by the Irish Aviation Authority, Aviasolution (2004), and Olsvik (2015), who identified three primary phases in the overall development of aircraft hijacking:

Phase 1: 1948–1968: Flight from Persecution or Prosecution

During this era, aircraft became instrumental in facilitating the escape of individuals seeking to evade persecution or legal prosecution. Hijacking incidents emerged as a method for swiftly traversing borders, offering a means to flee from one country to another in order to circumvent legal repercussions. A notable instance is the 1948 hijacking of a domestic flight traveling from Prague to Bratislava, which culminated in its landing within the U.S. occupation zone in Munich. The hijackers, comprised of three crew members and 21 out of 26 passengers, were in pursuit of asylum in Western nations, thereby intensifying the Cold War tensions between the Eastern and Western blocs.

Phase 2: 1968–1994: The Political Phase

This period is commonly denoted as the political era, which marked the inception of "modern terrorism," wherein political objectives became intricately linked with acts of terrorism. The primary aim during this phase was to apply pressure on a nation-state through strategies like inducing embarrassment, coercion, or inflicting economic damage on the targeted state. A significant instance of this occurred on December 21, 1988, with the bombing of Pan Am Flight 103, resulting in the tragic loss of 243 passengers, 16 crew members, and 11 individuals on the ground in Lockerbie, Scotland. Subsequently, Libya acknowledged responsibility for the bombing (Yap, 2023).

Phase 3: 1994–Present: The Aircraft as a Weapon of Destruction

The third phase represents a significant transition characterized by the deliberate utilization of aircraft as weapons, posing unprecedented challenges in terms of defense. This phase became evident with the hijacking of Air France Flight 8969 by Algerian terrorists on December 24, 1994, where the intention was to detonate the aircraft over Paris; however, the plane was redirected to Marseille, where it was successfully stormed by commandos, leading to the rescue of passengers and crew. Additionally, this phase includes the tragic events of 9/11, wherein aircraft were intentionally crashed into prominent structures in the US. Specifically, two planes targeted the World Trade Center, one struck the Pentagon in Washington, D.C., and the fourth was bound for the White House but ultimately crashed in Shanksville, Pennsylvania. (Berger Hobson & Pedahzur, 2022; Karber, 2001; GeiB, 2005; Madej, 2022).

The evolution of aviation security measures is ongoing due to terrorists continuously developing new tactics to exploit vulnerabilities (Leung, 2021). Vigilance is crucial, and complacency is not an option. To address the evolving threat landscape, ICAO regularly updates Annex 17, introducing almost annual amendments since 2017, with many changes directly addressing emerging threats. Aviation terrorism continues to be a significant security concern for many countries, and preventing and mitigating its occurrence remains a top priority. Aviation security threats extend beyond traditional aircraft hijackings and airport attacks. In the ever-changing aviation industry, new security threats are emerging, including cyber and drone attacks (Leung, 2021).

2.2.3 Cyber security on aviation

In the current era, cybercrime poses a critical threat, particularly in the aviation sector, due to its technological prominence. According to Huber (2023), the aviation sector experienced 38 successful cyber-attacks in 2022. In April of this year, hackers claiming affiliation with Russia launched a five-day attack on Europe's air traffic control regulatory body, disrupting its website without impacting European aviation operations. The anonymity enjoyed by perpetrators exacerbates the vulnerability of aviation to cybercrime, thereby making it difficult to identify hackers or physical evidence. Cyber terrorism, which aims to destroy or sabotage a targeted system, shares a common objective with cybercrime, but seeks to dismantle a system. Cybercrime encompasses computer- or computer-related offenses (Abeyratne 2011). The increasing reliance on technology and deepening globalization amplify the potential impact of cyberattacks, surpassing the historical magnitude of damage (Stastny & Stoica, 2022).

The Federal Aviation Administration (FAA) raised awareness to the susceptibility of aircraft to cyber-attacks in 2008, during the last phases of the production of the Boeing 787 Dreamliner, due to the aircraft's integration with the Internet system for passenger services (Zetter, 2008). In 2010, the FAA revealed vulnerabilities in the air traffic control system, including breaches in support systems and unauthorized access to personnel records and network servers by hackers (Adıgüzel, 2020). Supranational and international organizations have worked together to solve issues related to global security. Combating cybercrime has benefited greatly from the 2001 release of the "United Nations Manual on the Prevention and Control of Computer-Related Crime." This manual

emphasizes the potential impact of cybercrime on the aviation sector's relationship with international communication networks and urges the implementation of preventive measures in ensuing years.

2.2.4 Terrorist Threat to Drones as Targets

The civil aviation industry, with its international scope and diverse passenger base, is a prime target for terrorists seeking a global impact. Attacks on flights align with the goal of creating widespread fear and attacking the symbol of a state, as displayed by a flag on an aircraft (Osiecki et al., 2022). The increasing use of unmanned aircraft vehicles (UAVs) or drones in both military and civil applications has raised concerns about their security. UAVs are defined by the ICAO as aircraft capable of flight without an onboard pilot and controlled remotely or fully autonomously (ICAO 2011). The market for UAVs is expanding, and is projected to include cargo operations and potential passenger transport on scheduled international flights by the end of the 2030s. The potential vulnerabilities of unmanned aircraft to various forms of attack, including hijacking, shooting down, or use as weapons, are of great concern. Contrary to popular beliefs, it has been demonstrated that unmanned aircraft can be remotely hijacked through the exploitation of onboard systems. An experiment conducted by the American Department of Homeland Security on September 19, 2016, in which agents remotely hacked a Boeing 757 system and redirected it to land at the Atlantic City Airport in New Jersey, provides a chilling example (Paganini, 2017). Given the history of civil aircraft hijacking by terrorists, the vulnerability of UAVs to hijacking, particularly when carrying dangerous goods, poses a significant threat to global security.

The potential consequences of intentionally shooting down an unmanned aircraft and resulting in a collision with another object cannot be overstated. It is imperative to recognize that the use of civil aircraft, whether manned or unmanned, to cause harm to others is deemed a terrorist tactic (Sancton, 2001). The aforementioned incidents underscore the significant danger that terrorists pose to unmanned aircraft, particularly in light of their potential integration into scheduled passenger air traffic. Numerous conventions have been developed to ensure the security of air transport and prevent incidents, such as hijackings, bombings, and armed assaults on civil aviation.

2.2.5 International Conventions Concerning Securing Civil Aviation

The need for international cooperation in the aviation industry, which is by nature global in scope, has led to the establishment of global agreements, in addition to national laws enacted by individual countries to regulate aviation.

Paris Convention of 1919

The origins of international air navigation regulation can be traced back to the Paris Convention of 1919, which emerged during a post-World War I peace conference and led to the establishment of the New Aeronautical Commission on March 17, 1919. The Aeronautical Commission subsequently drafted the "Convention Relating to the Regulation of Aerial Navigation" on October 13, 1919, which was ratified by twenty-seven states. The 1919 Paris Convention was a significant milestone in the development of the concept of "air sovereignty" as it is understood today, with its preamble expressing a commitment to promoting peaceful international relations through aerial communications and preventing disputes. Prior to 1919, there were limited regulations governing aviation, making the development of the Convention crucial to shaping the concept of air sovereignty (De Silva, 2023). The convention comprises 43 articles addressing the operational, technical, and organizational aspects of civil aviation. Article 1 formally acknowledges the underlying state's complete and absolute sovereignty over its airspace, whereas Article 2 focuses on the principle of innocent passage. It stipulates that regulations set by a contracting state concerning the admission of aircraft from other contracting states should apply impartially, regardless of the nationality of the aircraft (De Silva, 2023).

The Paris Convention of 1919 laid the groundwork for the formation of the International Commission for Air Navigation (ICAN), a pivotal entity tasked with overseeing the evolution of civil aviation and recommending measures for states to adapt to these advancements. The inception of ICAN represented a seminal moment in aviation history, with the commission and its subsidiary bodies playing a crucial role in shaping the Chicago Convention (formally known as the International Civil Aviation Convention) signed on December 7, 1944 (Adıgüzel, 2020, p. 19). Preceding the Chicago Convention, ICAN made notable contributions to the development of international civil aviation regulations, hosting significant international gatherings such as the Ibero-American Convention in 1926, the Havana Convention, and the International Civil

Aeronautics Conference in 1928. Taken together, the Paris Convention of 1919 and the subsequent establishment of ICAN stand as significant milestones in the evolution of international air navigation regulations, exerting enduring influence on the contemporary understanding of air sovereignty (De Silva, 2023).

Chicago Convention of December 7th, 1944

Aviation initially fell under the jurisdiction of individual states. By the end of World War II, major powers acknowledged the necessity of achieving international consensus on aviation regulations (Kaunert et al., 2022). With advancements in military technology, including nuclear weapons and long-range missiles, disrupted commercial flights, and raised concerns in the civil aviation sector (Adıgüzel, 2020), the need for a comprehensive convention focused exclusively on civil aviation matters has become apparent. In September 1944, the US issued invitations to 53 governments for an international civil aviation conference, leading to the signing of the Chicago Convention on December 7, 1944, by 52 nations. This treaty, formally known as the Convention on International Civil Aviation, laid the groundwork for the establishment of the Provisional International Civil Aviation Organization (PICAO), which required ratification by 26 states to commence operations. PICAO officially began its activities on June 6, 1945, and ceased operations on April 4, 1947, upon receiving the 26th ratification on March 5, 1947. Following this, in October of the same year, the ICAO transitioned into a specialized agency of the United Nations, affiliated with the Economic and Social Council (ECOSOC) (Kaunert et al., 2022).

The Chicago Convention, in Article 1, asserts that "contracting states recognize that every state has complete and exclusive sovereignty over the airspace above its territory." This provision reiterates clauses in the 1919 Paris Convention by affirming each state’s full and exclusive control over its airspace (De Silva, 2023). Notably, the Convention extends its principles to all states, including non-contracting parties. Thus, the ICAO superseded previous international aviation conventions, emerging as the sole global authority on international public aviation rights. As of September 13, 2023, the Chicago Convention had 193 member states, highlighting the ICAO’s universal significance (ICAO, n.d.).

The ICAO was established to ensure the safe, efficient, and orderly development of international civil aviation, focusing on worldwide route agreements, organizational development, and a

multilateral aviation convention covering air navigation, transport, and technical aviation matters, with a particular emphasis on safety (Mackenzie, 2010). In 1945, the International Air Transport Association (IATA), which represented the world's scheduled airlines, was founded with the objective of promoting safe, regular, and cost-effective air transport for the benefit of people worldwide, with a similar emphasis on aviation safety (Kaunert et al., 2022).

In the aviation sector, global development and regulation are coordinated due to the industry's international scope, while operational control remains within the jurisdiction of individual nations. National governments endorse and implement the standards and protocols established by collaborative efforts among industry entities and trade associations, adhering to the established two-tier framework that has characterized international aviation organizations since their establishment. The dynamics of aviation matters are fundamentally shaped by the interactions between sovereign states and a range of international bodies, as highlighted by Kaunert et al. (2022). The Chicago Convention, which established the ICAO, did not initially address unlawful interference, because such threats were unforeseen, necessitating another convention to cover aircraft hijacking.

Tokyo Convention of September 14th, 1963

The Chicago Convention marked a significant milestone in civil aviation regulation. However, the need for a new regulatory framework to address attacks on and actions against aircraft led to the signing of the Tokyo Convention during a conference held in Tokyo on September 14, 1963 (Gutierrez, 1965). Officially enforced in 1969, the "Convention on Offenses and Certain Other Acts Committed on Board Aircraft" outlines crimes falling under its purview, specifying the situations, locations, and types of aircraft involved. According to its first article, the Convention covers crimes against penal laws and actions that endanger the safety of aircraft, individuals, or property on board (ICAO, 1969).

To activate the agreement, the aircraft must be in flight, registered with the participating state, and situated on the high seas, in a sovereignty-free area, or within a state's territory. Although the Convention comprehensively addresses aviation crimes, it lacks a precise definition of offenses committed within an aircraft. Notably, the 11th article defines the seizure of aircraft as an unlawful act, but does not explicitly classify aircraft hijacking as a crime. The Convention omits the mention

of penalties for hijackers and imposes no obligation on states to punish such individuals. Instead, contracting states are entrusted with the responsibility of regaining aircraft control and implementing measures to restore it to its pre-incident state (Adıgüzel, 2020, p. 21). The Tokyo Convention excludes offenses occurring on aircraft dedicated to the military, customs, and police services. With 187 member states currently party to this convention, it stands as a significant achievement in bolstering the security of civilian aircraft (ICAO, 1963).

The Hague Convention, December 16th, 1970

The Tokyo Convention provided a general framework for crimes committed on board aircraft but did not include specific provisions for punishing aircraft hijacking, leaving it at the decision of the contracting states. To address this gap, the Convention for the Suppression of Unlawful Seizure of Aircraft was established during a conference in The Hague, Netherlands, from December 1 to 16, 1970, and was opened for signature by all states (Abramovsky, 1974).

The surge in aircraft hijacking incidents during the 1960s significantly influenced the formulation of the Convention. Unlike earlier agreements, the first article of the Hague Convention clearly defines aircraft hijacking. It stipulates that anyone who illegally seizes or attempts to seize control of an aircraft in flight by force, threat, or intimidation, or who assists others in doing so, commits a crime (Shubber, 1973). The first and third articles specify that hijacking must occur onboard an aircraft in flight, involve the use of force or threat, and be committed with the intent of taking control of the aircraft. Additionally, articles suggest that hijacking may involve collaboration between individuals (Shubber, 1973). Article 2 of the Convention requires contracting states to impose severe penalties for hijacking, leading to a universal approach to punishment and judgment of defined offenses. Although the Convention does not specify the nature of "severe punishment," it grants autonomy to determine appropriate penalties for offenders. Article 13 allows states that did not initially sign the Convention to adopt it at any time, contributing to the Convention's widespread acceptance of 185 parties to date (ICAO, n.d.).

In certain instances, the Convention allowed national laws to determine specific matters that were not addressed within their scope. Criminal activity that occurred prior to takeoff or after landing with open doors was not subject to the Convention's provisions, except for external attacks on aircraft. Complicity in the crime of hijacking was only punishable if the individual was present

within the aircraft, whereas those outside its boundaries fell under the jurisdiction of contracting states. The increasing frequency of unlawful aircraft seizures since 1948 rendered the Hague meeting and its resolutions a significant turning point in the history of civil aviation security (Adıgüzel, 2020, p. 24).

Montreal Convention, September 23th, 1971

The development of a new framework was necessitated by the inadequacy of the existing conventions. Incidents of aircraft hijacking, which primarily occur during flight, are the sole instances of recognized assaults on aircraft. The Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, a broader agreement, was ratified in Montreal on September 23, 1971, to address acts of sabotage or armed attacks targeting an aircraft's technical components. As of January 26, 1973, 188 nations had ratified the Convention (ICAO, 1971).

Article 1 of the Convention specifies the following actions as being prohibited: the illegal and violent endangerment of people's safety on an aircraft, the destruction or disabling of an operational aircraft, the placement of harmful materials or devices on an aircraft, damage to air navigation systems, and the provision of false instructions that jeopardize aircraft safety (United Nations Treaty Collections, n.d.). The Montreal Convention imposes liability on the individuals involved in such offenses. Signatory states emphasize that violations of civil aviation security pose a threat to lives and property, significantly disrupt air services, and erode global confidence in civil aviation security, thus underscoring the need for stringent measures to deter and punish offenders. Similar to the Hague Convention, the Montreal Convention imposes strict penalties for violations, with individual countries having discretion over the severity of punishment. In contrast to the Tokyo and Hague Conventions, the Montreal Convention does not require offenses to take place specifically on an aircraft governed by its provisions. However, it does establish a defined service period, commencing from pre-flight preparations by ground personnel, continuing until twenty-four hours post-landing, and not exceeding the flight's duration. Sabotage is also encompassed within the convention's purview. Article 4 specifies that the Convention applies during the service period if the airport or facility where acts of attack or sabotage occur is accessible for international air transportation (United Nations Treaty Collections, n.d.).

The inception of aviation security can be attributed to discourse initiated by the ICAO, ultimately resulting in the endorsement of the Tokyo Convention and acknowledgment of terrorism as a significant risk to aviation. This acknowledgment spurred heightened global collaboration, culminating in the adoption of the Hague Convention by the ICAO in 1970, which aimed to outlaw hijacking. The Montreal Convention of 1971 extended the provisions to actions that endangered airport safety and covered aircraft attacks. The official establishment of aviation security was achieved in 1974 with the amendment of the Chicago Convention to include "Annex 17: Security." These conventions serve as fundamental frameworks for civil aviation security, excluding state, military, or police aircraft (Adıgüzel, 2020). Although Somalia has endorsed these conventions, internal conflicts and extremist groups pose significant challenges to aviation security in the country.

2.3 The History of the Development of Civil Aviation Industry in Somalia

The historical development of the Somali civil aviation industry can be traced back to the 1920s, a period when Italy and Britain exerted control over different regions of the country. In Italian Somaliland, under Italian rule, Mogadishu's first airport (Petrella-MogadiscioAeroporto) was established in 1928, primarily for military purposes. By the mid-1930s, commercial flights were introduced. In 1935, the Ala Littoria Caproni 133 route was established, carrying a maximum of eighteen people, and it operated regularly from Asmara to Assab in Eritrea and Mogadishu in Somalia. One of the first international long-distance flights took place in 1936 when Ala Littoria began a transcontinental route connecting Mogadishu, Asmara, Khartoum, Tripoli, and Rome (Caprotti, 2011). In the north, under British rule, British Somaliland had an airport in Hargeisa with conflicting information regarding its construction date. While some sources indicate its origin during World War II, others suggest that it functioned as a British military airport in 1954 (Gandrup, 2016).

In 1960, Somalia gained independence (Muhumed, 2020) and commenced the development of air transport. Somali Airlines, a joint venture with Alitalia, was established in 1964 with the acquisition of three DC-3 aircraft. Alitalia provided management, technical support, and training until the government assumed full control during the 1970s (Kaplan, 1969, p.23-24). Operations were conducted from Mogadishu, with cargo and passenger flights serving ten domestic cities and

international routes to Europe, the Middle East, and Africa. Somali Airlines also operated a domestic air taxi service using a Cessna aircraft. The Department of Civil Aviation was established under the Ministry of Communications and Transport to manage and oversee civil aviation activities such as managing airports, licensing flying personnel, implementing air traffic control, and providing meteorological services (Kaplan, 1969, p.23-24).

In 1964, Somalia became a member of the ICAO and endorsed the International Air Service Transit Agreement. This was part of Somalia's official ratification of significant civil aviation agreements during that period. These agreements included the International Air Services Transit Agreement, also referred to as the "Two Freedoms of the Air," signed on December 7, 1944, along with the Convention on International Civil Aviation (ICAO Constitution), also enacted on December 7, 1944. Additionally, Somalia ratified several protocols amending the ICAO Constitution, such as Articles 93bis (Montreal, May 27, 1947), Articles 45, 48(a), 49(e), and 61 (Montreal, June 14, 1954), and Article 50. Moreover, in April 1971, Somalia also endorsed the African Civil Aviation Constitution (AFCAC), established in 1969. It is noteworthy that Somalia adopted a new constitution on December 16, 2009, replacing the previous one (ICAO Status of Individual States, n.d.).

International air services were provided through bilateral agreements with Alitalia, East African Airways, United Arab Airlines, and Aeroflots. Somalia has two surfaced runways, with Mogadishu's airport serving as the primary entry point. Hargeisa had a commercial airport with limited facilities, whereas other civil airfields had basic facilities and natural runways suitable for DC-3 aircraft (Kaplan, 1969, p.23-24). In the 1970s, Somali Airlines expanded its fleet by contracting with other airlines. A deal was signed with Tempair in early 1974 to provide a Boeing 720 B aircraft for the Mogadishut–London route and other flights in Africa and the Middle East. In 1975, the company procured two Fokker F27s, and in the subsequent year, acquired two Boeing 720Bs from American Airlines—the last one in service with an American carrier. Additionally, the company placed an order for two more Boeing 707s.

Due to the eruption of civil strife in the early 1990s, Somali airline operations came to a halt in 1991. This led to the emergence of privately-owned Somali carriers like Jubba Airways and Daallo Airlines, which stepped in to fulfill the void left by the national airline's cessation of services.

Subsequent to the Civil War, all aviation infrastructure ceased operations, including the national carrier, resulting in the loss of control over airspace management and the subsequent suspension of international flights due to the prevailing civil unrest and political turmoil. In response to these challenges, the United Nations assumed control of Somalia's airspace in 1991 amid the ongoing civil war and political instability. In 1993, this responsibility was transitioned to the ICAO project for Somalia. Following various efforts, the ICAO established the Civil Aviation Caretaker Authority for Somalia (CACAS) project in Nairobi in 1996, tasked with providing flight information services within the Mogadishu Flight Information Region (FIR). Due to security concerns within Somalia, CACAS relocated to Nairobi in 2018. Its primary objective was to oversee the safe operation of air transport within Somali airspace, given the absence of a functioning central government. Over the course of more than two decades, the United Nations managed Somalia's airspace with minimal direct involvement from the Somali government (ICAO, 2010).

In the 2000s, the protracted civil conflict in Somalia began to subside, leading to rehabilitation of the country's civil aviation sector. In 2010, the ICAO reported a 5.7% increase in air traffic within Somalia's airspace during the preceding year, with a projected 8% rise anticipated over the subsequent three-year period. However, prevailing challenges from the ongoing complexities within Somalia and the broader regional context have significantly impeded the expected traffic growth (ICAO, 2010).

The Turkish government announced plans to renovate Adan Adde International Airport in December 2011, the primary and gateway airport in Somalia as part of a broader post-conflict reconstruction initiative (Khalif, 2012). A new control tower to monitor airspace was built as part of the renovation project. Favori LLC, a Turkish firm, began a $10 million project in September 2013 to construct new aviation facilities, renovate old ones, and modernize service structures. This increased the airports' daily aircraft capacity from 15 to 60 aircraft. In January 2015, Presidents Hassan Sheikh Mohamud of Somalia and Recep Tayyip Erdoğan of Turkey officially inaugurated a new terminal built by the Turkish construction firm Kozuva (TIKA, 2015). As a result of this improvement, the airport can now handle up to 1,000 passengers per hour on 60 commercial planes every day. In 2015, the Turkish Cooperation and Coordination Agency (TIKA) established the Mogadishu Civil Aviation Training Center, significantly enhancing the capacity of the Somali civil

aviation sector (Addow, 2011). This collaboration underscores the significance of international partnerships in rejuvenating the post-conflict infrastructure. Aviation improvements and enhanced airport security measures have allowed international flights to resume. According to the Voice of America ([VOA], 2012), Turkish Airlines was the first international airline to operate in Somalia after 1991, paving the way for carriers such as Ethiopian Airways, Air Djibouti, Kenya Airways, Qatar Airways, Uganda, and Fly Dubai to establish routes and operate in Somalia.

On March 6, 2012, Turkish Airlines made history by becoming the first major commercial carrier to commence direct flights to Somalia in over two decades. This event marked the resumption of the first flight from outside East Africa to Mogadishu since 1991. Turkish Airlines offered two weekly flights to cater to the travel needs of the Somali entrepreneurs and the diaspora community. This development effectively reestablished Somalia's connectivity with global destinations, thereby facilitating enhanced mobility for the Somali diaspora (Aviation Week Network, 2012).

In November 2018, Ethiopian Airlines resumed direct passenger flights between Addis Ababa and Mogadishu, marking a significant milestone in bilateral economic relations after a 41-year hiatus. The resumption of flights followed a period of halted air travel due to border conflict between Ethiopia and Somalia in 1977–78. The resumption of commercial air travel coincided with Ethiopian Prime Minister Abiy Ahmed's official visit to Somalia in June 2018, aimed at strengthening political and economic ties in the Horn of Africa. Abdullahi Mohammed Warfa, the deputy head of the mission at the Somali Embassy in Ethiopia, expressed optimism about the resumption of flights, emphasizing its potential to enhance connectivity between the large Somali diaspora and their homeland (Ethiopian Airlines, 2018). Ethiopian Airlines expanded its routes to include Garowe and Bosaso in the Puntland region of Somalia on July 15, 2019. The airline framed this expansion as a means of reinforcing the long-standing people-to-people and the economic and political connections between Ethiopia and Somalia. The airline emphasized that the new flights would facilitate travel for the Somali diaspora and serve as a conduit for travelers from various global regions, including the Americas, Europe, Asia, the Middle East, and Africa, to reach Somalia via Addis Ababa, its primary hub. Ethiopian Airlines' extensive network of over 120 international destinations viewed this expansion as a means of strengthening connectivity worldwide (Ethiopian Airlines, 2019).

In 2018, Kenya Airways commenced offering flights to Mogadishu; however, these services were suspended owing to the emergence of the COVID-19 pandemic. After signing a bilateral air service agreement in August 2023, Kenya and Somalia resumed their direct flights. This agreement, in conjunction with Somalia's reclassification of its airspace as Class A after 30 years, has resulted in a significant improvement in safety and operational efficiency in the region. As a result of these developments, Kenya Airways restarted nonstop flights to Mogadishu on February 15, 2024. These three weekly flights are expected to enhance travel convenience by reducing travel time and improving accessibility between Nairobi and Mogadishu (Kenya Airways, 2024).

On August 29, 2019, Uganda Airlines commenced direct flights from Entebbe to Mogadishu, Somalia, four times a week. Uganda has become a preferred destination for Somali nationals seeking educational opportunities, and the introduction of direct flights is expected to strengthen the bilateral relationship between the two countries. Uganda ranks fifth among the countries that attract Somali students, followed by Egypt, Sudan, Ethiopia, and Turkey. Government officials from both Somalia and Uganda, who were present on the inaugural flight, highlighted that the presence of international airlines reflects Somalia's progress in consolidating peace and security, and its openness to business opportunities. They noted Somalia's thriving aviation sector and its capacity to attract globally recognized airlines, which they attributed to improving peace and security conditions and expanding economic prospects across the country (African Union Mission in Somalia, n.d.). On September 6, 2020, Qatar Airways launched operations from Doha to Mogadishu via Djibouti. The airline anticipated that this new service would reduce ticket prices and boost the growing international carrier market in Somalia (Qatar Airways, 2020).

On March 9, 2023, Flydubai launched daily flights to Mogadishu, marking the first direct flight between Somalia and the United Arab Emirates (UAE). This move aligned Flydubai with numerous other international carriers operating in Somalia. Hamad Obaidalla, Flydubai's Chief Commercial Officer, expressed the company's commitment to expanding its presence in East Africa and tapping into underserved markets. He emphasized the region's economic progress and stated that flydubai’s direct flights would contribute to further economic stimulation by facilitating enhanced travel and trade opportunities. With the launch of flights to Mogadishu, Flydubai's African network expanded to 11 destinations, providing greater travel convenience for passengers originating from the UAE and neighboring countries. These destinations include Addis Ababa,

Alexandria, Asmara, Dar es Salaam, Djibouti, Entebbe, Hargeisa, Khartoum, Juba, and Zanzibar (Flydubai, n.d.).

Sudhir Sreedharan, Flydubai's Senior Vice President of Commercial Operations, emphasized the airline's dedication to offering reliable and convenient travel solutions between the UAE and Somalia. He highlighted that Flydubai operates this route using its fleet of Boeing 737 MAX aircraft, providing passengers with the option of traveling in Business Class or experiencing a personalized journey in the Economy Class. Sreedharan also expressed anticipation for increasing flight frequency to Somalia starting on June 1, 2023, with the aim of further enhancing connectivity between the Somali market and Dubai, as well as other destinations beyond (Flydubai, n.d.).

In addition to the major international carriers, there are several smaller airlines owned by business investors that operate within the country and abroad, such as Jubba Airways, Daallo Airlines, Freedom Airline Express, Salaam Air Express, African Express, and Halla Airlines. Among these carriers, Daallo Airlines is the oldest and most prominent; it was established in 1991 and commenced operations with a single Cessna Caravan. Initially, the airline provided flights from Djibouti to Hargeisa, Somalia, following the collapse of Somali Airlines during civil unrest in Somalia. Today, Daallo Airlines offers a wide range of services, including scheduled passenger flights, cargo transportation, and charter services, and it has achieved notable success across Africa, and the Middle East. The airline's accomplishments have been recognized, with it being highlighted as one of Africa's notable entrepreneurial successes in the article "Entrepreneurship in Africa: A Study of Success" by David S. Fick (Source: <https://www.daallo.com/about-us>).

The Somali Airspace has made significant progress in recent years. In December 2014, the Federal Government of Somalia (FGS) and ICAO signed a transition plan project (SOM 14/801 and SOM 14/802), also known as the Flight Information Services for Somalia (FISS), which outlined the airspace management transfer roadmap. On June 18, 2018, the FGS took full control of airspace management from the ICAO, resulting the closure of the CACAS FISS station in Nairobi (SCAA, n.d.). The Somali Minister of Aviation and Air Transport confirmed the government's oversight of all the air traffic in Mogadishu. The relocation of 34 air control personnel from Nairobi to Mogadishu was promptly carried out (China Global Television Network Africa [CGTN Africa], 2023). The country’s regained control of its airspace ended in a period of more than two decades,

in which external management was in place. However, following the ongoing activities outlined in the roadmap project, the FGS successfully regained the collection of Air Navigation revenue from the ICAO on August 1, 2019 (SCAA, n.d.).

The Civil Aviation Act was approved by the FGS Parliament in 2020 and promulgated by the Presidential Decree (SCAA, n.d.). On December 9, 2022, the FGS further ratified Articles 50(a) and 56 of the Montreal Convention of October 6, 2016. Subsequently, on March 4, 2023, Somalia ratified Article 83bis of the Montreal Convention of October 6, 1980 (ICAO Status of Individual States, n.d.).

In 2023, Somalia upgraded its airspace to Class A, which enhances safety and operational efficiency. A coordinated effort among the Somalia Airspace Special Coordination Team, Somali Civil Aviation Authority (SCAA), ICAO, adjacent FIRs, and various airlines facilitated this development. This transformation was achieved by deploying modern radio navigation and other technological infrastructure after a successful trial was initiated (Maruf, 2023). This upgraded air traffic management system, along with improved navigation and communication infrastructure, enhances situational awareness along busy air corridors, especially at intersections with routes that connect diverse global regions. The region's airspace now adheres to Class A regulations, requiring air traffic control clearance and responsibility for maintaining lateral and vertical separation between aircraft operating above an approximate base altitude of 24,500 ft above mean sea level within the Mogadishu FIR (IATA, 2023). According to a local media outlet, the Directorate General of SCAA reported an increase in the number of international airlines using Somalia's airspace. This growth has been attributed to recent improvements in airspace upgrades. Before these upgrades, there were approximately 220 daily flights through the country's airspace; however, this number has now increased to 500. Additionally, there has been a significant increase in aeronautical revenue generation in the sector, with the annual sum increasing from $12 million to $22 million.

On February 6, 2023, the IATA and Somalia's Minister of Transport and Civil Aviation signed an agreement to boost aviation's economic and social benefits in Somalia. During the ceremony, Kamil Alawadhi, IATA’s Regional Vice President for Africa and the Middle East, emphasized aviation's crucial role in meeting the United Nations Sustainable Development Goals (SDGs). The

agreement, focused on global standards and best practices, aims to develop Somalia's air transport sector, promoting the country's development. Alawadhi expressed strong confidence in Somalia's vision for a thriving aviation industry and reiterated IATA's dedication to converting the agreement into practical outcomes (IATA, 2023). H.E. Fardowsa Osman Egal, Somalia's Minister of Transport and Civil Aviation, acknowledged aviation's importance in national development plans and committed the government to improving the air transport sector, ensuring compliance with international standards for long-term social and economic advancement. According to the agreement, both parties pledged to bolster cooperation on aviation-related priorities within the nation. The agreement embodies IATA's mission for African aviation: to establish a secure, efficient, sustainable, and cost-effective air transport system that fosters growth, job creation, international trade, and tourism. Moreover, it emphasizes the critical role of aviation in promoting connectivity among nations and supporting the UN SDGs (IATA, 2023).

After signing the agreement, Somalia achieved significant progress by reinstating the IATA Billing and Settlement Plan (BSP) after a 33-year hiatus. On February 22, 2023, the Somali Civil Aviation Authority (SCAA) relaunched the BSP in Mogadishu, marking a crucial milestone for the nation. The Federal Republic of Somalia's Minister of Transport and Civil Aviation, along with the IATA regional vice-presidents for Africa and the Middle East, praised this achievement as a major advancement for Somalia (The Somali Investor Magazine, 2023).

IATA-accredited passenger sales agents use the BSP to streamline the processes involved in selling, reporting, and remitting transactions. This enhances financial oversight and cash flow management for BSP Airlines. Electronic ticketing optimizes billing procedures for airlines, reducing the administrative burden associated with billing and collection. The BSP consolidates all such information, eliminating the need for individual agents to present their sales data and invoices to airlines separately. Agents remit their sales to the BSP, which then makes a single consolidated payment to the airline (IATA, n.d.).

On May 17, 2023, SCAA introduced the rollout of an effective civil aviation oversight framework in Somalia. The Federal Government of Somalia (FGS) and ICAO collaborated to establish a fully functional and self-sustaining civil aviation infrastructure. Prior to this development, the absence of regulatory frameworks restricted airlines registered in Somalia from operating beyond borders.

With the implementation of this aviation system and the corresponding regulations, the SCAA will have the capacity to issue licenses to aviation personnel, including pilots, air traffic controllers, aircraft maintenance engineers, and flight operation officers, in accordance with the country's civil aviation regulations. Furthermore, Somali civil aviation laws and regulations will empower the Civil Aviation Authority to grant air operator certificates and enforce the ongoing oversight of aircraft operations (SCAA, 2023).

In recent years, Somalia has also entered into several bilateral air service agreements (BASAs) with various countries to revitalize its civil aviation sector. In 2016, Saudi Arabia and Somalia signed civil aviation agreements. The General Authority of Civil Aviation (GACA) in Saudi Arabia and the Federal Republic of Somalia signed a memorandum of understanding, permitting air operations between the two countries to four international destinations yet to be determined. Both parties granted their carriers the right to conduct four regular flights and seven air cargo flights per week, with limitations on the Fifth Freedom Rights for air cargo transport. The agreement outlined the designations of national carriers and terms for transport modes, including code sharing and additional operations. It also allows the leasing of aircraft by national carriers and enables carriers to interlink without the need for transport rights (Arab Air Carriers' Organization, 2016). In 2020, Rwanda and Somalia signed the BASA, allowing unrestricted direct flights between the two countries (MININFRA, 2020). In 2023, Kenya and Somalia signed a BASA permitting flights between Mogadishu and Nairobi (The Star, 2023). Additionally, Ethiopia and Somalia signed an Air Services Agreement (ASA) in 2023 to improve their cooperation in the aviation industry (Walta Media and Communication Corporate S. C., 2023).

The Somali cultural heritage and its location in the Horn of Africa, where the Indian Ocean and the Gulf of Aden meet, make it a crucial hub for maritime trade, fishing, and tourism. Although there have been advancements in Somali civil aviation, such as the easing of airspace restrictions and the introduction of international airline routes, as well as the establishment of regulatory bodies and the signing of BASA, political instability and security challenges have prevented the country from fully utilizing its strategic position. In the following sections of this thesis, I examine Somali airports infrastructure and airlines, as well as the regulatory bodies and security measures in place for civil aviation, and delve into the current security issues facing the sector that stem from decades of conflict.

2.4 Airports Infrastructure and Airlines Operating in Somalia

Airports are critical facilities that serve as gateways for international travel, tourism, and commerce, allowing the movement of people and goods across borders (Zhang and Graham, 2020). It is essential to have adequate airport infrastructure to facilitate the export of high-value or perishable products. Airports also play a vital role in the national economy by providing critical humanitarian and emergency assistance, and contributing to revenue and job creation (Zhang and Graham, 2020). Somalia, which has one of the lowest per capita incomes globally, faces challenges in terms of commercial aviation affordability. The country has approximately 60 strategically distributed airstrips, airfields, and airports, which were originally developed for military purposes after gaining independence (African Development Bank Group, 2016). Among them, seven are major feeder airports and 23 are important airstrips. The six main airports in Somalia include Mogadishu, Berbera, Hargeisa, Bosasso (recently upgraded), Garowe, and Kismayo, whereas most other urban centers maintain at least one airstrip capable of handling small aircraft (SOMINVEST, n.d.). Figure 2.1 illustrates the major airports, feeders, and airstrips in Somalia.

The Aden Adde International Airport of Mogadishu (MGQ) previously known as Mogadishu International Airport, serves as the primary airport for Somalia, and is strategically located approximately 5 km from the city center. This is the basis for both The Ministry of Transport and Civil Aviation (MOTCA) and SCAA, along with their respective sub-departments. The airport features a single runway and a terminal with limited facilities. The airport offers direct or transit flights to several destinations, including Ambouli Airport (JIB) in Djibouti, Berbera Airport (BBO), Bosasso Airport (BSA), Dubai (DXB), Entebbe (EBB), Galkacyo Airport (GLK), Hargeisa Airport (HGA), Istanbul (IST), Jeddah (JED), Nairobi (NBO), RiyanMukalli Airport (RIY), Sharjah (SHJ), and Wajir Airport (WJR) (European Union Agency for Asylum, 2021, pp. 20–22). Several airlines operate international flights from the MGQ, including the Freedom Airline Express, which offers services to Mogadishu, Galkacyo, and Kismayo from Nairobi. Air Djibouti connects Mogadishu to Aden, Addis Ababa, and Djibouti. Daallo Airlines provides connections with Dubai, Nairobi, and Jeddah. Ethiopian Airlines offer daily flights to Addis Ababa. Turkish Airlines connect Mogadishu to Istanbul, Kenya Airways to Nairobi, Qatar Airways to Doha, and Flydubai to Dubai. Salaam Air Express operates on-demand flights between Mogadishu and Nairobi (European Union Agency for Asylum, 2021, pp. 20–22).

Since 2013, the management of Aden Adde International Airport, a substantial source of domestic revenue, has been under the purview of the FAVORI LLC Airport Management and Ground Handling Company, a Turkish-owned entity. The government claimed that this transition was vital to enhancing the security and reputation of Somalia's main airport with the objective of achieving more efficient operations and increasing the government's share of generated revenue. Presently, FAVORI LLC is responsible for overseeing all aspects of airport management, including security and maintenance, and has entered into a profit-sharing agreement with the FGS (Ibrahim, 2020).

Hargeisa Airport was initially constructed in the 1950s and operated as a military base. Following the civil war, it was renamed Hargeisa Egal International Airport (HEIA) in honor of then-president Mohammed Haji Ibrahim Egal. In the aftermath of the conflict, the airport primarily served humanitarian and small commercial flights, but its condition remained in a state of disrepair. However, from the mid-2000s, there was a significant increase in both passenger and cargo flights. In 2012, the airport underwent extensive rehabilitation, including expansion of the runway and the implementation of enhanced security measures and technologies. Today, Hargeisa Egal International Airport facilitates international flights to Addis Ababa (operated by Ethiopian Airlines), Dubai (serviced by Daallo Airlines and Flydubai), Nairobi (operated by Daallo Airlines, and Jubba Airways) and Djibouti (Djibouti Air). Domestically, the airport connects Hargeisa to Mogadishu (operated by African Express, Daallo Airlines, and Jubba Airways), Galkacyo (operated by Jubba Airways), Garowe (operated by Jubba Airways), and Bosasso (operated by Jubba Airways) (European Union Agency for Asylum, 2021, pp. 74–75).

Garowe International Airport is located 12 km from the city center and is the third largest airport in Somalia. The facility accommodates both international and domestic flights. In terms of international travel, Ethiopian Airlines, Djibouti Air and Freedom Airline Express operated flights from Garowe to Addis Ababa, Djibouti and Nairobi respectively. For domestic travel, Garowe Airport offers connections to Mogadishu through Freedom Airline Express, Jubba Airways, and Daalo Airline; to Galkacyo via Jubba Airways; to Hargeisa through Jubba Airways; and to Bosasso via Ethiopian Airlines and Jubba Airways (European Union Agency for Asylum, 2021, p. 55-56).

Bosaso Airport (BSA), located in Bossaso, Somalia, is the nation's fourth-largest airport and is currently undergoing construction. It serves as a key transportation hub connecting Bosaso to

Mogadishu (MGQ), as well as offering international flights to Addis Ababa (ADD) and Dubai (DXB). Ethiopian Airlines is the primary carrier, with around four scheduled departures per week, followed by Daallo Airlines as the second-largest operator at the airport.

It's worth noting that all other airports in Somalia exclusively handle domestic flights. Figure 1 depicts the locations of the major airports, feeders and airstrips in Somalia.

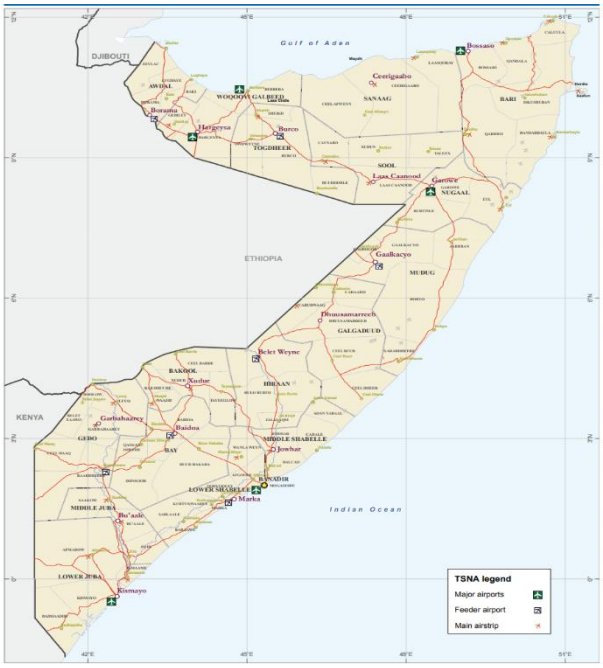

Figure 1. The major airports, feeders, and airstrips in Somalia (African Development Bank Group, 2016)

2.5 Civil Aviation Regulatory Bodies and Security Regulations in Somali

The MOTCA is one of 25 government ministries in Somalia that operates under the Office of the Prime Minister (Office of the Prime Minister of Somalia, n.d.). As a political entity, MOTCA is responsible for formulating and advancing transportation policies in Somalia. Its responsibilities include overseeing transportation governance, managing airports and national airlines, and supervising state-owned enterprises in the transport sector. The mission of MOTCA is to design, administer, and distribute efficient, safe, and accessible transport systems that are modern, environmentally friendly, affordable, and of high quality. MOTCA has five main objectives: providing effective and sustainable transportation services, developing a new international airport,

ensuring compliance with international aviation standards set by the ICAO, designing crucial infrastructure, and enhancing the economic aviation environment for both domestic and international services (MOTCA, n.d.). Figure 2 Shows the structure and hierarchy of MOTCA.

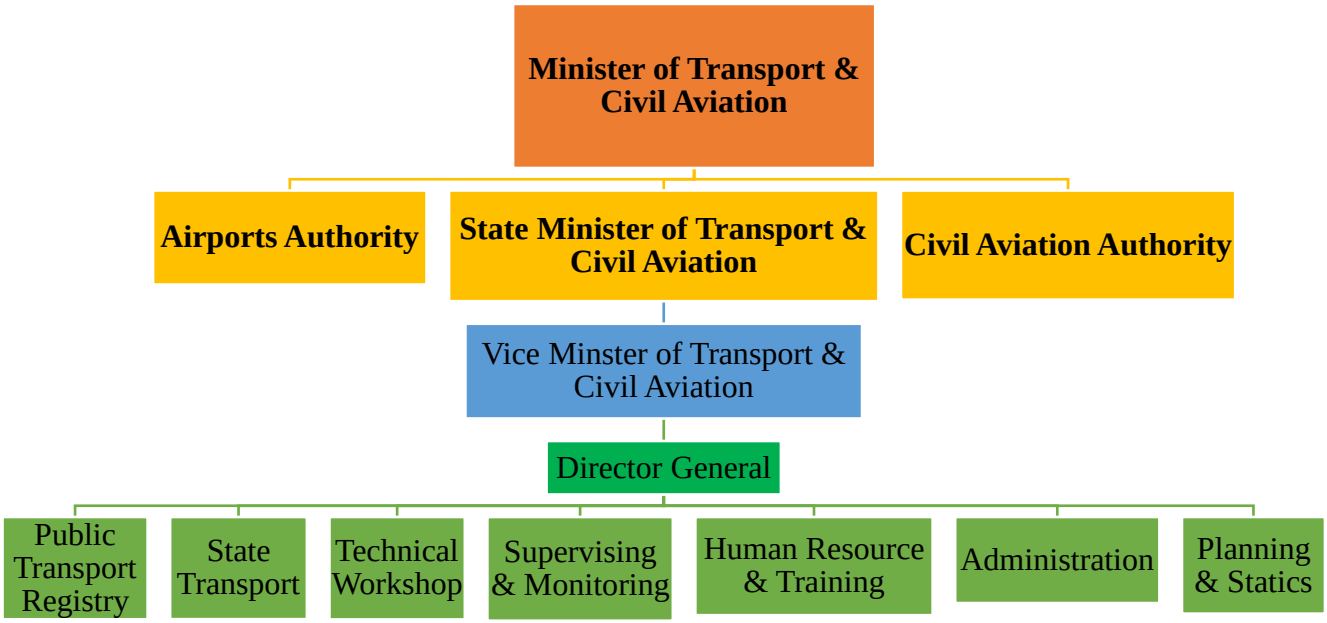

Figure 2. the structure of MOTCA (African Development Bank, 2016).

The SCAA is closely connected to the MOTCA. According to Chapter 1 of Article 4 of the Somali Civil Aviation 2020 Act, SCAA's objective and purpose is to plan, develop, and manage civil aviation airports economically and efficiently, and regulate and operate a safe civil aviation system in Somalia in accordance with the provisions of this Act. Article 5 also outlines the SCAA's responsibilities, which include: (a) regulating civil air operations in the territory of Somalia; (b) regulating the operation of Somali aircraft outside of Somali territory; (c) developing and promulgating appropriate regulations and clear and concise aviation safety standards; (d) developing effective enforcement strategies to secure compliance with aviation safety standards; (e) assisting the MOTCA in the formulation of the National Aviation Policy of Somalia and preparing an aviation plan for Somalia in accordance with the National Aviation Policy of Somalia;

(f) administration of drug and alcohol management plans and testing; and (g) issuing certificates, licenses, registrations, and permits necessary for operators and aviation personnel.

The SCAA comprises four main divisions: Aviation Regulation & Oversight, Airports, Air Navigation Services, and Corporate Services departments (SCAA, n.d.). The Aviation Regulation & Oversight Department, which encompasses the Air Transport, Aviation Security and Facilitation, Flight Operations, Personnel Licensing, and Airworthiness subdepartments, collaborates with stakeholders to enhance aviation safety, efficiency, and sustainability. The department's key responsibilities include formulating and enforcing aviation regulations, conducting inspections and audits for compliance, investigating accidents and incidents, and providing guidance and support to aviation organizations to improve their safety performance (SCAA, n.d.).

The Department of Airports is a crucial component of SCAA and one of its three pillars. Reporting to the Director of Airports, the department ensures efficient airport operations, contributes to overall aviation services, and generates revenue for SCAA while adhering to strict ICAO standards for airports and aerodrome operations across Somalia (SCAA, n.d.).

Air Traffic Management (ATM), Communication Navigation Surveillance (CNS), Search and Rescue (SAR), Aeronautical Information Management (AIM), Aviation Meteorology (MET), and Safety Management Systems (SMS) are the six sub-departments of the Air Navigation Service department. These sub-departments are responsible for ensuring the safe and efficient flow of air traffic through radar and communication systems; providing integrated services for aircraft communication, navigation, and surveillance; responding rapidly to aviation emergencies; offering comprehensive resources for safe flight operations; conducting investigations on reported incidents and accidents; and collaborating with aviation organizations for hazard identification and risk mitigation through SMS (SCAA, n.d.).

The Department of Corporate Service manages various administrative and supportive functions, including human resources and administration, payroll and benefit administration, finance and accounting, information technology, facility management, and procurement services (SCAA, n.d.).

At the international level, according to the ICAO status of Somalia with regard to international air law instruments, Somalia has ratified and is a member of the international civil aviation conventions indicated in Table 1 (ICAO, n.d.).

Table 1. Status of Somalia with regard to international air law instruments

International Convention	**Date of Ratification**	**Effective Date**
1. Convention on International Civil Aviation Chicago, 7/12/1944	2/3/1964	1/4/1964
2. International Air Services Transit Agreement Chicago, 7/12/1944	10/6/1964	10/6/1964
3. Article 93 *bis* Montreal, 27/5/1947	30/9/1964	30/9/1964
4. Article 45 Montreal, 14/6/1954	30/9/1964	30/9/1964
5. Article 48(a), 49(e) and 61 Montreal, 14/6/1954	30/9/1964	30/9/1964
6. Article 50(a) Montreal, 21/6/1961	30/9/1964	30/9/1964
7. Article 48(a) Rome, 15/9/1962	30/9/1964	11/9/1975
8. Article 50 (a) Montreal, 6/10/2016	12/9/2022	-
9. Article 56 Montreal, 6/10/2016	12/9/2022	-
10. Article 83 *bis* Montreal, 6/10/1980	3/4/2023	3/4/2023

After nearly three decades, the Somali Civil Aviation Act was officially approved in 2020, encompassing the regulations and legislation Summarized in Table 2 (SCAA, n.d.).

Table 2. Civil Aviation regulations and legislation

No	**Regulation**	**Reference**
1.6.3.1	General	SOMCAR-Part 1 of 2021
1.6.3.2	Personnel Licensing	SOMCAR-Part 2 of 2021
1.6.3.3	Approved Training Organization	SOMCAR-Part 3 of 2021
1.6.3.4	Aircraft Registration and Marking and Environmental monitoring	SOMCAR-Part 4 of 2020
1.6.3.5	Aircraft Airworthiness	SOMCAR-Part 5 of 2021

1.6.3.6	Approved Continuing Airworthiness Organization	SOMCAR-Part 6 of 2021
1.6.3.7	Aircraft Instruments and Navigation Equipment	SOMCAR-Part 7 of 2021
1.6.3.8	Operations	SOMCAR-Part 8 of 2021
1.6.3.9	Air Operator Certificate (AOC)	SOMCAR-Part 9 of 2021
1.6.3.10	Foreign Air Operators	SOMCAR-Part 10 of 2021

With regard to security regulations, Chapter 2, Article 28 of the Somali Civil Aviation 2020 Act, outlines several key provisions. Firstly, the SCAA shall establish a National Civil Aviation Security Programme (NCASP) in accordance with relevant international conventions, annexes, and amendments. Secondly, the SCAA is responsible for formulating regulations, practices, and procedures to safeguard civil aviation against unlawful interference, and for coordinating the implementation of the NCASP. Thirdly, a National Civil Aviation Security Committee shall advise the SCAA on the organization and implementation of the NCASP at all levels of civil aviation. Fourthly, the SCAA shall allocate and coordinate aviation security responsibilities among relevant state and industry organizations, in consultation with the committee. Fifthly, the SCAA shall oversee civil airport security activities to ensure safety and security, covering passengers, crew, ground personnel, the public, aircraft, navigational facilities, and protection against unlawful interference. Lastly, the SCAA shall supervise security duties, including screening, searching, questioning, and investigating procedures for individuals entering a security-restricted area or boarding an aircraft.

Article 29 addresses the National Civil Aviation Security Quality Control and Training Programme. According to this provision, personnel assigned to Security Compliance Monitoring activities must receive training according to the National Civil Aviation Security Training Programme (NCASTP) issued by the SCAA before conducting surveys, audits, inspections, and investigations under the National Civil Aviation Quality Control Programme (NCAQCP) and taking enforcement actions. In addition, SCAA oversees the implementation of the NCASP and coordinates the NCASTP for the personnel of all relevant entities.

Article 30 stipulates the following requirements: (1) Each airport operator is mandated to develop, implement, and maintain an Airport Security Program (ASP) that has been approved by the SCAA.

(2) Each airline operating at Somali airports must establish, implement, and maintain an Aircraft Operator Security Program (AOSP) that meets the requirements of the NCASP. (3) The aforementioned airlines are required to submit their programs to the relevant authority and each airport authority where they operate. (4) All service providers and entities performing duties at airports must comply with the provisions of the NCASP and ASP.

2.6 Security Challenges in Somalia

The aviation industry, which is known for its speed and convenience, has become a vital component in facilitating travel and has attracted attention for its unique characteristics. In addition to streamlining transportation, this sector plays a crucial role in enhancing a nation's global standing, sustaining a significant economic sector, and serving as a powerful agent of globalization. However, the increasing importance of civil aviation exposes it to security risks, particularly in countries experiencing conflict such as Somalia. This section delves into the historical roots of Somali's political instability and terrorist attacks perpetrated against the country's civil aviation sector.

2.6.1 Somali Political Instability

During the colonial period, Somalia was partitioned into five different regions: Italian Somaliland, which encompassed the majority of present-day Somalia; British Somaliland, now known as Somaliland; French Somaliland, presently Djibouti; as well as Somali enclaves within Ethiopia's Ogaden region and Kenya's North Eastern province. In 1960, British Somaliland and Italian Somaliland achieved independence from British and Italian administrations respectively, merging to establish the Somali Republic. This new entity aimed to unite all five territories inhabited by Somali populations (Nyadera et al., 2019). The five points on the Federal Republic of Somalia's flag stand in for these five regions. However, Siad Barre, an army commander, led a military coup in 1969 that overthrew the civilian government and gave him the presidency (Pham,2011).

Barre started the Ogaden War in 1977 to annex Somali-populated areas of Ethiopia. Despite early advances, the Somali military was eventually defeated by Cuban forces, supported by the Soviet Union, marking a significant turning point in Somalia's history (Vaughan, 2019). Barre's regime became increasingly authoritarian, leading to the emergence of various opposition militia groups

and escalating violence. Barre remained in power until 1991 (Ingiriis, 2019). In 1993, a United Nations task force, led by the US, was deployed to maintain stability and provide humanitarian aid in Somalia. However, significant casualties suffered by the task force led to its withdrawal from Somalia in early murch1995 (Crocker, 1995).

The Barre regime severely destroyed Hargeisa, the capital of Somaliland, destroying roughly 70% of the city and killing and displacing more people. Following the collapse of Barre's regime in 1991 (Mohamoud, 2002, p.16), Somaliland declared independence from Somalia (Ingiriis, 2016). Somaliland successfully reduced internal conflict through a series of peace conferences presided over by traditional leaders, established a functioning government, wrote and ratified the constitution, held numerous democratic elections, and made significant progress in economic development. Somaliland became a successful example of grassroot-driven state-building (Kaariye, 2021).

On the other hand, Southern Somalia has endured over thirty years of instability, severe conflict, and power struggles, ranging from state collapse to civil war and then extremism. This turmoil has been characterized by the mobilization of armed clan factions under the leadership of influential individuals referred to as "warlords." These warlords have competed for territory control and any available economic resources amid the wreckage of the collapsed state, leading to prolonged instability in central and southern Somalia (Mwangi, 2010).

The Intergovernmental Authority on Development (IGAD) played a significant role in establishing the Transitional Federal Government (TFG) of Somalia during peace talks held in Nairobi from 2002 to 2005 (Nyadera et al., 2019, p. 13). Due to security issues, the TFG initially functioned out of Kenya, prompted by the actions of the 'Mogadishu Group,' which consisted of warlords and 'armed ministers' who had departed the Parliament in Nairobi to return to Mogadishu. Their dissatisfaction was largely due to the perceived predominance of pro-Ethiopian ministers within the TFG (Mwangi, 2010). Mwangi also noted that despite being the internationally recognized sovereign authority over Somalia, the TFG faced significant challenges concerning its own security and the country's security at large. The TFG did not control any Somali city until 2005 when it moved its headquarters to Baidoa. The Transitional Federal Parliament's first meeting in

Baidoa occurred in 2006. Following Ethiopia's intervention in late 2006, the TFG expanded its influence in Somalia, albeit remaining heavily dependent on Ethiopian support (Mwangi, 2010).

In the face of escalating crime and the absence of effective political structures and a centralized government, Islamic movements emerged in Somalia. The Islamic Courts Union (ICU), founded in June 2006 in Mogadishu, responded to local security issues effectively during its brief period of governance (Pham, 2011). The ICU system, which integrates various religious traditions and political ideologies, resonated with the local populace due to its simple structure and operation. It consists of three main components: a shura (council), a chairman, and a military commander. The shura, which includes respected clan figures from political, traditional, business, and religious sectors, selects the chairman. Following the shura's approval, the chairman appoints the military commander. The ICU's financial resources typically come from private donations and levies on businesses and militia activities (Mwangi, 2010).

In June 2006, the ICU successfully ousted the warlords who had held sway over Mogadishu, achieving the first period of peace in 15 years—a feat that had evaded both the warlords and the TFG. The ICU was initially welcomed by Somalis for bringing peace and implementing security measures, and they also gained the backing of business leaders frustrated with paying taxes to the warlords (Mantzikos, 2008). By 2006, the ICU had taken control of much of southern Somalia, including Mogadishu. However, in December 2006, a coalition of Ethiopian forces and the TFG defeated the ICU. Following this, in 2007, the ICU launched a guerrilla war against the TFG and the Ethiopian forces that had invaded Somalia. Al-Shabaab emerged as a significant force during this insurgency (Shay, 2014, p. 98).

During the 2008–2009 national reconciliation program, the ICU negotiated with the TFG. The UN-sponsored peace talks in Djibouti in January 2009 resulted in an agreement for Ethiopian forces to withdraw from Somalia, and ICU leader Sheikh Sharif Sheikh Ahmad committed to ending hostilities. On January 31, 2009, Sheikh Sharif Sheikh Ahmad was elected president of the TFG. However, disagreements over reconciliation efforts led to the formation of Al-Shabaab as an opposition group to the "moderate" ICU. Al-Shabaab, an offshoot of the former ICU in Somalia, is affiliated with Al-Qaeda in the Horn of Africa (Shay, 2021b).

In early 2009, following the Ethiopian forces' departure from Somalia, Al-Shabaab assumed the control of vacated areas. With Western-backed support from the African Union Mission to Somalia (AMISOM), the Somali government combated Al-Shabaab. Al-Shabaab characterized their actions as a holy war or Jihad against perceived "enemies of Islam," engaging in conflicts with the TFG and AMISOM. Furthermore, they declared hostility against the United Nations and Western non-governmental organizations distributing food aid in Somalia. Subsequently, the U.S. and several Western governments designated Al-Shabaab as a global terrorist organization, citing its alleged ties to Al-Qaeda. Notably, key Al-Shabaab members welcomed this designation, considering it an "honorable" recognition because of their self-identification as devout Muslims and their view of Americans as infidels (Shay, 2021b).

Since August 2011, soldiers from Ethiopia, Kenya, Uganda, Burundi, Djibouti, and the Somali army, operating under the AMISOM banner, have liberated key towns from Al-Shabaab (Williams, 2018). Despite this, Al-Shabaab has been on the offensive since 2009, intensifying its attacks on AMISOM bases, Somali government installations, officials, security forces, hotels, and targets in neighboring Kenya. The group remains a significant threat to Somalia's security and to the broader region, opposing foreign troop presence and frequently targeting international interests and peacekeepers, including American, EU, and Turkish entities (Shay, 2021b).

The security situation in Somalia has remained volatile. According to a 2023 report from the European Union Agency for Asylum (EUAA) titled "Somalia: Security Situation," monthly average security incidents in Somalia numbered 265 in 2021, 236 from January to April 2022, and 227 between May and July 2022. Over the reference period of July 2021 to November 2022, ACLED (Armed Conflict Location and Event Data Project) recorded 3,922 security incidents, comprising 2,584 battles, 808 explosions or other remote violence, and 530 violent acts against civilians (EUAA, 2023, P. 36–37). Figure 3 Shows the Security Incidents in Somalia from July 2021 to November 2022.

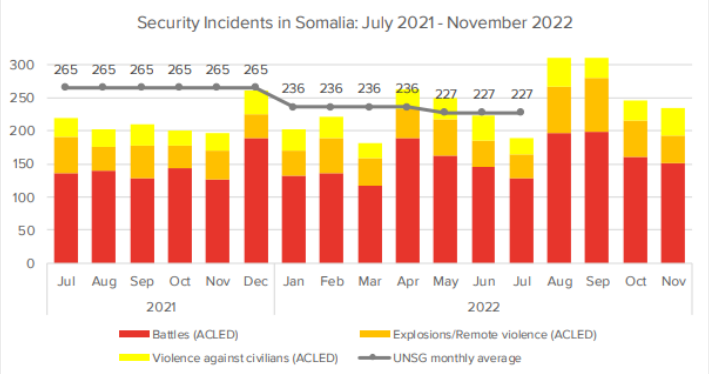

Figure 3. Security Incidents in Somalia from July 2021 to November 2022 (EUAA (2023, pp. 36–37)

The protracted political instability and security threats posed by various armed militia groups, notably Al-Shabaab and clan militias, have inflicted substantial damage to Somalia's economic infrastructure, including its aviation facilities. As a result, international flights have been suspended and national flag carriers have ceased operations (Maruf, 2023). The country has lost control over its airspace, rendering it among the most dangerous in the world, despite its strategic air corridor, the Mogadishu Flight Information Region (FIR), which connects various regions across Africa, the Middle East, the Indian subcontinent, Western Europe, and the Indian Ocean Islands (Wakai, 2023). Figure 4 shows the Mogadishu FIR.

During the writing of this thesis, there was an ongoing dispute between the Somali federal government and Somaliland over airspace management. This conflict arose after Somaliland declared independence from Somalia in the early 1990s following the collapse of the central government in 1991. This lack of a functional central government coupled with Somaliland's declaration of independence led to concerns about the safety of airspace. To address these challenges, the ICAO and the United Nations Development Programme (UNDP) established the CACAS and transferred the airspace management center to Nairobi, Kenya. Since then, the ICAO has managed the airspace from Nairobi through the CACAS. In 2013, the ICAO facilitated negotiations between Somalia and Somaliland in Istanbul to establish a cooperative framework for airspace management. The resulting Istanbul II communiqué outlined plans for an Air Traffic Control Board to be based in Hargeisa, Somaliland, and a technical committee representing both parties (Mohumed, 2019). However, in 2018, Somalia resumed control over its airspace, which sparked disputes with Somaliland. Despite its objections, Somaliland lacked the necessary

international recognition to enforce its stance on the matter (Diplomat, 2018). The regained control over airspace led to tensions, as Somaliland contested the unilateral decision. This situation raises concerns regarding the safety and security of airspaces.

Recent developments in airspace disputes between Somalia and Somaliland have raised concerns about the politicization of airspace management. In January 2024, Ethiopia and Somaliland signed a Memorandum of Understanding (MoU) that involved Somaliland granting port rights on its Red Sea coast to Ethiopia in exchange for Ethiopia's recognition of Somaliland's sovereignty. This agreement resulted in Somalia imposing restrictions on flights to Somaliland's airspace, particularly within the Mogadishu FIR, for unauthorized flights. The situation intensified on January 17, 2024, when Somalia denied entry into the Somali airspace for an unscheduled Ethiopian Airline flight (ET8372) carrying high-ranking Ethiopian officials bound for Somaliland. This forced the flight to return to Addis Ababa (SCAA, 2024). In response, Somaliland asserted its authority over its airspace and started communication with airlines transiting through its airspace, which created security threats. Terrorism has further weakened the aviation sector. The following section details Al-shabab background who consistently targets the Somali civil aviation industry.

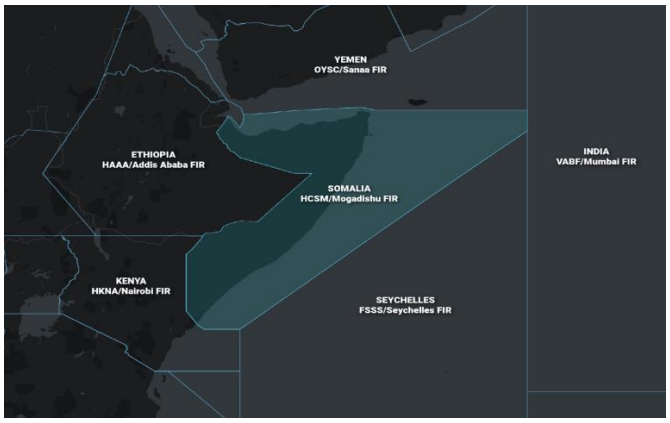

Figure 4. The Mogadishu FIR (Safe Airspace, 2023)

2.6.2 Background of Al-Shabab

Following the withdrawal of Ethiopian forces from Somalia in early 2009, Al-Shabab, which initially emerged around 2002, became more prominent. The group was primarily founded by former members of Al-Ittihad Al-Islami (AIAI), an Islamist organization formed in the late 1980s in response to the oppressive regime of Siad Barre and the resulting political chaos. Disillusioned

by AIAI's decision to demobilize and abandon violent jihad, some of its ex-members established Al-Shabab (Mubarak and Jackson, 2023). Between 2002 and 2005, Al-Shabab was the smallest jihadi faction in Mogadishu, focusing on combating kidnappings and criminal gangs. When the ICU rose to power in 2006, three of its groups were aligned with Al-Shabab, giving it considerable influence within the ICU. Al-Shabab leveraged this influence to undermine negotiations with the TFG. Following the Ethiopian invasion and the ICU's subsequent collapse, Al-Shabab gained prominence by aiming to expel foreign forces, oppose the TFG, and establish an Islamic state based on its vision. The group's strongest presence has been in rural areas with minimal state control. Al-Shabab exploited the Ethiopian intervention to recruit fighters and used effective media strategies to position itself as the region's sole authentic Salafi Jihadi group. It also used intimidation and conflict to absorb or eliminate smaller groups that resisted joining. Despite later pledging allegiance to Al-Qaeda, Al-Shabab's goals have largely remained focused on national rather than transnational ambitions (Marchal, 2009; Bacon, 2018).

In the beginning, Al-Shabab's governance was met with opposition from certain clans, although some were supportive of the group. Initially, Al-Shabab's interaction with clan structures was antagonistic. However, the group soon realized the political importance of engaging with these structures (Skjelderup, 2020). Elders who opposed Al-Shabab were often targeted and replaced, while those who supported the group were rewarded. Under Al-Shabab's control, inter-clan peace was enforced. Clan elders were held responsible for any violence committed by their clans and were required to ensure that blood money was paid when clan members killed individuals from other clans. As Al-Shabab's governance evolved, elders rapidly gained power, taking on roles as administrators, tax collectors, and recruitment officers. Over time, Al-Shabab's strategy shifted towards exploiting existing social structures and identities to their benefit rather than attempting to completely dismantle them (Anzalone, 2023).

According to Mubarak and Jackson (2023), by 2010, Al-Shabab had taken control of a large portion of central and southern Somalia, including multiple cities and ports, which allowed it to generate substantial revenue. The group also implemented a governance system in these areas. Nevertheless, the extent of Al-Shabab's territorial control and its capabilities have varied over time. The group's ability to adapt and seize opportunities has been crucial to its growth and persistence. In response to efforts to contain or defeat it, Al-Shabab has continually evolved its tactics and

strategies. For instance, when it began to lose territory to government forces and international troops around 2012, the group transitioned from conventional control and governance of towns and cities to guerrilla warfare (Mubarak & Jackson, 2023).

Al-Shabab continues to leverage local community grievances against the government. Recently, the African Union Mission to Somalia estimated that the group controls 20–30% of rural south-central Somalia. Although this marks a significant decline from its peak dominance between 2007 and 2014, when it controlled about 80% of the country (NATO SDS HUB, 2021), it remains a notable presence. For millions of Somalis, Al-Shabab's shadow administration has been the only form of government they have experienced for the past decade. Moreover, these territorial estimates do not fully reflect the group's influence and reach into government-controlled areas, including Mogadishu. Despite considerable military pressure, Al-Shabab has sustained its influence through various governance mechanisms (Bahiss et al., 2022). The group's resilience and expansion are bolstered by its ability to recruit fighters and generate income through taxation, including from businesses in Mogadishu and other areas under government control (Hiraal Institute, 2022; Bacon, 2022).

Mubarak and Jackson (2023) argue that Al-Shabab's operational tactics reveal a dual strategy, with distinct approaches in areas it directly controls compared to those beyond its immediate reach. In regions where its control is strong, Al-Shabab establishes complex governance structures, effectively delivering essential services and maintaining security. By creating order and resolving inter-clan conflicts, the group has entrenched its influence, capitalizing on government failures to enhance its authority and erode the state's legitimacy. As a result, despite losing territory after 2014, Al-Shabab has maintained a significant presence in remote and rural areas lacking effective state governance. Conversely, in regions dominated by government forces or where control is contested, Al-Shabab resorts to covert infiltration, using coercion to undermine existing structures and weaken state authority through intimidation and violence. The group’s extensive intelligence network allows it to gather crucial information through threats and bribery, facilitating targeted threats, tax collection, and the enforcement of behavioral norms on civilians, even in areas with minimal territorial control (Faruk & Bearak, 2019).

Following his inauguration in May 2022, President Hassan Sheikh Mohamud of Somalia initially pursued a conciliatory approach, aiming to engage in dialogue with Al-Shabab to foster peace and

stability (Kippahl, 2022). However, by August 2022, he shifted to a more aggressive stance, declaring a 'total war' against Al-Shabab and initiating a substantial military offensive (Dhaysane, 2022). This campaign was supported by the Macawiisley, a coalition of clan militias that had formed around 2018 in Middle Shabelle in reaction to Al-Shabab's increasing violence and extortion (Maruf, 2022). The escalation was triggered by an Al-Shabab blockade between Matabaan and Beledweyne in the Hiran region, which worsened the effects of drought, increased prices, and intensified local grievances, sparking a rebellion by clan militias. Al-Shabab's brutal efforts to quell the uprising only fueled further resistance, causing the rebellion to spread throughout Hiran (Mubarak & Jackson, 2023).

The government-led offensive, bolstered by clan militias, the Somali military, and the African Union Transition Mission in Somalia, has succeeded in reclaiming substantial territories from Al-Shabab. However, the lack of a comprehensive governance and administrative plan for these recaptured areas raises concerns about the government's ability to maintain control over them in the medium to long term (Hiraal Institute, 2023). Despite leveraging local networks and clan dynamics to enhance counterinsurgency efforts, the political strategy for reconciliation and governance remains unclear.

Mubarak and Jackson (2023) underscore a crucial aspect of this issue, highlighting the significant depopulation in several regions, including Adan Yabal and Moqokori, which served as case studies. In these instances, Al-Shabab vacated the areas before the offensive, resulting in a substantial civilian exodus. This preemptive flight or coerced displacement, orchestrated by Al-Shabab to disrupt potential ties between civilians and the government, has further complicated the government's strategic aims. Additionally, the Somali civil aviation industry has been a primary target of Al-Shabab's terrorist attacks. The following section outlines these attacks on the Somali civil aviation sector (Mubarak and Jackson, 2023).

2.6.3 Terrorist Attacks in the Somali Civil Aviation Industry

Somalia has a history of aviation-related terrorism, with the first incident occurring in 1977 when the PFLP hijacked Lufthansa Flight 18 (Krause, 2003; Omweno, 2022). On October 13, 1977, the plane departed from Palma de Mallorca and was en route to Frankfurt when it was hijacked by four PFLP militants. The hijackers forced the captain to divert the flight to Larnaca, Cyprus,

instead of Frankfurt, requiring a refueling stop in Rome. The hijackers demanded the release of ten detained RAF members and two Palestinians held in Turkey. The Italian authorities chose not to intervene, allowing the aircraft to depart. Over the next few days, the plane landed in Rome and Cyprus for refueling and made emergency landings in Bahrain, Dubai, and Aden (Gurski, 2020). When the aircraft landed in Aden, the captain inspected the plane with the hijackers' permission but was fatally shot when he did not return. The first officer assumed control after refueling and departure around 2 a.m. on October 17th, Flight 181' touchdown in Mogadishu, Somalia, at approximately 06:34 local time on the same day. The hijackers permitted the first officer to flee but insisted on keeping the remaining passengers on board. The hijackers extended their release dates for the RAF (Red Army Faction) prisoners to October 18. A West German counterterrorist commander from GSG-9 (Grenzschutzgruppe 9) stormed the aircraft through emergency doors, distracting the militants with a small fire. A brief gun battle ensued, resulting in the death of three hijackers. The fourth hijacker was injured, along with three passengers and a cabin crew member caught in a crossfire. The operation lasted five minutes with the rescue accomplished, all 86 passengers and commandos were evacuated from the aircraft (New York Times, 1977).

In 1984, a second terrorist incident occurred when three Somali soldiers hijacked the Somali Airlines Boeing 707 (Flight 415) from Mogadishu to Jeddah, Saudi Arabia, via Berbara, Somalia. Approximately 30 minutes after departure, three heavily armed men took control, informing passengers that the aircraft was under their control. The hijackers forced the captain to land in Aden, Southern Yemen, but the authorities rejected the landing. Subsequently, the plane was redirected to Djibouti, but suspicions arose, leading them to alter their destination to Libya. Due to fuel constraints, hijackers ultimately demanded a landing in Addis Ababa, Ethiopia (Washington Post, n.d.). Upon landing at Bole Addis Ababa International Airport, hijackers released 22 individuals, including 15 women, 4 children, 3 cabin crews, and foreign nationals. They threatened to detonate the aircraft unless the Somali government met their demands, including the release of political prisoners and cancelation of the execution of seven Somali youths convicted of anti-government activities scheduled for that day. The hijackers insisted on releasing and transferring political prisoners to Djibouti with confirmation of their arrival. In this tense situation, diplomatic channels between Somalia and Ethiopia were strained due to historical conflicts dating back to the

1977 war over the Ogaden region. Communications occurred through the Italian Embassy in Addis Ababa via Rome as an intermediary (New York Times, 1984).

The Somali government initially rejected hijackers' demands, stating that they could fuel global terrorism. The government held the Ethiopian government responsible for the hostages' safety, alleging support for the Somali rebels. The hijackers, linked to the Somali Democratic Salvation Front and the Somali National Movement, aimed to overthrow President Mohammed Siad Barre's government, which was established through a 1969 military coup. In response to the government's stance, discussions were initiated with various embassies to address the act of banditry and terrorism against civilian passengers, emphasizing the violation of international agreements safeguarding civilians. Ultimately, the Somali government yielded hijackers' demands, leading to the release of political prisoners and the safe landing of aircraft and passengers at Mogadishu airport (New York Times, 1984).

On June 21, 1996, a third hijacking incident involving a general aviation aircraft traveling from Somalia to Kenya was recorded. Two individuals, armed with pistols and hand grenades, compelled the plane to land on an airstrip close to Kilwayne, Somalia. While the hijackers released passengers without harm, they absconded with $30,000 (U.S.). The aircraft was chartered by a Somali entrepreneur for transportation of khat (a stimulant derived from a narcotic plant) from Kenya to Somalia. The hijackers managed to board the flight at the K-50 airstrip near Mogadishu by assuming the guise of businessmen heading to Nairobi (FAA, 1996).

The aviation industry is currently grappling with significant security challenges, largely due to the activities of the Al-Shabaab group. This group has been responsible for numerous attacks targeting the aviation sector. A notable incident occurred on February 8, 2016, when a suicide bomber detonated an explosive device aboard a Daallo Airlines flight. The explosion forced the plane to make an emergency landing in Mogadishu. During the blast, the pressurized cabin was breached, creating a one-meter-wide hole, through which the bomber was ejected from the aircraft. The aircraft's elevation was estimated to be between 12,000 and 14,000 feet subsequent to its departure from Adan Adde International Airport (Kriel and Capelouto, 2016). Furthermore, Somali authorities released visual evidence depicting airport personnel handling a laptop suspected of containing an explosive device that was detonated on a passenger plane en route from Mogadishu

to Djibouti. The recording depicted two airport workers managing a laptop linked to suspected perpetrators. According to reports, 74 passengers, including the suicide bomber, initially checked in with Turkish Airlines, which had to cancel its Mogadishu flight that morning due to adverse weather conditions. Consequently, Turkish Airlines arranged for Daallo Airlines to transport passengers on their behalf to Djibouti, from where they were to continue their journey aboard a Turkish Airlines flight (Maruf, 2016).

Al-Shabaab claimed responsibility for the assault, indicating that they originally targeted a Turkish Airlines aircraft but shifted to Daallo Airlines after the cancellation of the Turkish carrier's flight. The group stated their objective was to strike Western intelligence officials and Turkish NATO forces, aiming to instill fear despite the operation's failure to bring down the plane. This illustrates their capability to bypass security measures and reach their targets, as reported by Mohamed (2016). An airport security official carrying a laptop managed to slip through a designated employee gate and handed it over to the bomber. However, the scheduled flight on that day was canceled. The following day, a second attempt was made, during which the laptop passed through security scans without detection. This lapse was attributed to the inadequate knowledge of airport security personnel and their unfamiliarity with the innovative techniques employed by the al-Shabab group. Colonel Hassan Ali Nur Shute, the chief prosecutor of the military court, emphasized that the attackers exhibited a high level of sophistication when concealing explosives within the laptop. This sophistication made it challenging for the security staff to identify it, as they had not previously encountered such a method. (Maruf, 2017).

The Somali military court sentenced two individuals to life imprisonment to orchestrate a bomb attack on Daallo Airlines. One of them was a trusted insider among Mogadishu airport security officials, and both convicts were associated with al-Shabab. Additionally, eight others were convicted of aiding in the planning of the attack, but were not affiliated with the al-Qaeda-affiliated militant group. Furthermore, the pilot of the plane expressed a critical assessment of the security, describing it as inadequate. (BBC News, 2016).

After the incident, the government implemented specific measures to enhance security at Adan Adde's international airports. These measures include changes to airport security procedures, improvements to scanner capabilities, and initiatives to elevate the proficiency of security

personnel. Rigorous screening procedures involving searches were instituted for all individuals entering or departing from airports. The security protocol involved the use of three scanners, sniffer dogs, and mandatory laptop shutdowns. Notably, international flights such as Turkish Airlines were granted permission to maintain a dedicated security gate, where supplementary security checks were conducted following the aforementioned screening procedures (Maruf, 2017). This event was a turning point, highlighting the need for heightened awareness of global civil aviation security and the importance of vigilance against evolving tactics employed by global terrorists to achieve their objectives. In response to this threat, passengers comply with government regulations including the shutdown of laptops during screening. For example, the US and Britain imposed restrictions on passengers flying with several Middle Eastern airlines, and prohibited the carriage of laptops and tablets on planes. Authorities cited concerns about airline safety, specifically referencing a February 2016 incident involving a Somali airline, Daallo, where a passenger detonated a bomb concealed on a laptop (Maruf, 2017).

In 2020, a Kenyan plane crashed in Bardale town, Somalia, downed by an Ethiopian anti-aircraft gun, resulting in six fatalities. Ethiopian forces stationed in Bardale assisted in retaining control over al-Shabab militants. The incident unfolded when the Kenyan plane aborted its landing due to an Ethiopian military vehicle with Zu anti-aircraft missiles on the runway. During the second landing attempt, an Ethiopian soldier operating the Zu fired multiple rounds, hitting the plane (Al Jazeera, 2020).

Ethiopian military officials accepted their soldiers' responsibility for downing the plane, but claimed that they were unaware of the aircraft's scheduled arrival. They explained that the soldiers, lacking communication and awareness, feared a potential "bombing" and thus shot down the plane (Dahir, 2020). Bardale, located approximately 60 km west of Baidoa, lacks an air traffic control tower, and flight arrival information is conveyed to ground officials via telephone (Maruf, 2020). Maruf mentioned that there was controversy surrounding the identity and status of the soldiers who fired on the plane. Multiple sources, including an AMISOM source, indicate that these were "non-AMISOM" soldiers. These non-AMISOM soldiers, constituting a significant portion of the Ethiopian troops in Somalia, operate beyond the African Union mission mandate. Questions persist regarding the legality of the presence of non-AMISOM Ethiopian forces in the country. One could contend that the responsibility for this terrorist attack does not lie in the Al-Shabab group.

Nevertheless, the truth remains that the soldiers stationed in the region to combat Al-Shabab suspected that the aircraft might have been intended for a suicide attack by this group, as they asserted.

Al-Shabaab, in addition to engaging in aircraft assaults, has been known to target Somali airports with the intent of inflicting property damage and instilling fear in passengers. In 2017, the group carried out a terrorist incident involving two suicide car bombings that resulted in the deaths of over twenty individuals near Somalia's primary airport, Adan Adde International Airport. One vehicle detonated at a checkpoint situated outside the African Union base, whereas the other exploded in close vicinity to the airport. Al-Shabaab claimed responsibility for this attack (Nur, 2017). Furthermore, in the same year, Somali security forces thwarted a plot by two Al-Shabaab militants attempting a mortar attack on Mogadishu's Adan Adde International Airport. The forces intercepted the attackers before they could breach the perimeter of the airport (CGTN Africa, 2017).

More recently, on March 23, 2022, two terrorists were killed and three police officers were wounded in an Al-Shabaab attack on Mogadishu's Adan Adde International Airport (Faruk, 2022). Armed attackers attempted to enter the airport with hand grenades and small arms; however, security personnel killed them. The incident resulted in injuries to several security personnel. Al-Shabaab, affiliated with the al-Qaeda network, claimed responsibility, stating that the Halane military compound within the airport was their target. This compound houses UN (United Nations) and African Union peacekeeping forces and diplomatic missions from Western countries, including the US (Dhaysane, 2022). As a result, all flights were disrupted, and numerous international flights were cancelled according to airport authorities.

The attackers involved in the incident were dressed in Somali military uniforms, which allowed them to navigate multiple security checkpoints without arousing suspicion (Crisis24, 2022). Following the investigation, two former members of the Somali Forces were apprehended for suspicion of their alleged involvement in facilitating an attack. One of the captured attackers, in an interview with the Somali National Television, confessed that their resentment towards military dismissal had motivated them to join Al-Shabab secretly, with the intention of aiding attacks on government compounds. In return, they received a modest salary from the group.

Al-Shabab frequently resorts to wearing Somali military attire when carrying out their attacks. They procure these uniforms through illegal means or corruptly obtaining them from certain members of the Somali armed forces in exchange for money, which underscores the pervasive issue of corruption in the country.

Egal (2016) highlighted the substantial influence of police corruption in enabling terrorist activities in Mogadishu. The research revealed that Al-Shabab can conduct attacks in ostensibly secure areas by bribing law enforcement officials, even when government security forces are present. Egal observed that arms supplied to the Somali police for national defense were being sold in the Bakara market. This situation allows Al-Shabaab to purchase these weapons and use them to combat government forces, thereby compromising the country's security and enabling it to acquire more advanced weaponry for brutal attacks in Mogadishu.

The Al-Shabab group also poses a threat beyond Somali aviation, as it is willing to target facilities outside Somalia to replicate the 9/11 attacks. Al-Shabaab trained two Kenyan individuals as pilots for terrorist activities involving airplanes. On July 1, 2019, Philippine security forces detained Cholo Abdi Abdullah, a Kenyan citizen member of Al-Shabaab in Iba, Zambales, on the basis of local charges (Gotinga, 219: Shay, 2021). Abdullah received pilot training and obtained a license from a Philippine aviation academy. Before his arrest, he researched methods for hijacking commercial airliners, including breaching cockpit doors from the outside. He also sought information on the tallest building in a major U.S. city and obtaining an American visa (BBC, 2020). On December 15, 2020, Abdullah was transferred to U.S. custody, facing charges of conspiring to hijack an aircraft and crash it into a tall building in the U.S. (Shay, 2021).

In March 2021, Kenyan police also issued a terrorism warning, urging citizens to provide information about Mr. Rashid Mwalimu. Authorities suspect Mwalimu, a trained pilot, may orchestrate an aviation-related attack in or from Kenya. Reportedly residing in Somalia, he poses a risk of clandestinely re-entering the country. Mwalimu, who joined Al-Shabaab in 2015, conducted attacks in Somalia with Cholo Abdi Abdullah after training in Boni along the Kenyan coast. Subsequently, both underwent pilot training in the Philippines (Shay, 2021).

Following the Trump administration's decision to move the U.S. embassy in Israel to Jerusalem in January 2019, Al-Qaeda launched the "Jerusalem will never be Judaized" campaign. As part of this initiative, the organization's affiliates in East and West Africa carried out several major attacks (BBC News, 2020). On January 5, 2020, an attack on the Manda Airstrip near the Camp Simba U.S. base in Lamu County was successfully repelled by U.S. Africa Command and the Kenya Defense Forces. This incident resulted in the deaths of a U.S. service member and two civilian contractors, with two other Department of Defense personnel injured and six aircraft destroyed. The militant group Al-Shabaab claimed responsibility for the attack, declaring it a significant part of their "Jerusalem will never be Judaized" military campaign. The Kenyan military confirmed they had neutralized at least four terrorists during the assault (Shay, 2021).

2.6.4 The Impact of Political Instability and Terrorists on Somali Civil Aviation

Following the devastating civil war and dissolution of the central government in 1991, Somalia experienced extensive looting of public infrastructure by clan factions (Ahmad, 2014, p. 10), which has since exemplified contemporary statelessness (Abdirizak, 2022). The aviation industry is particularly susceptible to instability during periods of unrest. Somali Airlines ceased operations, and despite government assurances to revive the airline, this objective is yet to be realized. As a result of state collapse, Somalia lost control of its airspace, which was subsequently managed by Nairobi, Kenya, until June 2018. The country's airspace is classified as Class G, until January 2023 indicating uncontrolled airspace, and provides advisory services to pilots (Maruf 2023). Although security has improved and airspace has been restored to Class A status after a 30-year absence, threats persist. For example, the U.S. Federal Aviation Administration (FAA) issued a Notice to Airmen (NOTAM) on December 27, 2022, restricting flight operations in the Somali airspace to below FL260 until January 7, 2027, as a result of safety concerns related to militia activities (Federal Register, 2022, December 27). Similarly, Canada, France, Germany, and the United Kingdom have issued NOTAM warnings (Transport Canada, 2021; EASA, 2023), which have had a negative impact on revenue collection from the Somali airspace as the country charges for air traffic management services.

The civil conflict resulted deficient airport facilities, a shortage of qualified personnel, and regulatory inadequacies. The report published by the African Development Bank in 2016 exposed

the inadequacies of airport facilities, shortage of skilled personnel, and lack of effective regulations due to civil conflict. It emphasized the need for infrastructure development, regulatory framework enhancement, and personnel training. The report identified gaps in policy formulation, stressing the importance of legal and regulatory surveillance, compliance reviews, and updates to ensure adherence to the ICAO standards. It recommended reviewing and updating the Aeronautical Information Publication, establishing a national aviation security program, and evaluating the feasibility of separating regulatory and operational functions to improve oversight (African Development Bank, 2016, pp. 94–98).

In collaboration with other government bodies, the Ministry of Public Works, Housing, and Reconstruction published the Somali National Infrastructure Strategy (2019-2063) in 2018. The report highlights that Somalia's aviation sector falls short of African and global standards owing to minimal commercial aircraft activity. Key obstacles include the lack of cohesive policies and regulatory frameworks, insufficient skilled labor, financial constraints, political instability, and land-related issues. The absence of harmonized policies and financial resources at the federal and local levels, coupled with the lack of a centralized coordination mechanism, impedes industrial progress. The report recommends establishing a secure and cost-effective aviation regulatory system and constructing a new Mogadishu Airport to handle the expected rise in air traffic. The revival of the national carrier was also emphasized as a priority for the Somali Civil Aviation Ministry.

The Somalia National Development Plan (2020-2024, pp. 213-218) of the Ministry of Planning, Investment, and Economic Development also highlights key challenges faced by the air transport sector, such as limited public resources impeding investment in both hard infrastructure and operational maintenance. Insufficient administrative and technical capacity at the federal and state levels hinders the formulation of essential laws, regulations, and financial governance. The report further states that the air transport sector necessitates the simultaneous development of a regulatory framework covering revenue collection, customs, taxation, and safety. Moreover, the establishment of cargo services is crucial for the comprehensive development of the air transport sector.

Despite the devasting impact of state collapse and long-term political instability, the aviation sector also faces significant security challenges due to the country's volatile security situation. Somalia is widely perceived as having a highly volatile security environment, with the U.S. Department of State Travel Advisory Levels assigns a red level to the country and advises against travel. These warnings primarily stem from factors such as crime, terrorism, and civil unrest. Throughout Somalia, violent crimes, such as kidnapping and murder, along with illegal roadblocks, are prevalent (U.S. Department of State Bureau of Consular Affairs, 2023). Terrorist organizations are actively planning attacks aimed at a variety of locations, including airports, seaports, government facilities, hotels, restaurants, shopping centers, and other sites frequented by Westerners, as well as government and military personnel, and Western convoys. The methods of attack include car bombs, suicide bombers, individual attackers, and mortar fire. In Somalia, terrorist incidents often involve the indiscriminate use of explosives and weaponry and can occur without prior warning. Additionally, civil unrest is a persistent issue that frequently escalates into violence (U.S. Department of State Bureau of Consular Affairs, 2023).

The UK government has also issued a strong warning regarding the high likelihood of terrorist attacks and a significant kidnapping threat across Somalia. Terrorist organizations have issued threats targeting Western individuals and affiliates of Western entities. In Mogadishu, there is a persistent threat of terrorist assaults that can strike crowded areas, prominent events, government representatives, and sites frequented by foreigners without warning. Hotels, in particular, are viewed as legitimate targets by these groups due to their frequent patronage by government officials. Armed militias contribute to a dangerous level of criminal activity in Somalia, resulting in murders, armed robberies, and numerous kidnapping incidents (GOV. UK, 2023).

The Canadian government also cautions against travel to Somalia, citing an extremely volatile security situation and a high risk of domestic terrorism, particularly in south-central Somalia and the capital city of Mogadishu. Political unpredictability, including clashes between security forces and protesters and increased attacks within the capital, causing civilian casualties and infrastructure damage, further compounded security concerns. Additionally, there is a notable absence of tourist facilities across the country (Government of Canada, 2023). Similarly, most Western and Asian countries issue similar warnings to discourage their respective citizens from traveling to Somalia, emphasizing the grave security risks associated with the region.

These travel warnings have significantly impacted the country's air travel industry, as tourism and aviation are mutually dependent. Tourism relies on aviation to transport tourists, whereas aviation depends on tourism for revenue. Turbulent security environments, including wars, coups, civil unrest, and terrorism, have proven to hinder tourism in many countries. When tourists realize that their safety is at risk, their willingness to visit a destination diminishes. The severity, frequency, and perception of security events negatively impact the travel industry. The most problematic result is the decline in international tourist inflows to affected countries (Mansfeld, 1994). Timothy (2006) asserted that in situations of perceived insecurity, individuals tend to modify their travel itineraries by opting for safer locations or, in some cases, decide to cancel their travel plans altogether. This trend persisted until the collective memory of the event gradually diminished. Additionally, Timothy contended that warfare leads to the degradation of both natural and cultural assets vital for the tourism industry, redirecting travelers to alternative destinations. Furthermore, he argued that war typically results in global declines in international travel (Timothy, 2006)

The recent escalation of tensions between Somalia and Somaliland has created a pressing challenge in the administration of air traffic control, leading to a heightened risk of potential mid-air collisions. The core of the disagreement centers on the contentious issue of airspace control, with both parties accusing each other of issuing conflicting instructions via VHF radio communications. This ongoing political discord between Somaliland and Somalia has persisted since 1991, with Somaliland functioning as a secessionist entity, yet remaining unacknowledged by the international community. It is worth mentioning that Somaliland has preserved its authority over its aerodromes, while Somalia exercises control over the upper airspace, extending from Mogadishu (Aviation Week Network, 2024).

Following Ethiopia's accord with Somaliland in January 2024, which exchanged port rights along the Red Sea for diplomatic recognition, recent events have seen an exacerbation of hostilities. In response, Somalia decried this agreement and initiated measures to curtail ingress into Somaliland by precluding unauthorized flights from accessing the Mogadishu FIR. On January 17, 2024, the SCAA obstructed an Ethiopian Airlines Dash 8 transporting Ethiopian dignitaries to Somaliland, citing a lack of requisite authorization for airspace entry (Horn Observer, 20224). Consequently, Somaliland has asserted its prerogative to assert control over its airspace, precipitating a protracted airspace dispute between the contending entities (Aviation Week Network, 2024). A ramification

of this conflict occurred on February 24, 2024, when an Ethiopian Airlines (ET) Airbus A350 and a Qatar Airways (QR) Boeing 787 narrowly averted a collision, with the Traffic Collision Avoidance System (TCAS) intervening. The Mogadishu air traffic controller (ATC) mistakenly directed the Qatar Airways crew to climb from 38,000 feet to 40,000 feet, even though the Ethiopian Airlines aircraft was already at the same altitude, approximately 180 nautical miles from Hargeisa (Tatenda, 2024). This near-miss underscores the paramount significance of robust air traffic control mechanisms and the inherent hazards pervading the airspace within the region. Figure 5 shows near-miss collision of these airlines. During their flight from Phuket to Tel Aviv on February 18, 2024, the crew of an El Al 787 aircraft reported experiencing communication disturbances while traversing Somali airspace (Tatenda, 2024).

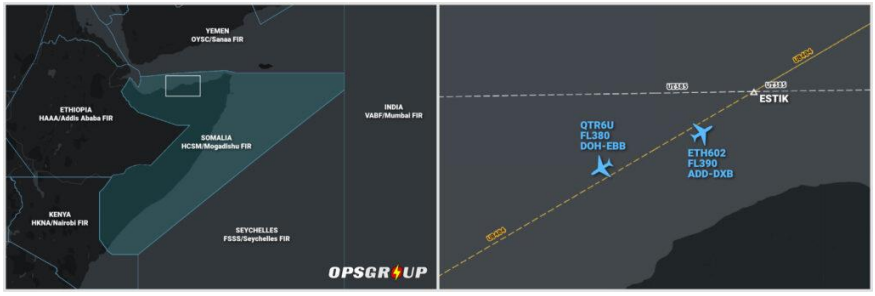

Figure 5. Near-miss collision of ET and QR (OPSGROUP, 2024)

On February 19, 2024, OPSGROUP, an organization headquartered in New Zealand tasked with monitoring potential hazards to aircraft operations, documented approximately 10 cases of aircraft operating within the Mogadishu FIR encountering a purportedly spurious controller on the designated frequency and issuing conflicting directives. Notably, the designated sector controller had not issued corresponding climb and descent clearances to the affected flight crews (OPSGROUP, 2024). The majority of these incidents occurred in the northern sector (Somaliland) of the Mogadishu airspace, as delineated in Figure 6.

Figure 6. Documented Somali airspace incidents (OPSGROUP, 2024)

Even though Mogadishu Control clearly had control over the entire Mogadishu FIR and is the only one with the power to regulate, coordinate, and provide Air Traffic Services (ATS) within the Upper FIR, transmissions from Hargeisa in Somaliland seemed to copy Mogadishu's authority without naming themselves as "Hargeisa Control" or "Somaliland Control" or using any other terminology that would make them different from Mogadishu. The apparent objective behind these actions appears to be the propagation of confusion with the intent to draw attention to the airspace issue, which could potentially result in dire consequences (OPSGROUP, 2024).

On February 25, 2024, the SCAA issued an official statement to allay public concerns and airlines operating in Somalia's airspace, reaffirming its full authority over the safety and security of flight operations. The SCAA assured the absence of any discernible security or safety risks within Somalia's airspace, emphasizing its adherence to international aviation standards and regulations. Moreover, the SCAA iterated its collaborative efforts with prominent international bodies such as the ICAO and the IATA, as well as regional and international stakeholders, to ensure the seamless operational of the airspace (Abdiqani, 20224). However, the aforementioned airspace dispute and the attendant incidents have underscored broader systemic issues within the region's airspace management framework. A conspicuous lack of coordination and communication protocols within air traffic control systems has exacerbated inherent risks, thereby posing significant peril to air traffic in the region. The potential escalation of airspace conflicts could precipitate the diversion of numerous commercial flights, thereby resulting in substantial revenue losses stemming from overflight fees.

2.6.5 Poor Aviation Infrastructure

There are two types of infrastructure that are necessary for a nation or business to maintain economic growth: hard infrastructure and soft infrastructure. Hard infrastructure encompasses the vast array of physical systems and networks essential for the functioning of a modern industrialized society. These systems include telecommunications, transportation, energy, and water supply and sanitation services, all of which play a critical role in influencing the daily lives of the public, the operations of businesses, and the activities of government entities. The maintenance of vital systems such as roads, bridges, airports, and vehicles are critical for the smooth operation of the nation. On the other hand, soft infrastructure refers to the necessary institutional frameworks for effective functioning, including access to education, financial services, and law enforcement (Bu, 2024).

The Somali Civil Aviation faces significant challenges in terms of both hard and soft infrastructure because of prolonged political instability spanning three decades. As outlined in the previous sections of this chapter, civil unrest has led to the devastation of aviation infrastructure, including airports, airlines, and regulatory bodies such as the SCAA (Harper, 2013). Recovery efforts have been slow and challenging, requiring substantial investment before sustainable operation can be achieved. The Somali National Development Plan 2020–2024 and Somali National Infrastructure Strategy (2019–2063) highlight the challenges faced by the country's primary gateway, Mogadishu Adan Adde Airport. The airport nears its operational capacity limits and is restricted to daylight operations owing to the lack of essential navigational aids such as an instrument landing system for nighttime landings. Furthermore, an airport's inappropriate location, which is home to illegal residents, poses security risks and could serve as a haven for those with malicious intentions. The incident where a Kenyan plane crashed in Bardale, Somalia and was shot down by an Ethiopian anti-aircraft gun illustrates the poor state of aviation facilities in the country. The airport lacked an air traffic control tower, and flight arrival information was conveyed via telephone, as detailed in the thesis's Terrorism Attacks in the Somali Civil Aviation Industry section.

The start of the civil war in Somalia in 1991 led to the dissolution of government institutions and cessation of essential regulatory functions in the aviation industry. This conflict also caused a loss of technical and legal expertise, researchers, and documentation related to civil aviation.

Consequently, the recovery of civil aviation institutions, including the national civil aviation authority and other government bodies involved in aviation, is still ongoing. The lack of centralized coordination and regulatory mechanisms has led to unorganized sector development. Somalia currently faces challenges in developing the administrative and technical capabilities necessary to establish laws, rules, regulations, and financial governance for sustainable infrastructure service provision. Additionally, there is a significant lack of specialized technical skills required for managing the construction and maintenance of infrastructure across various sectors (the Ministry of Planning, Investment, and Economic Development, pp. 213-218).

Both the Somali National Development Plan 2020–2024 and the Somali National Infrastructure Strategy (2019–2063) have highlighted the significant challenge of a shortage of specialized air transport professionals, particularly those with expertise in aviation security. These professionals are essential for developing a comprehensive aviation security policy program that aligns with international standards and protects the industry from individuals who may wish to cause harm. For instance, the 2016 Daalo Airline incident, which is extensively discussed in the thesis section on terrorist attacks in the Somali civil aviation industry, illustrates this challenge. In this incident, a suicide bomber managed to pass through the security screening point with a concealed explosive device hidden in his laptop, undetected. The investigation into the incident revealed that the security lapse was primarily due to insufficient knowledge of airport security personnel and their unfamiliarity with the innovative techniques employed by the al-Shabab group, which claimed responsibility for the attack.

Budget constraints and Somalia's inability to access international financing for large-scale infrastructure projects have limited investment possibilities in this sector. Insufficient budget allocations to maintain infrastructure investments exacerbates this situation. The volatile security situation in many parts of the country poses specific threats, such as ensuring the security of workers, materials, and projects during rehabilitation efforts, and safeguarding infrastructure networks after completion. In his 1998 study, Hoeffler examined the challenges of infrastructure rehabilitation and reconstruction in twelve war-affected African economies, including Somalia. His research revealed that the financial resources required for infrastructure rehabilitation and reconstruction often exceed the capacity of these governments. Hoeffler suggested that private investment in infrastructure could serve as an alternative to public investment, but investors were

hesitant to invest in countries experiencing civil war or post-conflict situations, particularly if there was a perceived risk of the conflict reigniting. Hoeffler argued that investors generally considered sub-Saharan African countries, particularly war-affected ones, as high-risk. Therefore, he recommended that following a peace agreement, these countries should focus on policy reforms, with an emphasis on building institutional and regulatory capacity to attract private infrastructure investment (Hoeffler, 1998).

Corruption leads to weak institutional governance and afflicts fragmented institutions. Corruption can manifest in various ways in the realm of civil aviation, affecting the integrity of responsible individuals, employment criteria, recruitment processes, and future investments in a country's aviation sector. For example, if we consider the Daallo Airline terror attack, it was revealed that an airport security official facilitated a suicide mission. Similarly, in the 2022 terror attack at Adan Adde airport, perpetrators dressed in Somali military uniforms managed to navigate multiple security checkpoints without raising suspicion. Subsequent investigations revealed the involvement of two former Somali Forces members who were discharged from the military. One of the attackers, speaking to Somali National Television after their apprehension, disclosed that their resentment stemming from military expulsion led them to clandestinely join Al-Shabab to support attacks on government facilities and receive a modest salary from the group. Egal (2016) highlighted that by bribing the police, Al-Shabab could easily carry out attacks in ostensibly well-secured locations, even in the presence of government security forces. Ronan and Jenkins (2017) highlighted that corruption is both a fundamental cause and a result of ongoing political instability in Somalia, a country that has persistently been ranked lowest on Transparency International's Corruption Perceptions Index since 2006. They argued that corruption infiltrates all tiers of both public and private sectors, impacting nearly every aspect of Somali society. This includes the diversion of public funds by officials for their own benefit, the extortion of bribes for essential services, and the utilization of clan-based networks for securing jobs and political positions (Ronan & Jenkins, 2017). The adverse conditions within this compromised setting could also impede private investments in the aviation industry. According to Hoeffler (1998), potential investors are likely to be deterred from engaging in countries in which the selection process appears to prioritize political affiliations and unclear criteria over technical and financial qualifications. Hoeffler

argued further that it is essential to establish a regulatory framework for each industry, ideally along with an independent regulatory body separate from the government ministry.

Based on the literature review, it is evident that the Somali civil aviation industry faces various security challenges, including political instability, persistent threat of terrorism, and inadequate aviation infrastructure. This infrastructure encompasses both hard and soft components, such as insufficient physical aviation facilities and regulatory deficiencies, shortage of skilled personnel, limited financial resources, and corruption-related problems. To gain a deeper understanding of these challenges, interviews were conducted with key stakeholders in the Somali civil aviation industry.

2.7 Research Gap

The aviation sector in Somalia faces a multitude of security challenges that significantly impede its development. As previously stated in the introduction and literature chapters, Somalia endured a protracted conflict that encompassed the collapse of the military regime on January 21, 1991, a brutal civil war among clans, and a severe humanitarian crisis that received widespread media attention. The emergence of Islamist groups in Somalia subsequently took advantage of the political vacuum and continued to target aviation facilities, resulting in reduced traffic growth. These ongoing security crises have led to the degradation and destruction of vital infrastructure, including the aviation industry, as detailed in the literature review chapter. The airports in Somalia have not been adequately rehabilitated since the conflict, and their facilities remain in poor condition. Additionally, there is a pressing issue regarding the skills and knowledge of aviation employees, as previous employees left the country due to insecurity caused by the civil war, and current employees have not received sufficient training due to the government's lack of financial capacity to implement such training. Finally, there is a need to address regulatory deficiencies in the industry as these regulations are essential to the sector's growth.

The current state of security in the industry has not been thoroughly examined in any single study. While previous research has extensively analyzed the causes and consequences of the Somali conflict, little attention has been paid to how this unrest specifically affects the country's air transport industry during its post-conflict era. Despite the evident vulnerability of civil aviation to internal and external conflicts, scholarly investigations have largely overlooked this critical aspect.

Therefore, this study seeks to address this gap by thoroughly examining the security challenges confronting Somalia's air transport industry in the post-conflict recovery era. By filling this gap, this research aims to contribute to the existing literature on the impact of Somali protracted conflict on its aviation sector and provide valuable insights for both international and national aviation policymakers, practitioners, and scholars working towards the reconstruction and revitalization of the Somali aviation sector.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter outlines the research method used in this study, its development, and the research tools employed. It begins the research design process by identifying the chosen method and its rationale. It then identifies data collection covering the target population and sample selection, and develops inquiries, instrumentation, and data collection procedures. It also identifies the data analysis, including the presentation of the analytical techniques. Finally, it presents the ethical considerations, reliability, and validity.

3.1 Research Design

Research design is a strategic plan to guide the entire research process and facilitate the alignment of actions with the intended outcomes (Hansen, 2011). This study utilized a qualitative research methodology for its efficacy in uncovering and explaining real-life events and individuals' meanings attributed to their experiences (Shire, 2019). Qualitative researchers seek to comprehend how people interpret their experiences and construct their world (Shire, 2019). 39). A qualitative approach is particularly suitable for conducting in-depth interviews in which the researcher listens to and interprets participants' stories, beliefs, and experiences. In-depth interviews are valuable for delving into the complexities of conflict-ridden societies, such as interviewing rebels in remote jungles to understand their motivations for engaging in conflict (Brounéus, 2011).

The present research of the security challenges facing the Somali civil aviation industry in the post-conflict recovery era, employed the qualitative in-depth interview method due to the unique nature of the study. Somalia, emerging from over three decades of political instability, requires capturing the specific social reality of the security challenges to its civil aviation industry. Brounéus (2011) noted that in-depth interviews are chosen to explore individual perspectives on narrowly defined themes. The questions that guided the interviews were typically semi-structured, with predetermined questions that all interviewees answered. The interviews took diverse paths based on the participants' responses, allowing the exploration of themes raised by the interviewees. The questions were open-ended, permitting concise or detailed answers. The interviewee was regarded as an expert, while the interviewer assumed the role of the student, actively listening, and

using reflective listening, follow-up questions, and probes to encourage participants to share their accounts (Milena et al., 2008).

This study employed a semi-structured in-depth interview format. The researcher developed open-ended questions in consultation with academic circles to ensure their relevance and clarity. The objective was to gather perspectives and experiences of Somali civil aviation stakeholders regarding the security challenges facing the Somali air transport industry.

This thesis was guided by the following research questions:

- What are the security challenges facing the Somali civil aviation industry in the post-conflict era?
- How do security challenges impact the Somali civil aviation industry?
- What strategies can be implemented to mitigate these security challenges?

3.2 Data Collection

The secondary data was gathered from reports of Somali government institutions, including the Somali National Development Plan 2020–2024, the Somali National Infrastructure Strategy (2019–2063), and the Somali Civil Aviation 2020 act. Additionally, secondary data is sourced from journals, books, dissertations and online platforms.

Primary data was gathered from various stakeholders in Somali civil aviation policymaking, including aviation security inspectors, aviation security advisors, airport managers, Ground Operations Manager and Air traffic controllers associated with the Somali Civil Aviation Authority in Somalia. This sample was chosen because they are involved in daily operations and possess a comprehensive understanding of existing security challenges affecting the industry.

We selected the participants from five main airports in Somalia: Adan Adde Airport, Bosaso Airport, Kismayo Airport, Shati-Gaduud International Airport, and Ugas Nur Airport. Adan Adde Airport is located in Mogadishu, the capital city of Somalia, and serves as the nation's main airport. The airport hosts both the MOTCA and the SCAA, along with their respective sub-departments. Bosaso Airport, situated in Bosaso, the economic heart of the Puntland region in northeastern Somalia, serves as a key transportation hub for the region. It facilitates both domestic

and international air travel, making a substantial contribution to regional connectivity. Kismayo Airport is located in the third-largest city in Somalia, Kismayo, in the Jubaland region of southern Somalia, which is the administrative city of Jubaland state. It serves as a vital hub for air transport in the region. Shati-Gaduud airport was constructed in 1972. It was established during the administration of Mohamed Siad Barre. It is located in Baidoa, in the Southwest State of Somalia, and boasts a population of approximately 1.5 million. Presently, it functions as the largest airport in the Southwest State of Somalia. Ugas Nur Airport, located in the capital city of Galmudug State in central Somalia, plays a crucial role in facilitating domestic air travel within the nation. Adan Adde and Bosaso Airports provide both international and domestic flights, whereas Kismayo, Shati-Gaduud International Airport, and Ugas Nur Airports primarily serve domestic flights. The selection of these airports' geographical distribution was chosen to ensure a diverse representation of experiences and viewpoints in the research, thereby enhancing an in-depth understanding of the subject matter.

The data were collected from 13 individuals (10 males and 3 females) working in these airports encompassing aviation security inspectors and advisors, air traffic controllers, and airport managers associated with the Somali Civil Aviation Authority in Somalia through the snowball sampling method, where each participant connected another potential participant to the researchers. The study employed snowball sampling due to availability and reliability concerns, leveraging a homogeneous group with shared kingship and close tribal relations—Somalis are more open with their own. Community members facilitate access to potential participants. All the participants were aged between twenty-seven and thirty-seven years during the time of the interview.

When data was collected, the participants informed the researcher that there is a scarcity of female employees in the sector as well as in other government organizations. This is the primary reason for the smaller percentage of female participants in this study compared to male participants. The study advocates for gender equality in the sector, promoting equal career opportunities for both women and men.

Participants were allowed to choose interview locations and time that were convenient for them to ensure confidentiality. Participants were selected considering factors such as Experience, gender,

occupation, and geographical regions for diverse representation within the Somali civil aviation industry. Table 3 Shows the full details of the participants who voluntarily participate in this study, including their positions, aviation experiences and the duration of each interview.

Table 3. Participants Detailed Information

Participants	**Gender**	**Position**	**Experience**	**Duration**
P1	male	Aviation Security inspector	10 Years	59.17 Minutes
P2	Male	Aviation Security Inspector	7 Years	1 hour & 17 minutes
P3	Male	Aviation Security inspector	9 Years	32.35 Minutes
P4	Female	Airports Aviation Security Advisor	8 Years	21.14 Minutes
P5	Female	Aviation Security Inspector	5 Years	15.37 Minutes
P6	Male	Aviation Security Instructor	7 Years	39 Minutes
P7	Male	Airport Manager & former ATC	5 Years	28.16 Minutes
P8	Male	Airport Manager	7 Years	26.38 Minutes
P9	Male	Airport Manager	4 Years	17.13 Minutes
P10	Female	Air Traffic Controller	3 Years	13.18 Minutes
11	Male	Air Traffic Controller	5 Years	30.30 Minutes
P12	Male	Air Traffic Controller	4 Years	21.03 Minutes
P13	Male	Ground Operations Manager	9	13 Minutes

The current research utilized Zoom for conducting research interviews via video conferencing to gather insights into participants' thoughts, given their physical distance from the participants' respective geographic locations. According to Dicicco-Bloom & Crabtree (2006), video conferencing is a cost-effective alternative to face-to-face interviews, particularly for geographically dispersed or budget-travel constraints. Braun et al. (2021) highlight that online qualitative surveys offer access to large, dispersed populations, especially in student or unfunded research. Gray et al. (2020) also noted that Zoom offers numerous advantages over other platforms. He stated that, it doesn't mandate account creation or downloads, enabling easy participation via a live link. Screen-sharing capabilities allow for document and material display, while password

protection ensures confidentiality. Zoom also offers recording options, saving interviews as audio-only or combined audio-video files, accommodating participant preferences for privacy.

Rigorous measures were implemented to manage data effectively during data collection. These measures included securely storing all recorded interviews on a protected drive and maintaining translated transcript data on a computer secured with a strong password.

Showkat and Parveen (2017) emphasizes the significance of active listening and patience while conducting interview. The researchers apply these principles to foster strong relationships and trust with the interviewees. A set of five open-ended questions (Table 4) with follow-ups was asked to elicit comprehensive responses from participants. The whole study was conducted between October 2023 and April 2024, during the fall and spring semesters.

Table 4: the five open-ended questions asked by the participants

Question 1	How would you describe the current security situation in the Somali civil aviation industry?
Question 2	What security measures are currently implemented to safeguard the Somali civil aviation industry?
Question 3	What are the main security challenges facing the Somali civil aviation industry?
Question 4	How do these security challenges impact the overall development of the Somali civil aviation industry?
Question 5	Based on your experience, what recommendations would you suggest to improve aviation security in Somalia?

These interview questions were sourced from the literature. The first question sought to gain a comprehensive description of the current state of the industry security from the participants. The second question focused on the current regulatory frameworks and practices in place to protect the industry from unlawful interference, as well as the effectiveness and compliance of these measures. The third question, which is the central focus of this research objective, aimed to understand the specific security challenges faced by the civil aviation industry. The fourth question concentrated on the impact of the security challenges outlined in question three on the industry. The fifth

question sought to gain the participants' recommendations for strategies that could be implemented to address the security challenges they identified.

3.3 Data Analysis

Analyzing qualitative data presents challenges, necessitating researchers to structure and interpret the collected data (Hilal&Alabri, 2013). This process demands alertness, flexibility, and engagement (Beech, 2000). As explained in Chapter 2 The Somali civil aviation faces political instability, terrorism threats, poor aviation infrastructure which encompasses both hard infrastructure (such as inadequate physical aviation facilities) and soft infrastructure (including regulatory deficiencies, scarcity of skilled aviation personnel, limited budgetary resources, and problems related to corruption). The interview questions guided the research, emerged from this issue, and focused on the impact of these factors on the industry. The participants' responses closely align with these factors, helping to categorize the data into themes.

Participants had the option to communicate in either Somali or English during the interviews, depending on their preference. Therefore, we conducted all interviews according to the interviewees' preferred language. Using dictionaries and consulting with translation experts, we translated the Somali interviews into English. We collected over 40 pages of transcripts. We organized the data based on similarities using manual methods like sorting, sticky notes, highlighting, and word document searches. This strategy facilitates cross-case analysis by enabling a more thorough understanding and the extraction of deeper contextual insights and frameworks, according to Paterson and Krupa (2012).

Braun and Clarke's (2006) identified six-steps of thematic analysis approach, which allows for iterative movement between stages as necessary. The steps are:

- Familiarization with Data: Initially, the researcher immerses themselves in the data to grasp semantic nuances and jot down preliminary observations.
- Code Development**:** Next, the researcher defines codes to encapsulate salient concepts within the data, ensuring comprehensive coverage.
- Theme Generation**:** Themes are distilled from the coded data by aggregating related codes that coalesce around specific constructs.

- Review and Thematic Mapping**:** The identified themes undergo scrutiny vis-à-vis the coded data and dataset holistically, often aided by a thematic map.
- Definition and Naming of Themes**:** The researcher describes and labels themes, constructing an analytical narrative that explains their significance within the research context.
- Report Writing**:** Finally, the analysis is synthesized into a coherent report, presenting findings in a structured manner conducive to academic discourse.

Following this systematic approach, I immersed myself in the data by thoroughly reviewing field notes and recordings, producing detailed English transcripts. This deep dive enabled a comprehensive understanding of participant tones and content, facilitating the identification of both differences and commonalities across cases. Then, participant comments were categorized into positive, negative, and neutral groups, leading to the emergence of initial codes within each category. Drawing inspiration from Saldaña's (2009) definition of coding as a means of organizing data into manageable units and identifying meaningful patterns, these codes were then combined and analyzed for relationships and themes. Through a process of condensation and consolidation, overlapping or similar codes were merged to form main themes. These themes were then scrutinized in relation to the research question. This thematic analysis involved both the reduction of qualitative text and the synthesis of emerging patterns from the narratives. Ultimately, seven themes were refined, six of which aligned with the initial literature, while one was novel discoveries from participants responses.

Table 5 presents a comparative analysis of the participants' responses regarding themes and codes. The table provides a summary of what the participants said about each theme and organizes the phrases used to describe each issue under each theme. Participants’ responses were categorized as negative (−) or positive (+). Negative responses included participants who showed hopeless when answering the questions, and mostly had negative answers. Meanwhile, positive participants demonstrated optimism and their responses were generally positive. A key takeaway from the table is that the majority of participants' responses were negative, indicating that multidimensional security challenges affect the industry. These themes are further explained and discussed in the next findings chapter.

Table 5: comparative analysis of the participants' responses (P= Participant).

Themes/Categories/ Codes	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13
Theme1: Political Instability													
Long-lasting civil conflicts	-		-					-					
Unstable political environment	-			+	+		+	-					
Central government collapse	-												
Civil war	-	-		-					-				
Dissolution of all aviation institutions	-	-	-	-									
Clan militias seized control of airports	-	-											
Absence of a legitimate government	-	-											
International airlines stopped flights to Somalia	-	-											
Lack of a functional government allowed terrorist groups to arise	-												
Country lost airspace management & regulatory bodies	-	-											
National flag carrier stopped operation		-											
ICAO assumed control airspace management		-											
Lack of a central, single force that controls all the regions of the country		-		-									
SCAA unable to monitoring, audits & inspect airports in Somaliland, breakaway region from Somalia		-											-
Management of airspace relocated to Kenya from 1996 to 2018		-											
Political conflicts among Somali politicians						-							
Political tension led to the temporary closure of several airports owing to security threats						-							
Theme 2: Terrorism Threats													
Al-Shabab heightening security issues	-												
In 2016, carried out a suicide attack on Airlines	-		-	-									
Terrorist attack airports	-	-				-		-					
These security threats' impacts persist	-		+						-				
Terrorist groups attempt to target Organizations' employees	-												
Terrorism restricts foreign visitors	-												
International airlines in Somalia face challenges due to terrorism threats.	-												
Theme 3 Poor Aviation Infrastructure													
Modern Technological Deficiency													
Some reginal airports Checked Pax Manually due to absence security equipment		-	-			-	-		-	-	-		
Others use obsolete equipment that does not meet regulatory standards		-	-			-	-						

Some airports do not have airport fences, which are crucial for ensuring airport security		-			+								
Absence of security screening equipment for passengers at airports.											-		
Employee Knowledge Gap													
Poor enforcement of security protocols due to a lack of knowledge	-												
Insufficient Staff with comprehensive knowledge and expertise in aviation security	-	-	-	-	-		-	-			-		
lack of necessary employee training		-	-		-		-		-				-
viability of security training programmes is less than 50%.					-				-				
Regulatory deficiency													
Lack of regulations for overseeing the industry		-	-										
Government obtained control airspace before implementing essential aviation regulations		-	-										
SCAA has not fully implemented all ICAO standards and best practices		-	-	-									
Implementation & compliance are at 35 to 45%		-	-	-									
Lack of Aviation Security Awareness													
lack of security awareness and coordination among stakeholders	-		-	-					-				
Insufficient security threat awareness	-					-							
Absence of incident reporting system	-											+	
Inadequate risk management & response	-											-	
Lack of a culture of aviation security				-									
Lack of Adequate Budget													
Insufficient budget to enhance staff knowledge		-	-	-									
Insufficient budget to modernize airport equipment		-	-	-						-			
Lack of enough budget to improve employee moral		-	-		-			-					

3.4 Ethical Consideration

DiCicco-Bloom and Crabtree (2006) identified four key ethical considerations relating to the research interview process:

- Minimizing the risk of unexpected harm;
- Safeguarding the confidentiality of interviewee information;
- Effectively communicating the study's nature to interviewees; and

- Mitigating the risk of exploitation.

This study emphasizes the ethical dimension, ensuring confidentiality and anonymity for all participants. Strict measures were taken when contacting participants, with the researcher transparently conveying the study's objectives and potential impacts and providing the option to withdraw at any time without stating reasons. We sought consent from participants after they had read the information sheet that detailed the research objectives, procedures, confidentiality, voluntary participation, and risks and benefits. We provided participants with a comprehensive outline of the research and opportunities for questions to ensure informed consent. We obtained ethical approval from the thesis supervisor prior to the interview process.

We employ pseudonyms in the analysis phase to conceal the full identities of those opting for anonymity. Qualitative research commonly uses this method to ensure participant anonymity (Itzik and Walsh, 2023). Shire (2019) argues that ethical considerations extend beyond participant engagement to data reporting. The study ensured confidentiality by promising to delete recordings after analysis. We encouraged participants to freely express their thoughts and engage in natural conversation to prevent misinformation.

3.5 Reliability and Validity

Ensuring reliability and validity are critical aspects of qualitative research, serving to gauge its objectivity and the credibility of its findings. According to Elin and Leon (2010), these concepts can be categorized into internal and external dimensions. Internal reliability concerns agreement among multiple researchers within a study group regarding their observations and interpretations. Conversely, external reliability pertains to the ability to replicate the research with similar outcomes. While achieving high external reliability can be challenging due to variations in settings, Elin and Leon (2010) recommend adopting a similar role as the original researcher when replicating the study to enhance reliability.

To ensure reliability within this thesis, the Methodology chapter extensively explores both the data collection process and the execution of interviews. All interview inquiries are delineated in table 4 of chapter 3, facilitating other researchers to replicate the study under consistent circumstances and attain analogous outcomes. Offering a comprehensive depiction of the research procedure is crucial for upholding the integrity and dependability of the findings.

Internal validity concerns the consistency and alignment of researchers' conclusions with the theoretical frameworks guiding their research (Elin & Leon, 2010). In qualitative research, internal validity is often considered robust due to the researchers' extensive time spent observing social settings, which fosters a strong correspondence between their observations and theoretical concepts (Elin & Leon, 2010). However, external validity presents a challenge in qualitative research, as it pertains to the generalizability of findings to other social settings. Qualitative studies often use small sample sizes and case study methods, limiting their external validity (Elin & Leon, 2010). To improve validity and reduce the risk of researcher bias in data interpretation, all interviews for this thesis were recorded, and the transcriptions were returned to the interviewees for verification and approval

CHAPTER 4

DISCUSIONAND FINDINGS

This chapter presents the findings, discussions on the research questions, and the overall study objectives. In alignment with the previous chapters, this research aims to explore the security challenges facing the civil aviation industry in Somalia in the post-conflict recovery era and examine their impacts on the industry. As stated in the methodology chapter, the study focused on a specific sample consisting of personnel within the Somali civil aviation industry. We selected participants from five primary airports in Somalia: Adan Adde Airport, Bosaso Airport, Kismayo Airport, Shati-Gaduud International Airport and Ugas Nur Airport. We selected these airports based on their geographic dispersion to ensure a diverse representation of experiences and perspectives in the study.

Following Braun and Clarke's (2006) six-step analysis, this study identifies three main themes and five sub-themes through a cyclical process. The three main themes, derived from data analysis, are: Political Instability, Terrorism Threats, and Poor Hard and Soft Aviation Infrastructure. The Poor Hard and Soft Aviation Infrastructure further comprise five sub-themes: Deficiency of Modern Technology, Employee Knowledge Gap, Regulatory Deficiency, Lack of aviation security awareness, and lack of adequate budget (themes are indicated in Table 4).

4.1 Political Instability

As the literature indicates, the aviation industry in Somalia is vulnerable to political instability during periods of unrest. Owing to the collapse of the state, the national flag Carrier, Somali Airlines, was forced to cease operations. Somalia lost control of its airspace, which was subsequently managed by Nairobi, Kenya until June 2018. The country's airspace is classified as Class G, which indicates an uncontrolled airspace that provides advisory services to pilots (Maruf, 2023). Although security has improved, and airspace has been restored to Class A status after a 30-year absence period, threats persist. The U.S. FAA issued a NOTAM on December 27, 2022, restricting flight operations in the Somali airspace to below FL260 until January 7, 2027, because of security concerns related to militia activities (Federal Register, 2022, December 27).

This is supported by the responses of the majority of participants. They defined the present security situation of the industry as almost similar to that of the past. P1 stated that the industry is confronted with significant security issues owing to long-lasting civil conflicts that have greatly hindered its progress. The collapse of the central government during the Civil War in 191 resulted the suspension of all the aviation institutions. Following the collapse of the government, clan militias seized airport control to collect money, leading to the destruction of facilities. Because of the absence of a legitimate government regulating the nation's airspace, international airlines stopped their flights to Somalia. The lack of a functional government also allowed extremist groups, such as Al-Shabab, to arise. He asserted that: "*nation's political environment is currently unstable which limits aviation development*".

Other participants mentioned similar challenges. They revealed that all aviation institutions and infrastructure were destroyed during the war. Somali Airline terminated its operations. The country's airspace management and regulatory bodies, such as SCAA, were also affected by this conflict. The militia groups have caused substantial damage to most of the country's airports. ICAO assumed responsibility for the administration of the Somali Civil Aviation. The control center for Somalia's airspace was relocated to Nairobi. P 2 stated that the current security challenge facing the sector is the absence of a single force governing the whole country. He stated that:

> The absence of a single central authority in the country leads to occasional conflicts between the federal government and regional states, which impacts industrial security. Militia groups linked to certain politicians sometimes shut down airports and forced airlines to stop operations in specific areas, posing security threats to industry operations. These militias attempt to seize control of airports or airstrips to showcase their power and achieve political objectives. The SCAA cannot monitor, audit, or inspect airports in Somaliland, a breakaway region from Somalia, due to political conflict between the two entities.

P 4 expressed support the notion of political instability in the country's aviation industry. He stated:

> When visit regional airports in federal member states for oversight, they occasionally encounter difficulties in performing our duties, especially if there is political conflict between the regional

> state and central government. This lack of understanding of the aviation sector can be attributed to politicians who may politicize their functions, rather than recognizing its role as a service provider.

However, P5 reported an improvement in Somalia's aviation industry security, stating that it has improved 90% in recent years. He notes that most major airports with international flights have robust security measures in place, except for smaller airstrips, despite the country's civil unrest.

4.2 Terrorism Threats

According to the literature, The U.S. Department of State Travel Advisory Levels label Somalia as red, warning against travel due to security threats like crime, terrorism, and civil unrest. Terrorist groups plan attacks on various locations such as airports, seaports, hotels, and restaurants. Attack methods include car bombs, suicide bombers, and mortar fires. Civil unrest in Somalia often leads to violence. This is supported by a response from participants who states terrorism threats against Somali civil aviation. P1 claimed that Al-Shabab group heightened security issues facing the sector. He mentioned that in n 2016, Al-Shabab carried out a suicide attack on Daalo Airlines. He highlighted that "*Terrorist groups attempt to target aviation' employees, attack airports and foreign tourists and business travelers often have limited mobility because of concerns about terrorism in the country.*" P8 also highlighted this security threats:

> Currently, we are facing terrorist threats. They occasionally attack Adan Adde airport by throwing bombs in the Halane section, where UN agencies and Western diplomatic missions such as the US Embassy and the UK are located. These attacks typically occur at night and cause instill panic among personnel and passengers. I witnessed that the bomb thrown by the militia at the airport a few days ago injured one individual.

P6 stated that terrorist threats caused domestic flights to divert from their direct routes, and instead took longer paths to avoid areas controlled by terrorist groups. He explained that if aircraft flew these routes, they risked being targeted and shut down by the terrorists. Consequently, airlines rerouted long flights to avoid potential dangers, leading to increased fuel consumption and longer journey times, which in turn raised ticket prices for passengers. This participant also claimed that security measures at some airports resembled a war zone, with heavily armed soldiers causing international tourists to feel frightened and damaging the airport and country's reputation. In addition, he mentioned that security threat alerts resulted in the temporary suspension of international flights and closure of airports due to security concerns, impacting airport operations

and passenger mobility. This, in turn, affected the revenue collected by airport customs. He warned that if these security concerns are not effectively addressed, they could lead to future problems, as airlines, especially foreign ones, may decide to stop operating in the country. He stated that "*Somali civil aviation market is an emerging market that has attracted several international airlines and domestic investments. However, security challenges may impede this progress and negatively impact a country's economic development, as aviation and economic prosperity are closely interconnected*". P2 and P8 also reported similar security issues, explaining that terrorist threats still exist, although their influence has diminished compared with previous years. Occasionally, they attempt to execute bomb attacks at airports with the aim of disturbance operations.

Although p3 acknowledged that the current state of Somali Civil Aviation Security is more stable than it was during the civil conflict years, he noted that security was altered in 2016 when terrorists carried out a laptop bomb attack on a Daallo airline flight departing from Somali airport. This event prompted international and national security concerns, resulting in airport security being strengthened through extensive investigations, screening of individuals entering or leaving the country, and the deployment of sniffer dogs at Adan Adde Airport. To prevent future incidents, a mandatory search policy was implemented with the declaration of *'no search, no flight*.'

All the above responses from the study participants are consistent with the Canadian, U.S., and UK governments' warnings against travel to Somalia due to the high risk of domestic terrorism, particularly in Mogadishu, and the constant threat of terrorist attacks on crowded places, high-profile events, and government officials. The recent security alert from the US Embassy in Mogadishu on April 8, 2024, supports these concerns, with threats to multiple locations in the city and the cancellation of all movements. This alert states that "*the Embassy received information about threats to multiple locations in Mogadishu, including Adan Adde International Airport, and that all movements have been cancelled*" (U.S. Embassy in Somalia, 2024).

4.3 Poor Soft and hard Aviation Infrastructure

4.3.1 Deficiency of Modern Technology

The Somali Civil Aviation is currently facing significant challenges related to both its hard and soft infrastructure, which can be primarily attributed to the ongoing political instability that has persisted for over three decades. One of the major deficiencies, as highlighted by P3 of the study participants, is the lack of a modern technology infrastructure. He expressed that the absence of a

legitimate government capable of establishing and enforcing regulations has resulted in the absence of regulatory oversight, which has enabled all aviation organizations to purchase and implement technology-lacking specifications that conform to international standards. He stated that "*even airports in Somalia, which are considered to have adequate equipment, still employ single-window or single-view screening, a practice that has become prevalent in most airports worldwide. The current technology is considered obsolete*". In addition, P7 revealed that airports in the country are equipped with outdated screening equipment such as X-ray scanners and CCTV cameras. She asserted that "*Airports still rely on single-view screening, a system that has been discontinued by the majority of airports worldwide*." She stated that, despite having such technology, obtaining modern equipment is challenging because of the country's financial limitations and current security conditions. Other study participants mentioned similar technological infrastructure issues. P6, P9, P10, and P11 highlight that some regional airports face security challenges because of the lack of advanced equipment. In these airports, passengers undergo manual inspections. They explained that these airports do not have the necessary passenger screening equipment, leading to manual inspections of passengers and their luggage. This method may not be as effective for detecting harmful hidden items that could pose security risks. They emphasized that the absence of X-ray screening devices for passengers and their luggage checking could result in potential security threats. Participants further mentioned that some airports do not have airport fences, which is crucial for ensuring airport security.

4.3.2 Employee knowledge Gap

The participants collectively acknowledged the scarcity of competent aviation personnel in the industry. P3 specifically pointed out the insufficiency of security personnel and their lack of appropriate aviation security proficiency, emphasizing the need for security training programs. Despite recognizing the necessity of such programs, the financial limitations prevent the provision of adequate training. P5 underscored the deficiency of trained aviation security personnel at regional airports compared with those in the capital city of Mogadishu. He pointed out that Adan Adde Airport in the capital city had competent professionals in both technical equipment and communication, but Somali Civil Aviation did not deploy trained aviation security personnel to regional airports. He stated that the airport he manages has some security equipment, but remains unused because of a lack of skilled individuals capable of operating it. This participant emphasized

that the police force is solely responsible for security measures at regional airports. Miscommunication may arise between security forces and foreign visitors because of the police force's lack of proficiency in the languages spoken by foreign visitors. He mentioned that language differences can lead to security problems when bodyguards and passengers misinterpret one another. He concluded that the scarcity of knowledgeable employees is responsible for training obstacles, attributing it to financial constraints. He stated, "*I can tell you that the viability of continuous security training programs is less than 50%.*" Other participants also highlighted that security personnel, especially those working in airports, frequently lack proper training, which makes them susceptible to security breaches. To prevent such incidents, they recommended employee training to recognize aviation hazards, including sharp objects that can pose a threat. Without proper security training, it is easy for unauthorized individuals to bypass security measures and cause harm.

4.3.3 Regulatory deficiency

P2, P3, and P4 reported in 2023 that aviation security legislation, including the National Aviation Security Program; Quality Control, Auditing, and Inspection; and the National Aviation Facilitation Program, was enacted. To ensure successful implementation, they organized workshops to educate stakeholders about the requirements, compliance, and benefits of these regulations for both public and private industries. Participants highlighted the implementation gap in these regulations. They reported a *35-45%* implementation and compliance rate for these regulations. They noted that these regulations apply exclusively to Adan Adde Airport in Mogadishu, the nation’s capital, and that all aviation entities operating at airports must comply with the regulations. However, the implementation of these regulations at other airports across the country is still in its early stages, with the first phase underway. The participant also pointed out that Somalia's airspace was managed by Nairobi, Kenya, because of civil conflict until 2018, when Somalia regained control over its airspace. Between 1991 and 2018, civil aviation services were significantly interrupted because of the civil war. Since 2018, the industry has made significant progress, particularly in terms of legislation. They stated that airlines registered in Somalia cannot fly outside of Somalia at the moment because of the country's failure to meet ICOA standards; however, the main goal of 2024 is to fully enforce these regulations nationwide and fulfill all ICAO standards and recommended best practices.

4.3.4 Lack of Aviation Security Awareness

According to the study participants, one of the key issues facing the aviation industry is a lack of security awareness. This problem stems from a knowledge gap among employees, which can lead to risky behaviors, such as allowing acquaintances to skip parts of the check-in process or failing to meet grooming standards. P4 cited an example of "*aviation security officers who did not properly wear their ID cards or closely monitor gate access".* The participant pointed out that large gatherings at airport terminals to greet public figures can create opportunities for unauthorized individuals to harm the industry. There is also a lack of a security culture in the aviation industry, as many individuals in the security sector have not received adequate training. P4 emphasized that aviation stakeholders need to understand that aviation security is a collective responsibility, not just the responsibility of those enforcing security measures. He also noted that most aviation security staff lacked theoretical expertise in areas such as Chicago Annex 17 of Aviation Security and Annex 9 of Aviation Facilitation. He highlighted the need for better cooperation among the various entities responsible for aviation security, including the police and intelligence forces. The issue of insufficient security cooperation was also highlighted by P9. He explained that foreign troops from AMISOM stationed at the airport, whose purpose is to help the Somali government in combating terrorism, have established outposts in the airport area to protect it from terrorist attacks. However, "*these soldiers follow their own security measures, whereas airport administrators and the SCAA implement their own security measures, resulting in a lack of coordination and cooperation between them".*

P6 pointed out that security personnel at airports and businesses often lack sufficient training, particularly regarding aviation security hazards. Continuous training is necessary for aviation security personnel to be knowledgeable about potential threats posed by sharp objects. Without appropriate security training, individuals cannot effectively detect hazards. According to P7, approximately *90%* of employees working at airports lack sufficient aviation security knowledge. These employees are often hired without adequate training, resulting in a poor understanding of the ongoing threat environment in aviation, both domestically and internationally. The lack of security awareness among stakeholders, including government officials and the public, is due to the industry staff's inability to convey that aviation security is a shared responsibility.

4.3.5 Lack of Adequate Budget

The majority of participants emphasized that financial constraints were a prevalent issue in Somalian aviation, as insufficient budgets led to inadequate infrastructure and a lack of necessary employee training. Owing to a lack of funding, regional airports often lack essential security equipment, such as passenger check systems, and use outdated equipment that does not meet regulatory standards. Policymakers from the SCCA who were participants noted that they were unable to compel airports to use modern equipment as required by civil aviation regulations because of their inability to secure funding. Participants also highlighted that some airports lack essential physical infrastructure such as airport fences, which are critical for ensuring security. The issue of inadequate training exists because workers lack appropriate training owing to insufficient budgets. Adequate financial resources are necessary for aviation security, including staff training, salaries, and procurement of security equipment. A budget is also necessary to mobilize efforts to increase aviation security awareness. Owing to insufficient funds, there is a shortage of skilled staff in the industry. Several participants reported that they were offered free training workshops by an international regional aviation organization, but they were unable to attend them due to financial constraints, such as travel and accommodation expenses.

The findings obtained from the study participants' responses align with the findings of the Ministry of Public Works and Reconstruction in Somalia's 2018 report and The Somalia National Development Plan (2020-2024, pp. 213-218), which were published by the Ministry of Planning, Investment, and Economic Development. These studies highlight the absence of coherent rules and regulatory frameworks, financial constraints, political instability, and land-related concerns are among the primary obstacles impeding industrial development. The lack of centralized coordinating mechanisms, inconsistent policies between federal and local governments, and insufficient financial resources all contribute to this issue. Furthermore, these findings are consistent with a report published by the African Development Bank in 2016, which revealed the inadequacies of airport facilities, shortage of skilled personnel, and lack of effective regulations due to civil conflict. The report emphasized the need for infrastructure development, regulatory framework enhancement, and personnel training. It identified gaps in policy formulation and stressed the importance of legal and regulatory surveillance, compliance reviews, and updates to ensure adherence to ICAO standards (African Development Bank, 2016, pp. 94–98). The literature

chapter also reveals that terrorist groups smuggle laptops through security scans without detection. This failure was attributed to the inadequate knowledge of airport security personnel and their unfamiliarity with the innovative techniques employed by the al-Shabab group. The sophistication of these techniques makes it challenging for security staff to identify them, as they have not previously encountered such methods. (Maruf, 2017).

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

In 1960, Somalia obtained independence (Muhumed, 2020) and commenced the development of air transport. In 1964, Somali Airlines, a joint venture with Alitalia, was established with the acquisition of three DC-3 aircrafts. Alitalia provided management, technical support, and training until the government assumed full control during the 1970s (Kaplan, 1969, p.23-24). Operations were conducted from Mogadishu, with cargo and passenger flights serving ten domestic cities and international routes to Europe, the Middle East, and Africa.

However, since 1991, Somalia has lacked stable government. Following its independence in 1960, a military coup in 1969 led to an authoritarian regime under General Siad Barre. Although state institutions remained stable in terms of security, civil services became heavily oriented towards supporting the military government's survival. Over time, the military regime became more authoritarian and opposition militias emerged to overthrow it. After the overthrow of the military regime, Somali civil aviation suffered severe destruction as clan militias destroyed airports and infrastructure. The national carrier ceased operations and the country lost airspace management, resulting in the suspension of international flights due to civil war and political instability. In 1991, the airspace of Somalia was taken over by UNISOM because of civil war and political instability, and in 1993, airspace control was transferred to the ICAO project for Somalia. After several initiatives, in 1996, the ICAO established the CACAS project based in Nairobi, which was mandated to provide flight information services within the Mogadishu FIR. The emergence of the Islamic Movement, which capitalized on the political vacuum, exacerbated civil aviation disruption, aiming to destabilize the government and isolate it from the rest of the world. The country is still recovering from this prolonged period of political chaos and insecurity, which has severely impacted its civil aviation facilities.

The civil aviation sector of the country has been recovering since the 2000s owing to the devastating impact of civil war and has made tangible progress. In December 2014, the FGS and ICAO signed a transition plan project (SOM 14/801 and SOM 14/802), also known as Flight Information Services for Somalia (FISS), which outlined the airspace management transfer

roadmap. On June 18, 2018, the FGS took full control of airspace management from the ICAO, resulting in the shutdown of the Nairobi FISS station. However, following the ongoing activities outlined in the roadmap project, the FGS successfully regained the collection of Air Navigation revenue from the ICAO on August 1, 2019. The Civil Aviation Act was approved by the FGS Parliament in 2020 and promulgated by the Presidential Decree. The aviation market in Somalia is thriving, developing, vibrant, and competitive, attracting both domestic and well-known international airlines in recent years, including Turkish Airlines, Qatar Airways, Ethiopian Airlines, Kenya Airways, Flydubai, Uganda Airlines, and Air Djibouti. These developments indicate that the future of Somali civil aviation looks bright and will likely attract more airlines in the coming years.

Despite the developments in the country's aviation industry, there are still security challenges that impede its progress. Previous research has extensively analyzed the causes and consequences of the Somali conflict but has paid little attention to the specific impact of this turmoil on the country's air transport industry during its post-conflict recovery phase. Therefore, this study aimed to address this gap by thoroughly examining the security challenges of Somali civil aviation industry in the post-conflict era.

This study employed in-depth interviews using a qualitative research methodology to achieve its objectives. To collect the data, the study utilized online zoom interviews, which provided a flexible and effective means of capturing the real events and experiences of the respondents, resulting in high-quality data. The study population comprised Somali civil aviation workers, with a sample of three female and ten male staff members drawn from Somali civil aviation using snowball sampling. The study participants were asked five open-ended questions, with follow-up questions to elicit information. Secondary data were also extracted from various sources, including government institutions, online journals, dissertations, and the media. The collected data were analyzed using Braun and Clarke's (2006) six-phase thematic analysis framework, which provided a structured approach for categorizing and organizing the data. The data were thoroughly reviewed through intense reading, reducing, coding, and paraphrasing, or by directly quoting the respondents' stories. Ultimately, seven themes and subthemes were generated, which interpreted the overall perspectives of the study participants.

While there were minor differences among participants' answers on the topic being asked, the majority of responses indicated that the Somali civil aviation industry is currently facing multifaceted security challenges, including political instability, terrorism threats, poor aviation infrastructure (both soft and hard), deficiency of modern technology, lack of employee knowledge, regulatory deficiencies, lack of aviation security awareness, and an inadequate budget.

5.1.1 Political Instability

Participants indicated that the aviation industry in Somalia faces significant security challenges stemming from ongoing civil conflicts that have hindered its growth. The collapse of the central government during the Civil War of 1991 resulted in the disintegration of all the aviation institutions. Clan militias took control of airports to extort money, leading to infrastructure destruction, and international airlines ceased their operations in Somalia. Currently, Somalia lacks a unified central authority governing all regions, leading to sporadic conflicts between the federal government and regional states and impacting industrial security. They stated that militia groups associated with certain politicians sometimes shut down airports and halted airline operations in specific regions. Moreover, the Somali Civil Aviation Authority was unable to monitor or regulate airports in Somaliland, a breakaway region, because of its claim of independence from Somalia.

5.1.2 Terrorism Threats

The study participants pointed out ongoing terrorist threats, although they have decreased somewhat recently. They mentioned occasional attacks on Adan Adde airport, especially in the Halane section, where UN agencies and Western embassies are located. These attacks usually occur at night and cause fear among the staff and travelers. As a result of these security concerns, airports in the country are militarized, such as the Bottle Field, which makes international tourists nervous and damages the country's reputation. Participants recommended that if these security challenges continuous, they could deter international airlines from continuing their services, jeopardizing the growth of Somalia's emerging aviation market and impeding the country's economic development, given the symbiotic relationship between aviation and prosperity.

5.1.3 Deficiency of Modern Technology

Participants reported that the industry lacked adequate technological infrastructure. Following the demise of the central government, airlines and airports have continued to operate, but regulations have not been established because of the lack of a legitimate authority capable of implementing

such policies. The absence of regulatory oversight has allowed all aviation organizations to procure and install technology that does not conform to international standards. They mentioned that the current technology is outdated, and even airports in Somalia, which are considered to have adequate equipment, still rely on single-window or single-view screening, a practice that has become prevalent in most airports worldwide. They also noted that regional airports often face security challenges owing to a lack of advanced equipment and passengers are manually inspected. This is because these airports do not have passenger screening equipment, which can lead to the manual inspection of both passengers and their luggage. However, manual checks may not be as effective in detecting hidden dangerous items that pose security risk. Therefore, the absence of X-ray screening devices for passengers and their luggage poses potential security threats.

5.1.4 Lack of Employee knowledge

The participants indicated that there were insufficient security personnel to meet the current demand, and that certain employees lacked essential aviation security expertise. In particular, they noted that regional airports lacked well-trained aviation security staff, in contrast to airports in the capital city of Mogadishu. Adan Adde Airport in the capital is equipped with skilled professionals in equipment and communication, but Somali Civil Aviation has failed to deploy trained aviation security staff to regional airports. Some airport managers mentioned that they had security equipment at airports under their management, but they remained unused because of the lack of skilled individuals capable of operating it. They characterized the effectiveness of security training programs as being less than 50%.

5.1.5 Regulatory deficiency

Participants unanimously agreed that all necessary regulations had been enacted, but they were not yet fully implemented as they were still in the initial phase of being put into action. They stated that The National Civil Aviation Security Program, National Civil Aviation Quality Control Program, National Civil Aviation Training Program, and Facilitation Program were enacted in 2023; however, the rate of implementation of the regulations was 35–45%. These regulations apply exclusively to Adan Adde Airport in Mogadishu, the nation’s capital, and all aviation entities operating at airports must comply with them. However, the implementation of these regulations at other airports across the country is still in its early stages, with the first phase underway. Respondents pointed out that airlines registered in Somalia could not fly outside Somalia because

of the country's failure to meet ICOA standards. They emphasized that their main goal for 2024 was to fully enforce these regulations nationwide.

5.1.6 Lack of Aviation Security Awareness

Participants emphasized that the aviation industry confronts a significant challenge concerning the absence of security awareness linked to the employee knowledge gap. They stated that some airport personnel may prioritize expediency over security by allowing close friends or family members to bypass parts of the check-in process, presuming that they do not pose a threat. Moreover, they mentioned large gatherings at airport terminals to greet public figures, which could create opportunities for unauthorized individuals to inflict harm upon the industry. They said that they see Aviation security officers sometimes fail to maintain grooming standards, such as wearing their ID cards incorrectly or not closely monitoring gate access. Additionally, they mentioned an absence of a security culture within the aviation industry, as many individuals have not received adequate training. It is crucial that all individuals, not just those responsible for enforcing security measures, prioritize aviation security. They claimed that roughly 90% of individuals working in the industry, especially at airports, possess insufficient knowledge of aviation security. These employees were hired without prior knowledge or adequate training, resulting in a poor understanding of the ongoing security threats that aviation faces both domestically and internationally. This lack of security awareness among stakeholders, including government officials and the general public, arises from the inability of the industry staff to convey that aviation security is a shared responsibility for all, rather than just those in charge.

5.1.7 Lack of Adequate Budget

The overwhelming majority of participants in the study indicated that financial constraints were prevalent in the aviation industry in Somalia. These limitations were characterized by inadequate budgets, resulting in insufficient infrastructure and a lack of necessary employee training. They indicated that an insufficient budget leads to inadequate infrastructure and a lack of necessary employee training. They attributed this to budgetary limitations. As a result, some regional airports do not have essential security equipment and manually check passengers, while others utilize obsolete equipment that does not comply with regulatory standards.

The results obtained from the study are consistent with previous reports by the Ministry of Public Works and Reconstruction in Somalia's 2018 report and The Somalia National Development Plan

(2020-2024, pp. 213-218), which were published by the Ministry of Planning, Investment, and Economic Development. These studies highlight the absence of clear rules and regulatory frameworks, financial constraints, political instability, and land-related concerns as the primary obstacles impeding industrial development. The lack of a centralized coordinating mechanism, inconsistent policies between federal and local governments, and insufficient financial resources all contribute to this issue. Furthermore, these findings align with a report published by the African Development Bank in 2016, which revealed the inadequacies of airport facilities, the shortage of skilled personnel, and the lack of effective regulations due to civil conflict. The report emphasized the need for infrastructure development, regulatory framework enhancement, and personnel training. It also identified gaps in policy formulation and stressed the importance of legal and regulatory surveillance, compliance reviews, and updates to ensure adherence to ICAO standards (African Development Bank, 2016, pp. 94–98).

5.2 Research Limitation

Although the research objectives were achieved, there are some limitations that should be acknowledged. This study examines security challenges of Somali civil aviation industry in the post-conflict era, focusing on terrorism and political issues. These topics are inherently delicate and can influence participants' opinions and feelings. Some participants expressed concern about the sensitivity of the subject and feared that their personal identity might be disclosed during the data collection. To address this concern, I assured the participants that their personal information would remain confidential and would never be disclosed in any presentation or publication. I also promised to delete the recordings automatically after analysis. Additionally, I distributed consent forms to the participants, clearly outlining the study's objectives and potential impacts, and offering the option to withdraw at any time without the need to provide a reason. Despite these reassurances, some participants remained hesitant to answer certain questions fully, particularly those related to terrorism. However, most participants appeared to gain confidence after these assurances and were able to adequately answer the research questions. Nevertheless, the sensitivity of the topic remains a limitation as it may have affected the depth and completeness of the responses.

The key objective of this research is to open a new chapter and explore an area that previous researchers have not sufficiently addressed, which is the security challenge of the Somali civil aviation industry in the post-conflict era, and to contribute valuable insights to the field despite the

inherent challenges posed by the sensitive nature of the topic. This study has achieved this objective and identified the multidimensional security challenge of the Somali civil aviation, comprising political instability, terrorism threats, deficiency of modern technology, employee knowledge gaps, regulatory deficiencies, lack of aviation security awareness, and lack of sufficient budget.

5.3 Recommendation

This study presents recommendations and potential strategies to mitigate the security challenges identified in the study's findings, most of which were reported by the research participants. The study recommended to the Somali government, Somali Civil Aviation Authority, and other stakeholders to focus on Training and Capacity Building, Resource Allocation, Policy and Collaboration, Technological Upgrades, and Strategic Implementation and Monitoring.

5.3.1 Training and Capacity Building

It is essential to prioritize the development of aviation security personnel's abilities and knowledge. The implementation of ongoing and up-to-date training programs is necessary to prepare security staff for existing and emerging threats. The recruitment of individuals with a background in aviation will enhance the team's expertise, especially in understanding and applying aviation security standards. Furthermore, initiating security awareness campaigns will educate all stakeholders about their vital roles in maintaining a secure environment, emphasizing that security is a shared responsibility.

5.3.2 Resource Allocation

Allocating adequate resources is crucial for maintaining and enhancing security measures. A sufficient budget enables the procurement of modern security equipment, such as advanced airport screening technologies, and ensures regular maintenance of existing infrastructure. Financial resources are vital for offering competitive salaries and regular training, which are essential for boosting employee morale and promoting professional growth.

5.3.3 Policy and collaboration

A robust regulatory framework must be developed to ensure optimal security standards. This includes strict requirements for professional conduct, such as specific grooming standards and uniform policies, which help to make security personnel easily identifiable. Bolstering cooperation between international and national security organizations is essential for enhancing information

sharing and conducting joint security operations. A government-led oversight committee should be created to periodically evaluate the effectiveness of security measures and to adapt policies to address emerging threats.

5.3.4 Technological Upgrades

Implementing the latest security technologies is of paramount importance. Deploying cutting-edge security systems, such as biometric verification and extensive surveillance systems, will significantly bolster the capacity to detect and respond to security threats. Enhancing equipment at regional airports to streamline passenger screening procedures and replacing obsolete technologies will guarantee that all security measures are dependable and comply with international standards.

5.3.5 Strategic Implementation and Monitoring

Implementing and monitoring strategies is crucial for effectively managing and enhancing Somalia’s aviation security. This approach involves continuous evaluation, in which the effectiveness of security measures and training programs is regularly assessed through drills and independent audits. This ensures that standards are consistently met and improvements are implemented where necessary. Establishing robust feedback mechanisms is essential. These mechanisms should allow both employees and passengers to report security concerns or suggestions, ensuring that all feedback is constructively used to enhance security protocols. International cooperation plays a vital role in elevating Somalia's aviation security standards. By engaging with international aviation security organizations, Somalia can adopt best practices and receive technical support and training. This engagement helps to integrate Somalia’s aviation security standards with global norms, promoting a more secure and globally compliant aviation environment.

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APPENDICES

APPENDICES 1: Informed Consent Form for In-depth Interview Participants

Dear participant,

My name is Ahmed Nur Ali, studying at the University of Kyrenia in Northern Cyprus, Faculty of Aviation and Space Sciences, Department of Aviation Management. I invite you to participate in an interview for my master's thesis research project, which explores *the security challenges facing the Somali civil aviation industry in the post-conflict recovery era*. Before agreeing to participate, kindly review the study's purpose, procedures, confidentiality and voluntary participation.

Purpose:

This study aims to gain a deeper understanding of the security challenges facing by the Somali Civil Aviation Industry in the post-conflict recovery era. Your insights will contribute to the identification of potential solutions and improvements in security measures in the aviation sector.

Procedures:

If you agree to participate, you will be invited to participate in an in-depth interview with the researcher. The interview will take place in a private and confidential setting via a secure online platform at a time that is convenient for you. The interview is expected to last approximately 25 to 30 minutes and will involve questions related to your experiences, opinions, and perspectives on the security challenges faced by the Somali Civil Aviation Industry. During our conversation, I will make sure to take notes; however, with your permission, I will record our conversation to accurately capture all the information that you provide.

Confidentiality:

Your privacy is very important to me. I assure you that your participation in this study remains confidential. All personal data collected during the interview will be anonymous, and any identifying information will be removed from the data. Your name will not be disclosed in any publication or presentation of this research without your permission. I guarantee that the confidentiality of the data is maintained and secured from unauthorized access. After interpretation, all recordings will be destroyed automatically.

Voluntary Participation:

Your participation in this study is entirely voluntary, and you have the option to withdraw at any time without encountering any penalties. If you decide to withdraw, any information obtained up

to that point will be deleted, and your decision will not have any impact on your relationship with the researcher or any affiliated institutions.

Contact Information

If you have any questions or concerns about the study, you can contact me at Ahmeddiiriye97@gmail.com or k20221031@std.kyrenia.edu.tr

APPENDICES 2: Curriculum Vitae

Name-Surname: Ahmed Nur Ali
Email (1): K20221031@std.Kyrenia.edu.tr
Email (2): Ahmeddiiriye97@gmail.com

Education:

2017-2021
Bachelor of Business Administration in Aviation Industry Management, Kasem Bundit University Bangkok, Thailand
2022-2024
Master of Aviation Management, University of Kyrenia Girne, Turkish Republic of Northern Cyprus

Work Experience:

March-July 2020, Internship at Ethiopian Airlines at Suvarnabhumi Airport Bangkok, Thailand
1 June-31 July 2021, Internship at Thai Inter Flying Co., Ltd., Bangkok, Thailand

APPENDICES 3: Turnitin Result

Ahmed Nur Ali

ORIGINALITY REPORT

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