Journal of Colombo Air Symposium 2023

" Fostering shared air interests in the IOR:
Geopolitical cooperation, complexities, and compulsions"

Sri Lanka Air Force

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October 2023
Eagles' Lakeside Banquet and Covention Hall
Colombo, Sri Lanka

EDITORIAL BOARD

Colombo Air Symposium - 2023 Journal. Volume 1 Issue 1 2023

ISBN 978-955-0265-21-3

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Research Papers

FOREWARD

It is indeed an honour for me as the Commander of the Sri Lanka Air Force to pen this prologue for the research journal of the Colombo Air Symposium 2023 published for the third time in the annals of the Sri Lanka Air Force. This event has been one of the most significant plenaries on airpower held in the region, which provides a platform for scholarly deliberation and intellectual discussions. Moreover, the Colombo Air Symposium has been realized as a forum that incontrovertibly expands its inquiry on the spectrums of airpower further into new dimensions over the years since its inauguration in 2015. Accordingly, this holistic academic conclave presents scholarly research contributions of locally and internationally acclaimed and experienced military leaders, academics and researchers who explored on the theme 'Fostering Shared Air Interests in the IOR: Geopolitical Cooperation, Complexities and Compulsions'.

Expanding the core of this year's theme, it is noteworthy to mention that the phenomenon of regionalism has gained an unprecedented influence in the present geopolitical context. For instance, sharing and pooling of resources and interoperability are identified as opportunities for state and non-state actors to harmonize on safeguarding national interests through mutually beneficial cooperation. However, the nuances of geopolitical tensions and complex strategic architectures undoubtedly warrant profound diligence in multilateral and bilateral association between states in exploiting instruments of national power for exploring commonalities and facing the realities of conflicting interests.

As a corollary, the compounding of national and regional interests translates into the air domain where militaries and other stakeholders are inclined to exploit congruences in fulfilling strategic objectives through mutual coordination and cooperation measures. Furthermore, air interests of developing nations present even more complex scenarios that exist within the security landscape dealing with the geopolitical fallout in the post pandemic world. Therefore, it is evident that these notions have gained credence in the Indian Ocean Region (IOR) as the

littorals and the hinterland states seek to consolidate their mutual interest in an era of economic downfall, geostrategic unpredictability, and protectionist policies of major power players.

Against this backdrop, the Colombo Air Symposium is unpacked under five sub-themes, which reflect the constituent areas of scholar and practitioner interests. Thus, this publication presents research articles and academic inquires in airspace management, challenges and opportunities for airpower, socioeconomic compulsions in airpower application, the VUCA environment and finally, regional coherence and interdependence. These articles present in-depth analyses of the regionalist approach in the IOR and beyond, with particular focus on the developing states and their capabilities to safeguard national interests not only in the airspace but in maritime, economic, and geopolitical domains. In addition, special attention is garnered through this journal on Sri Lanka and its geo-strategically significant location in the IOR to understand its wider scope in interpreting the air interests of the region.

Hence, these academic contributions with sound research endeavors that are unfolded during this year's symposium and included in this publication will unquestionably benefit scholars, researchers and ever eager and enthusiastic readers on the disciplines of airpower, defence, and security studies. Further, the knowledge acquired and shared in the symposium will be disseminated to varied levels of concerned professionals as well as policymakers in the field of national and international security studies. Therefore, this publication with its broadened discourse is expected to foster the evidence based approach to scholarly inquiry on airpower and its role in regional strategies and security architecture with the emphasis on the national interests of Sri Lanka.

AIR MARSHAL RAUP RAJAPAKSA

RSP and two Bars, VSV, USP, MSc (MOA) USA, MSc (Def Stu) in Mgt, MA in IS&S (UK)
BSc (Def Stu), MIM (SL), AMIE (SL), rcds, psc

COMMANDER OF THE SRI LANKA AIR FORCE

COHESIVE AIRSPACE MANAGEMENT OF THE IOR IN COLLABORATION WITH REGIONAL AUTHORITIES TO COUNTER EMERGING NON-TRADITIONAL THREATS

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ABSTRACT

Air power is decisive and highly dynamic in the modern global defence landscape. It is not always possible for small sovereign nations to design and operationalize a unique air power model due to various factors such as economic constraints and regional socio-political paradigm. Therefore, co-operation and interoperability are the main aspects where a small nation would be able to secure her sovereignty in the gloom of a complex global environment.

Over the course of time, the strategic advantage of Sri Lanka has become an established fact owing to several fundamental reasons. First, Sri Lanka is a maritime nation located in extremely close proximity to the global Sea Lines of Communication, positioned at a choke point, where the sea traffic routes converge through Sri Lankan waters. Second, Sri Lanka is situated at the midpoint, between the East and the West, in particular considering its geographical location being equidistant between the Eastern Pacific and the coasts of Africa and Central Asia, which bestows upon this island nation an unparalleled strategic posture in the Indian Ocean Region. Third, Sri Lanka as a midsize island is in the precise contiguity to the colossal mainland Asia, becoming a gateway to ocean trade and sea-lines and global connectivity to the littorals and the hinterlands within the greater Indo-Pacific region. This geographical attribute and the strategic significance of Sri Lanka are ever more significant in the contemporary context, in a changing strategic and security landscape, under the revival of power competitions and paradigm shifts in transnational threats to the Indian Ocean Region.

Therefore, the Indian Ocean Region is moving towards the focus of the global geostrategic agenda, and the resource competition and energy security, environmental and economic issues exacerbated by climate change, the involvement of external powers like China, and the emergence of regional powers like India, which underscore a heightened need for attention to this region.

All those factors are connected to the security issues in the maritime domain where SLAF needs to concentrate on the stability in Regional Maritime Domain with acquiring of state-of-the-art technologies and cooperation with relevant stakeholders.

Moreover, Sri Lanka is maintaining her non-aligned foreign policy which shows no allegiance to any superpower that can create rivals. Therefore, for the time being no likely threats from another sovereign nation are to be expected. Even though, it has been evident that with the explosion of the technology, the activities of non-state actors have been blossomed and congested in the IORA. Since these non-state actors are not adhering to conventional maritime rules and regulations, they cannot be tamed by conventional tactics. The exclusively large maritime jurisdiction of Sri Lanka is further aggregating the issue. In order to explore the maritime domain, as a nation we have to secure our boundaries at the first place. Mainly poaching, piracy, human trafficking, various smugglings, impacts of climate change and instability in the region are main non-traditional threats which as an island nation we have to negotiate tactfully. Due to the innate traits of air power, by developing maritime air dominancy enables the nation to successfully counter said non-traditional threats. However, due to various facts which the paper will discuss progressively are restraining a small nation like Sri Lanka to be an airspace dominant figure in the geostrategies Indo Pacific theatre. The only way out is to be an integral part of a regional profound mechanism that can ensure the national security. Even though, there are so many issues which can be threatening the relevancy of such a mechanism in the dynamic political paradigm in the IORA.

This paper focuses on the issues arising in establishing a mechanism for effective use of air power with regional cooperation to mitigate the aforementioned and identified threats in IORA, which is vital in safeguarding the regional security and status quo. However, a synergetic approach is not easily achievable among regional stakeholders. The complexity of foreign policies and array of objectives in different players will hamper the main principles of a common mechanism. Specially, in a military engagement there might be issues with handling of sensitive data and common utilization of platforms. Therefore, from the inception the mechanism has to be practical and unanimously agreed upon by all players.

Key words - IOR, Common Mechanism, Marine Domain

I. INTRODUCTION

In simplest terms Airspace Management referred as, coordination, integration, and regulation of the use of airspace of defined dimensions. (Navarane, 2023). It is essentially a planning function, with the primary objective of optimizing the utilization of available airspace by dynamic time-sharing and, at times, the segregation of airspace among various categories of airspace users on a need basis, depending on the tactical situation. In ideal scenario it is all about preventing any compulsions and disputes. As a small island nation, Sri Lanka is immensely suffering scarcity of resources. Therefore, a proper plan of Airspace management is essential in defending the sovereignty of her. The research is mainly focusing on the ways to counter non-traditional threats by virtue of collaborative airspace management with an absolute regional harmony.

A. Statement of the Problem

Sri Lanka is facing numerous difficulties, when defending her comparatively larger oceanic jurisdiction with available assets. Further, the issue has been escalated with the geo strategic positioning of the country as all regional stake holders are demanding a foot print of them. Therefore, a mechanism should be established to harmonize the airspace management that not to escalate in to a regional dispute. That will also be a solution to the scarcity of resources.

Therefore, to overcome the issue with an absence of a common mechanism to counter nontraditional threats, regional authorities have to focus on the development of a cohesive airspace management strategy, in collaboration with all players, to effectively counter the emerging non-traditional threats in the IOR. This problem statement emphasizes the need to identify the specific challenges faced by Sri Lanka, explore how collaboration among regional authorities through strategies that integrate technology, regulatory frameworks, and cooperative mechanisms can strengthen the fight against non-traditional threats. Finding a viable solution to this problem is essential for safeguarding Sri Lanka's economic prosperity, national security, and environmental sustainability. By addressing this issue, Sri Lanka can contribute to the broader efforts of enhancing regional stability and cooperation in countering emerging non-traditional threats within the IOR.

B. Purpose of the Study

The purpose of this study is to illustrate and emphasize the importance of a meticulous regional mechanism for airspace management in collaboration with regional authorities to find out a literal solution to close loopholes in defending Sri Lankan airspace from newly emerging nontraditional threats.

C. Research Questions

The following questions will form the guidelines for the compilation of the research thesis

i. Who are the major stake holders in the IOR that are playing major roles?

ii. What is the potential key non-traditional maritime security threats prevail in the modern SL context?

iii. What are the constraints and compulsions that can occur when crafting a common mechanism of airspace management?

iv. What type of agreement required in setting up the common mechanism for airspace management?

D. Limitations of the Study

The analysis is mainly focused on maritime domain and the recommendations are to be implemented with a properly crafted legal framework.

Data Availability and Quality - The study's effectiveness heavily relies on the availability, accuracy, and comprehensiveness of data related to non-traditional threats, airspace management practices, collaborative initiatives, and incidents in the IOR.

Political Sensitivities - Regional collaborations, particularly in contexts involving security and military considerations, can be subjected to geopolitical sensitivities.

Access to Classified Information - Much of the critical information related to security and defense might be classified or not publicly accessible. Diverse Perspectives - The IOR encompasses a diverse array of nations with varying interests, priorities, and historical backgrounds. Analyzing a cohesive approach to airspace management may not adequately address the different perspectives, challenges, and policy priorities of each nation, leading to oversimplification or generalization.

Dynamic Nature of Threats - Non-traditional threats in the IOR are constantly evolving due to technological advancements, and geopolitical shifts.

Scope of Research - While the study focuses on collaborative airspace management to counter non-traditional threats, it might not fully capture the other strategies, policies, and initiatives that are also relevant to regional security in the IOR.

Changing Policies - Government policies and strategies related to security and collaboration can change over time. The study might not account for continuous shifts in policies.

II. METHODOLOGY

A. Hypothesis

This paper builds upon the following hypothesis. “The formulation of a collaborative regional mechanism would be the best avenue to counter non-traditional threats in the IOR”

B. Design

As the research cannot be based on individual desirous opinions, a survey to reflect the same amongst a sample population was not carried out. On the contrary, the current scenario will be analyzed and the recommendations will come out with the proposed framework.

As such, the paper will follow an exploratory design. The main objectives will be to identify the key areas on which the collaborative mechanism should be achieved.

C. Limitations

As the study is purely based on the current behavior of stake holders in IOR, and the proposals cannot be tested in real time, the success of implementation is beyond the possibility of analysis.

III. LITERATURE REVIEW

The Indian Ocean is a vast theater, stretching from the Strait of Malacca and western coast of Australia in the East to the Mozambique Channel in the West. It encompasses the Persian Gulf and the Arabian Sea in the North, all the way down to the southern Indian Ocean. (Baruah, 2022) The IOR (Indian Ocean Region) roughly covers an area of 68.56 million sq. km and is the third largest ocean in the world. Spanning over nearly 20% of the Earth’s surface, the IOR has emerged as not only an imperative communication link between the West and the East but also attracted significant global attention for its geopolitical and economic significance.

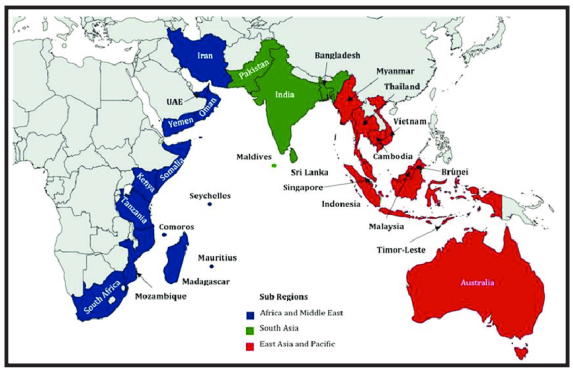

Figure 01 (Indian Ocean Region Area)

Along the coasts of this huge geographic expanse are countries that are home to some 2.7 billion people. The Indian Ocean's key subregions are South Asia, the Middle East, the eastern coast of Africa, and the islands dotting the ocean from Sri Lanka in the East to the Comoros Archipelago in the West.

The region's size and diversity explain its geoeconomic importance. Its regional forum, the Indian Ocean Rim Association, includes countries (23 sovereign nations) as politically and socially different as Australia, Indonesia, Iran, and South Africa, leading to new power dynamics. From resource-rich Africa and the energy-dense Middle East to South Asia's labor markets and manufacturing industries, the stability of the Indian Ocean is crucial to the global economy. (Baruah, 2022)

A. The Strategic Importance of IORA

While it may be difficult today for one nation to control the entire expanse of the Indian Ocean the way the British, French, or Portuguese empires did during the colonial period, the strategic significance of the Indian Ocean remains the same. In fact, the advent of the Indo-Pacific, the new geopolitical framework that includes both the Indian and Pacific Oceans has pushed the Indian Ocean back into the spotlight after a period with no serious great power competition in the region, following the end of the Cold War. (Baruah, 2022)

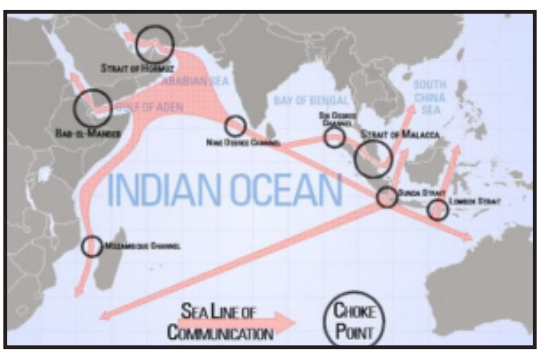

Figure 02 (Choke points & SLOC)

The importance of trade and the sheer scope of its many subregions make the Indian Ocean critical in terms of military and strategic engagement. It is a vital trading hub, connecting the Middle East to Southeast and East Asia, as well as Europe and the Americas. Any disruption along its trading routes will impact the entire globe's energy security, let alone that of significant economies like China, Japan, and South Korea, which depend on energy imported primarily via the Malacca strait. (Sengupta, 2020)

The Indian Ocean is home to seven chokepoints- the Suez Canal, the Strait of Hormuz, Bab-el-Mandeb, the Cape of Good Hope, the straits of Malacca, Sunda Strait and Lombok Strait. Emerging as an important territory in the Asia Pacific littoral, the Indian Ocean basin houses about one third of the world's population. Albeit nations bounding the Indian Ocean may have little interactions, it has become a critical trade route accounting for almost 40% of global oil exports. (Sengupta, 2020)

The region which lies at the crossroads of global trade holds a mammoth 16.8% of oil reserves worldwide and 27.9% of the world's natural gas reserves. A rich resource basin, this region accounts for a 35.5% of world's iron production and 17.8% of global gold production. The geopolitical criticality of the Indian Ocean hails from the trade and transit of energy resources. Linking the Atlantic to the Pacific, it accounts for roughly 40 per cent of global oil supply which makes its way through the Straits of Malacca and Hormuz and the Bab-el-Mandeb. Apart from serving as a conduit for trade and commerce, the IOR also has abundant reserves of natural resources. Global fishing (approximately 15 per cent), coupled with vast quantities of mineral resources like nickel, iron, cobalt, manganese, zinc, gold has contributed to its geo-economic importance. (Sengupta, 2020)

The sea lanes in the Indian Ocean command strategic importance with more than 80% of the world's seaborne trade in oil transits through the Indian Ocean. Energy security and resources being extremely critical, developing societies are heavily dependent on resources for primary and exportation purposes. The linking sea routes carry a heavy traffic of petroleum and petroleum products from the oil fields of the Persian Gulf and Indonesia.

In 1890, Alfred Mahan said, "whoever controls the Indian Ocean will dominate Asia; the destiny of the world will be decided on waters. Due to its ever proliferating economic and geo-strategic importance, the IOR has been subjected to tri-polar competition with the United States, India and China emerging as the important stakeholders of the region.

B. Airspace Management

As per the Chicago convention, the airspace can be defined as, “space lying above the earth or above a certain area of land or water”. Moreover, the space lying above a nation and coming under its jurisdiction. Although UNCLOS is titled as a ‘Law of the Sea’, its provisions also affect airspace and the operation of aircraft. In particular, UNCLOS defines volumes of airspace that are sovereign and international (where States may make laws and where States may not make universal laws respectively). It should be noted that the terms ‘national airspace’ and ‘international airspace’ are descriptive in nature. States may enact laws for their own citizens and aircraft registered in those States for operations within international airspace. The volumes of airspace are dependent on the definition of ‘baselines’ in UNCLOS, which are generally based on the maritime shoreline, whether the shore is continental in nature or the outermost part of a chain of islands (an archipelago). However, not all island groups are archipelagos, as the islands must be no more than 100NM apart to meet the definition of being an archipelago (except for 3%, 125NM apart).

The airspace management is designed to enhances the Flexible Use of Airspace (FUA) It enables the capability to be flexible and reactive to changes in airspace users’ needs, with the ultimate objective of optimizing the network capacity and performance. This can be only achieved through seamless and collaborative management of airspace configurations and a continuous sharing of information among all operational stakeholders. (Evans, 2023)

On the other hand, airspace management prevents mutual interference from all users of the airspace, facilitates air defense identification, and accommodates the flow of all air traffic safely. (Scientist, 2022)

The number of platforms and projectiles in the Tactical Battle Area (TBA) has increased exponentially. The friendly and adversary aerial systems are not only increasing in numbers, but are also of a variety of sizes from micro-UAVs to large aircraft and they are also travelling from very slow speeds to many times faster than the speed of sound. The civil air routes are also increasing manifold and with Future Air Navigation System (FANS), the routes could be more flexible. As airspace is a finite resource, it is imperative that appropriate control be exercised for efficient operations, freedom of action, and safety to prevent fratricide. Airspace Control (ASC) refers to regulating the use of airspace by various users. From a military operations point of view, the objective of airspace control is to optimize utilization of available assets and effectively deal with any unforeseen threat. (Chopra, 2022)

During a conflict, the air activity in the TBA is extremely dense as both friendly and enemy aircraft are transiting. Horizontal and vertical airspace is not only fully covered, but variations in time and space are dynamic. Most flights are launched at very short notice based on the evolving tactical situation. There are many Uninhabited Air Systems (UAS). Also occupying the airspace are high velocity long and medium range artillery shells and a variety of missiles. Ground-based air defence weapon. Therefore, the mechanism for airspace management has to be compiled so as to compatible for both peace and crisis situations.

Airspace management is inherently a complex process as it is highly dynamic and very difficult to demarcate boundaries. Therefore, it is important to understand the principles of airspace control so as to progress a mechanism for airspace management.

i. Continuous engagement

All the stake holders which whom are sharing the airspace has to positively engaged with the mechanism on regular basis.

ii. Mutual trust

Most importantly mutual understanding and trust has to be in a higher level in order to functionalize cohesive airspace management.

iii. Joint use of airports

In order to materialize a joint airspace control, there should be an agreement to use air fields in the closer proximity for all stake holders for common purposes.

iv. Joint use of air navigation facilities

There should be flexibility, so as all operators can utilize available navigational aids in cooperation.

v. Cooperation in airspace design

The airspace has to be clearly demarcated with clear dimensions with each other's jurisdictions. The limitations in height and area have to be properly evaluated.

C. Airspace Control Methods

Integration of the elements is the most important factor. The control is either positive or procedural. Positive control relies on real time identification and tracking.

It is conducted using radars; Identification Friend or Foe (IFF) interrogators and receivers; beacons; computers; digital data links; and communications equipment. All these may be restricted by line-of-sight coverage, electronic interference and limited communications. Procedural control relies on previously agreed upon and promulgated orders and procedures; included in these orders and procedures are ASC measures, fire support coordinating measures and air defence control measures.

Typically, an ADIZ is established in sovereign national boundaries or in an operational area. It minimises mutual interference between air defence and other operations. It may include one or more air defence areas, ADIZs or firepower umbrellas.

IV PRESENT SITUATION IN THE REGION

Earlier the area concerned was categorized as the Indian Ocean theatre and later on with dynamics in security landscape, the theatre has been renamed as Indo Pacific theatre. Partnerships in the Indian Ocean are also complicated in the new security environment. For instance, the US still has a military facility on Diego Garcia, an island in the Chagos Archipelago. However, Mauritius disputes British jurisdiction over the island, which London leased from Port Louis after its independence. In 2019, the UN General Assembly adopted a resolution in Mauritius' favor. Even though India is a significant ally of the United States in the Indian Ocean today, New Delhi politically backs Mauritius on the grounds of decolonization and nonalignment. The bilateral dynamics between larger nations and the region's islands and littoral have an impact on the larger ocean.

In the absence of the United States, which was concerned with its obligations in the Pacific, Afghanistan, and the Middle East, France and India assumed responsibility for the region's security. The eastern Indian Ocean is dominated by New Delhi, whereas the western Indian Ocean is dominated by Paris. The sole venue that unites the French-speaking islands in the region is the Indian Ocean Commission, which France participates in through its overseas region of Reunion. The Indian Navy, on the other hand, prides itself on being the first to respond to natural and humanitarian crises in the Indian Ocean and claims the whole Indian Ocean as its domain.

The UK is a significant regional player in security, although France and India are the main competitors. China, India, Japan, the United States and its NATO allies, as well as the UN, all have continuing missions to combat piracy off the coast of Somalia. They are often limited to the affected area off the Horn of Africa and address a common international marine problem. But over time, this interaction has given new parties, like China, the chance to engage with the islands and coastal nations of the Indian Ocean.

China has established itself as a potent ally for the Indian Ocean's islands and littoral nations by expanding on its anti-piracy activities. Under Beijing's Belt and Road Initiative, the Maritime Silk Road has offered an additional forum for cooperation on commercial and security matters. Beijing established its first overseas military station in Djibouti, a country bordering the Indian Ocean, in 2017. The Chinese station solidifies its status as a new player in the area, whereas France, Japan, and the US already have bases in Djibouti.

For instance, if India is the main partner for the Maldives and, to a lesser extent, Mauritius and the Seychelles, France is the main partner for Madagascar and the Comoros, two smaller countries that speak French. However, Beijing will face off against France and India at the same time on the region's six islands. Not France, India, the UK, or the United States, but China is the only major power in the Indian Ocean to have diplomatic representation in each of the six island countries.

New rivalry between India and China has filled the void left by the limited U.S. participation over the previous three to four decades paired with strategic immobility from New Delhi and Paris.

A. Regional Stake Holders in Action in IOR

The total area over a nation comprised of both airspace and outer space. When combined, airspace and outer space are referred to as "flight space," where flying objects are permitted (Yapa, 2015). Further, the world's busiest international/regional air routes are in the Asia Pacific Region and therefore it is expected that airspace management within the next 20 years in the Asia Pacific region will become national strategic importance to Sri Lanka as the country depends on air transport to connect people and goods with the rest of the world. More importantly, airspace management with regional stake holders is a critical enabler for a broader security enhancement. Further, a safe, secure, efficient, and environmentally responsive mechanism will reinforce a range of activities such as trade and commerce, tourism, investment that contribute significantly to country's economic prosperity. (Lanka, 2023)

Further, Sri Lanka as an island nation has to be more vigilant in terms of the air diplomacy in the region to address unforeseen situations (Wijetunge, 2022). Besides, as a developing country, regional collaboration with neighboring countries to manage the airspace to mitigate nontraditional security threats must be a critical concentration in terms of the national policy. Nevertheless, a body of law that governs space-related activities in outer space known as "space law," which is a recent branch of international law that has to be taken into consideration by the authorities with regional stake holders. It entails a responsible exploration and use of outer space place for everyone's benefit and consideration of humankind (Yapa, 2015).

V. EMERGING NON- TRADITIONAL THREATS

The militaries of other governments used to always pose the greatest security dangers to a nation-state, but this is no longer the case in the twenty-first century. The rise of numerous non-state actors, including terrorist networks, drug cartel, intra-state battles, unions, maritime piracy networks can be taken as significant modern threats to the national security of modern states. (Srikanth, 2023). Further, Asia-Pacific (APAC) region is the world's largest market for air travel, accounting for 33% of the market in 2012 and projected to reach 37% by 2017. In 2013, three of the top ten airports in terms of passenger movements and four of the top ten in terms of air cargo tonnage were located in the Asia Pacific region. (Organization, 2017)

As such, the region's traditional players like France, India, and the United States along with its partners like Australia, Japan, and the UK, will have to think through their smaller partners' nontraditional security challenges if they want to address their own national security interests in the region. In essence, if the big powers competing for influence in the Indian Ocean want the small island nations as allies, they must pay attention to these nations' security concerns. While these issues may be considered soft or secondary, they are deeply relevant to the island nations. These issues also carry strategic implications, such as for fishing vessels and scientific missions used for surveillance and reconnaissance purposes. Hence, they will significantly impact the region's ongoing geopolitical competition.

A. Transnational Organized Crime Networks

An organized crime network is one that employs force and coercion in order to pursue money through illegal methods, according to the World Bank (2013). International drug cartels, arms trafficking organizations, and maritime piracy networks can all be categorized as big organized crime networks; however, drug cartels have become increasingly significant over the past few decades

due to their increased access to resources. In “weak” or “failed” regimes, which are characterized by insufficient government control and poor law and order, organized criminal networks typically proliferate and flourish (Dosch, 2006).

B. The Waste Dumping

Illegal Fishing Nexus: States and non-state actors are cautioned to abide by sustainable fishing practices and ethical disposal of toxic waste by international conventions and standards of conduct. However, dumping toxic waste and illicit, unreported, and unregulated (IUU) fishing continue to be major worldwide problems that affect many nations in different ways depending on their governance capacities (Weldemichael, 2021). Moreover, Chinese fishing boats, boats from the European Union, and boats from other nations within the region have all been seen damaging the seabed while fishing in the Indian Ocean. Besides, nearly 35% of the world’s population depends on the Indian Ocean Region (IOR), the third-largest ocean in the world. Fish and fishing are crucial links in the chain of food security. These also have a major impact on the socioeconomic development of a country. IUU fishing practices substantially jeopardize sustainable fishing, which makes them a major source of worry for the IOR littorals. The IORA Working Group on Maritime Safety and Security (WGMSS) accordingly highlighted this as a region in need of further collaboration.

C. Terrorism and Insurgency

These has become the most well-known and obvious risk to a country’s security, especially in the wake of the 9/11 attack (Caballero-Anthony, Non-traditional security challenges, regional governance, and the ASEAN Political Security Community, 2022). Although terrorist and insurgency groups utilize force to further their claimed goals, they vary fundamentally from organized crime networks only in terms of their goals. Due to institutionalized corruption in the state system and some organized criminal networks’ public involvement in philanthropy and charity, it has grown increasingly difficult for state authorities to apprehend the heads of these networks.

D. Unauthorized Aerial Activities in Maritime Domain

Drones are increasingly being adapted for commercial and civil uses, including those that threaten national security of nation states in the marine realm. The drone is expected to perform tasks that are seen to be grimy, tiresome, or dangerous at a lower cost and with less risk (Marianne Harbo Frederiksen, 2018). Drones’ ability to quickly access remote and challenging-to-reach locations with less air defense network detection has given rise to severe

concerns about the safety of airspace management. Moreover, use of drones for tasks in offshore and maritime contexts, either over the open ocean or near harbors by commercial and other vessels have become a serious concern in present context which has to be addressed with a greater collaboration. More importantly, the innovative drone tactics used by the terrorists/criminals have been a major concern for quite some time and the threats posed by them continue to increase in unprecedented levels. These tactics range from simple surveillance and reconnaissance to more dangerous weaponization. The ability that the drones possess to evade traditional security measures and subsequent legislative consequences is a challenge for both the security authorities and the law enforcement agencies which further accentuates the necessity of a broader regional mechanism to battle against these threats.

E. Impact of Environmental Degradation

Environmental deterioration, particularly climate change and its effects, is one of the most important challenges affecting a country's security in the twenty-first century. An excessive number of natural resources have been depleted as a result of rising population and expanding energy needs, particularly in industrialized and emerging nations. Many academics have predicted that there would be interstate "water wars" in the future as fresh water resources decline (Srikanth, 2023). Due to the disruption of the typical climate brought on by rising temperatures, climate change may potentially have an impact on agricultural production. One of the biggest issues that the nations will confront in the future is food scarcity, according to some experts.

F. Maritime Oil Spill

The International Tanker Owners Pollution Federation (IOTPF), which displays statistics on oil spills more than 7 tons from tankers to the ocean, has been tracking oil leak incidents for the past 48 years (Aditya Rio Prabowo, 2019). Additionally, the most recent event in the Indian Ocean was included in huge leak cases with over 700 tons that polluted marine territory. The most recent decade also saw significant oil spills of 10,000 tons. Without a doubt, these cases are having an impact on the surrounding aquatic ecosystems' structure. Moreover, the X-Press Pearl event serves as an example of how oil spills pose a severe hazard to the maritime environment and may also be the result of unintentional loading on commercial ships. One of the unavoidable effects of oil spills is damage to the environment. In this scenario, a review of the incident can be a useful guide for correct estimation and planning in the event of a significant oil leak.

G. Refugee Crisis

War and civil strife, breaches of human rights, environmental and climate change challenges, and economic difficulties can all be contributing factors to the refugee crisis. Over 1.1 million stateless Rohingya people have been fleeing the ongoing violence in Myanmar's Rakhine State since August 2017. The world's largest refugee camp, which is still home to many people, lies close by in Cox's Bazar, Bangladesh, and it is causing a major humanitarian crisis. There are striking parallels between the humanitarian catastrophe at Europe's doorstep and the escalating refugee crisis in Southeast Asia, which primarily affects the marginalized Rohingya minority in Myanmar (The Refugee Crisis in Southeast Asia, 2016) . The Association of Southeast Asian Nations (ASEAN) and refugee destinations like Malaysia, Thailand, and Indonesia must rise to the occasion. According to recent reports, a number of nations are refusing to let thousands of refugees from Myanmar and Bangladesh cross through the Andaman Sea and the Straits of Malacca. These refugees are primarily looking for better economic possibilities (Arase, 2013). This comes after the earlier finding of refugee mass graves along the Malaysia-Thailand border linked to international criminal organizations' trafficking in human beings. The continued persecution of the Rohingya, who are denied Burmese citizenship and routinely exposed to military assault, is the cause of the rise in the number of refugees.

H. Piracy in IOR

Piracy in the IOR has been a longstanding problem with some significant economic and security implications. The piracy issue in IOR is primarily centers around the waters off the coast of Somalia which overlooks the Indian Ocean.

Piracy in the Indian Ocean peaked between 2008 and 2012, with Somali pirates seizing multiple commercial vessels and kidnapping crew members for ransom. These pirates were frequently armed with automatic guns and approached and boarded larger ships in small, swift boats. The attacks were not only financially devastating due to ransom payments, but they also put seafarers' safety and the security of global maritime commerce routes at danger.

International efforts, such as naval patrols by several governments and private security measures on ships, have managed to mitigate the threat of piracy to some extent. International naval task forces, such as Combined Task Force 151 and the European Union Naval Force Somalia (Operation Atalanta), played an important role in suppressing and preventing pirate operations.

Efforts to combat piracy in the IOR have gained some credibility as the number of pirate attacks has significantly decreased during recent years.

However, piracy still remains as a major concern in the security landscape of IOR. Ongoing international cooperation, maritime security measures and support for governance and development in the region are essential to further reduce the threat of piracy IOR.

VI. ROLE OF THE AIR FORCE IN COUNTERING NON-TRADITIONAL THREATS

A. First Element to Respond

When it comes to Sri Lankan context the maritime jurisdiction of her is few times larger than the land mass. Therefore, the area to be defended is exclusively proliferated in to a larger area in to the sea.

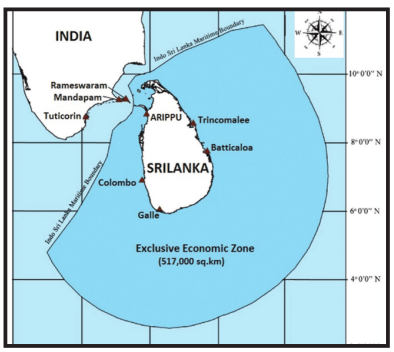

Figure 03 (Maritime domain of the Sri Lanka)

With the inherent core traits of air power (speed, reach and height) air force has the capability of responding to the scene far quickly than any other force. Moreover, air force mechanisms can be activated with a limited early warning.

In general, there are many common doctrinal principles of air forces in the region. Therefore, it is easy to formulate a combined mechanism in order to counter discussed non- traditional threats.

B. Surveillance and Reconnaissance

In accordance with the national policy of capitalizing on maritime resources, air force has the prime responsibility of carrying out surveillance to make sure that the skies and surfaces are clear of any incoming threats. The information which can be extracted from said missions are vital for deriving intelligence that provides additional cushion to get ready to counter any unforeseen situation in the middle of nowhere on high seas.

Moreover, with an accepted mechanism, regional air forces can share information which will enhance the economy of effort and the general awareness. Therefore, routine surveillance missions will be a reason for non-state actors to curtail their illicit acts to some extent.

C. Striking Capability and Deterrence

The threats from armed non-state actors have escalated in the Indian Ocean Region as a result of extensive hike in maritime activities. Therefore, the striking platforms are required to neutralize or deter them. In those circumstances, armed forces are the best option as they possess training in human resources, equipment, and capabilities not available to other agencies and non-state actors.

D. Disaster Relief

The span of disasters is proliferated in to a broader spectrum. It can be primarily categorized in to natural calamities and man-made disasters. From 1912 Titanic disaster to MH- 370 tragedy in 2014, there were so many types of disasters that had taken place in the marine environments. In the paper, it has been mentioned that the military is the prime resort that any government would utilize in a disaster in material of the place or time that it occurred. Moreover, when it comes to maritime domain, air forces have the potential to be the first element to respond in a grave disaster.

VII. DESIGN OF THE MECHANISM

Establishing a defense-based mechanism in the Indian Ocean Region (IOR) can indeed be a complex endeavor due to the diverse nature of the countries and their varying interests, priorities, and geopolitical dynamics. The challenges that might be encountered in setting forth a regional mechanism in the IOR to mitigate non-traditional security threats could include, but not limited to: historical tensions, Sovereignty Concerns, Competing Interests, Resource Constraints, Lack of Trust, Legal and Political Frameworks etc. Hence, a pragmatic approach towards realizing the establishment of a regional mechanism shall be taken as elaborated below.

A. Military, Civil Sector Co-operation

The first trained element that can be deployed to mitigate any kind of escalated situation at any time is the military. When it comes to IOR, area to be covered in a disaster or in any situation is proliferated in a larger dimension.

Due to congested marine activities in IOR, there are so many civilian assets available that can augment the military effort. Even though, most of the times military SOPs do not reserve a space for civilian relief personnel or assistance of civilian organizations. Moreover, civilians are considered as an extra burden on military by considering their safety. When crafting the mechanism, there should be a way to co-operate with civilian sector and extract all the assistance from them in countering non-traditional threats in IOR.

B. Emerging Civilian Groups and Organizations

According to the documented history of the Indian Ocean Tsunami in 2004, the critical role of private citizens and local groups in providing food, water, clothing, and temporary shelter during the first few days until the arrival of external aid was a decisive act. (Telforf, 2006) In Kathmandu, after the April 2015 Nepal earthquake, residents were the first responders rescuing their neighbors from collapsed buildings, providing temporary shelter, food, and water to the affected. (Bishunu Devkota, Brent Doberstein, and Sanjay Nepal, 2016)

For example, following the Kobe earthquake in 1995, authorities successfully set up working relationships between official organizations and emergent groups and volunteers. (Kathleen. J, Tierney, James D. Goltz, 1997)

Therefore, in the common mechanism, there should be a prominent place for civilian organizations. At the same time, a moderating mechanism has to be implemented, to co-ordinate these groups and volunteer individuals.

Moreover, the concept of the transnational citizen response teams will be a lucrative alternative that enhances the responsiveness and the effectiveness of any type of military operation in IOR. Specially, when it comes to firsthand information sharing, these groups can be served as primary sources of information. However, there should be a hub in individual sectors to mediate this first-hand information and to filter information for the reliability and accuracy. The network has to be a universally accepted model to avoid any complications in between sources.

C. Multi-Nodal Cross Border System

The planning and implementation of cross-boundary, networked airspace management mechanism requires new levels of collaborative decision-making among multi-national stakeholders. The active participation of all stake holders is the prime pre-requisite for effective employment of a cross border multi- nodal mechanism.

From the designing itself, all stake holders are to be in an agreement and should be in a perfect harmony in decision making. Followings can be considered as main considerations for a such mechanism. (Anonymus, 2017)

An inclusive process – Participation by States and other Stakeholders is the key;

A transparent process – Simple business rules to ensure compliance and build trust will be necessary;

D. Unanimously Agreed Strategical Information Exchange

The most important requirement in countering non- traditional threats is getting information without any delay and disseminating to relevant agencies to act upon. By allowing, sharing of information between all partners through a common network to improve efficiency and expedite operational decision making. Cross-border airspace management should provide opportunities for the efficient exchange of operational and strategic information for all stakeholders, ensuring strategic cooperation towards achieving the objectives of seamless flow of operational and strategic information. Then only all stake holders will be able to achieve a common situational awareness so as to execute a synergetic effort.

E. Sectors

Since the IOR is extending in a very large area, it is very difficult to manage with a fully centralized or a unified command. Therefore, the best solution would be segregating the area in to sub sectors with independent authorities to manage the sector. The most important thing is to make sure that all sectors are profoundly interconnected. The flow of information and unhindered co-ordination has to be ensured.

Otherwise, when using airspaces of sovereign nations for a common objective, following issues can be expected;

i. Political and diplomacy issues

When it comes to diplomatic clearances for flights, there are so many considerations to be taken in to account. Specially, military flights encounter considerably high degree of restrictions to penetrate other nation's airspaces.

ii. Procedures and regulations

Different navigational procedures and regulations are used in different airspaces. Specially, when using aerodromes in other countries, aviators may face so many complications.

iii. Interoperability

A key consideration in the development of the Regional Framework for Collaborative airspace management is the interoperability of systems, procedures and practices to ensure not only regionally harmonized mechanism, but also the effective, complementary operation of other systems forming part of the gate-to-gate chain of airspace management. It is vital that all systems and processes use common information, terminology and communications protocols to ensure common understanding and optimal outcomes.

VIII. CHALLENGES AHEAD AND RECOMMENDATIONS

A. Unity of Control

Airspace command and control require unity of control for the myriads of actions performed by the various type of elements. It requires qualified personnel, information and a support structure to build a comprehensive picture of the airspace. Other field elements provide planning resources. Several types of control exist that can be used exclusively or combined to achieve the desired degree of autonomy in operations. The networking and interoperability is itself, a complicated demand.

B. Agencies and Individuals

Agencies and individuals that perform airspace management functions include the Air Defence Control Centres, Civil Air Traffic Control Centers and Maritime Elements. They use radars and secure communications. The coordination between various elements requires high degree of precision for smooth functioning.

Both disaster preparedness and emergency response in South Asia are dominated by the national armed forces as they possess training in human resources, equipment, and capabilities not available to other agencies and non-state actors. This is often one of the key challenges in regional cooperation, as each country is wary of inviting neighboring armed forces into their territory. There is also a notable lack of civil-military coordination in this region, with civil actors being viewed as impediments to effective disaster management.

Consequently, bilateral and multilateral agreements to promote the use of foreign defense assets during disasters have had limited success. However, given the likelihood that natural disasters in South Asia will increase, coupled with the growing vulnerability of populations, existing disaster management actors are likely to be further stressed in the coming years.

C. Legal Frame Work and Relevancy

In order to ensure the relevancy, there has to be a meticulous legal frame work that has been drafted to tackle issues and distribute obligatory responsibilities and duties. Otherwise, the system would be irrelevant in the long run such as socio-political organizations like SAARC and other bi/multi-lateral agreements in the region

RECOMMENDATIONS

A. Unity of Effort

Unity of effort requires the airspace control system and associated procedures to be fully coordinated, integrated, and centrally planned by the airspace control authority. Air power is speedy in nature and quick decision making requires in managing airspaces without any compulsions. Therefore, the unity and coordination of all stake holders are prime pre-requisites. Following are the other requirements for a reliable airspace management mechanism.

i. Maintain close liaison and coordination among all airspace users. Require common airspace control procedures, which include procedural and/or positive control measures.

ii. Require reliable, jam-resistant, beyond line-of-sight, and secure communications networks.

iii. Require integrated, interoperable, survivable, and redundant airspace control systems.

iv. Respond to developing threat conditions and to the unfolding operation.

v. Airspace management mechanism has to be flexible and simple.

vi. Require appropriate training for effective and safe airspace control operations (US Air Force, 2014)

B. Citizen Emergency Response Training (CERT)

During the research it has been highlighted the value of rendering the assistance of all available civilian resource agencies and individuals in defending the IOR. Therefore, to enhance the jointness, regular exercises and training programmes are to be conducted. In sector steering committees, an empowered training moderator has to be established.

C. Common ATC Procedures and Terminology

It is noteworthy that, when myriads of operators operate in a common airspace, there can be so many compulsions. Therefore, commonly accepted navigational procedures, IFR/VFR approaches are to be adopted in an emergency situation. Moreover, RT phraseology has to be compiled in liaison with local jargons for individual sector separately, so as to avoid ambiguities which led to delay in responding.

D. Enhancing Jointness

In order to develop trust among stake holders, frequent dialogues and exercises are to be conducted. Moreover, the active enrollment of civilian entities has to be ensured. Without sufficient amount of trust, it will not be possible to work towards a common goal.

Joint Operations Centre (JOC) has to be established and the composition with representatives of all stake holders. Specially, civilian entities have to be included.

E. Steering Group

Even though the area has been divided in to sectors, there should be a regulatory body to ensure proper co-ordination and efficient discharge of duties and responsibilities of separate elements. Therefore, it is better to empower steering groups rather than managing by a single authority.

The steering group has to be exclusively comprised with top level political hierarchy, other related civilian and military officials. That will enable quick decision making without un-necessary delay. Specially, when it comes to cross boarder operations, steering group can directly involve in resolving diplomatic and political issues.

Recommendations Directed to Sri Lanka Air Force

A. Enhancing Maritime Capability

Since the maritime domain is exceptionally expanded in a larger area, the area of responsibility of the SLAF is also proliferated in to a larger periphery. Therefore, in line with the national policy of Sri Lanka, the maritime capability of SLAF has to be developed and prioritized as a long-term policy decision. In the short run, the existing capabilities are to be optimized and safeguarded with full commitment.

Mainly maritime surveillance and reconnaissance platforms have to be capable enough to cover all the area of jurisdiction. Secondly maritime air defence and striking capability has to be developed so as to counter and deter any non-traditional threat.

B. Integration with SL Navy

As the defender of the sea, SL Navy is equipped with required assets and human resources to counter any threat inbound to Sri Lanka along the Indian Ocean. There has been a dialogue from a long time as well. Several exercises were also conducted to integrate SLAF and SL Navy capabilities, even though, the interoperability is not established in to a satisfactory level yet. For an example, SL Navy possesses reliable surface looking radars all over the littoral belt of the island on strategic locations. That capability can easily be integrated with SLAF air defence to enhance the detection capability along the coastal line. Not only that, some Navy vessels are also equipped with radars that can be used to augment the detection capability of SLAF.

The integrated Air picture of all available radars possessed by SLAF and SLN is to be embraced in the JOP. Further, ship borne radars can act as force multipliers that can be steered as per the requirement.

Further, a doctrinal approach is required for unambiguous operation in order to link the main two stake holders, namely SLAF and SLN. Even though, it is not an alien concept to us as synergetic offensive operations were widely carried out during the past 30 years struggle. There is an imminent requirement of properly crafted SOPs for each function as it is incorporated with highly sensitive Indian Ocean Region with powerful international stake holders.

C. Information Sharing with other Stake Holders

There should be an accepted method to share information with other relevant military elements. The information which can be extracted from other elements is vital to act in advance to tackle these very complicated transnational crimes without getting in to unnecessary international political compulsions.

IX. CONCLUSION

"Whoever controls the Indian Ocean will dominate Asia. This ocean will be the key to the seven seas in the 21st Century. The destiny of the world will be decided on its waters"Admiral Alfred Thayer Mahan Even though the famous quotation was articulated in year 1987, it is relevant to present day more than ever. With the increasing prominence of IOR, many stake holders are eagerly eying for their dominancy. As a result of that, the tension of IOR has intensified. With the geostrategic position of Sri Lanka in in the IOR, as a small state she has to manage her foreign policy execution very carefully.

In line with exploring of blue water economy in the larger maritime domain of Sri Lanka, countering discussed non-traditional threats is of prime importance. Moreover, considering the difficult time period which the country is running through, it is not possible to acquire or induct new assets for counter operations. However, Sri Lanka is still maintaining her non-aligned policy which enables her to take a part in a collaborative mechanism of airspace management in countering non-traditional threats. However, for smooth operation of a collaborative mechanism, from the design itself to the framework, all stake holders are to unanimously agree upon. Otherwise, the prolong relevancy and sustainability of the said mechanism will be frequently questioned. The recommendations made herein pave the way to address the emerging non-traditional threats that challenge the security and stability of the littorals and hinterlands of IOR. With the establishment of a framework for regional airspace management, strengthening information sharing, bringing together the technologies, and building capacities through joint initiatives, nations can remain unfazed of these challenges.

In conclusion, countering of non-traditional threats which are often unprecedented in nature requires a paradigm shift from isolated efforts by individual nations to a united regional approach with the involvement of all the stakeholders. This collaborative effort not only reinforces the overall security of the region but also exhibits the tenacity to safeguard shared interests and preserve the peace, stability, and prosperity in the IOR.

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GROUP CAPTAIN PN GUNATHILAKE

WWV and Bar, RWP, RSP, USP, MMS (Mil Com), MSc (Strat Stu), Pg Dip (Def Mgt), MIM (SL), AMITD (SL), fawc, psc, qfi

Group Captain PN Gunathilake was born in Colombo on the 28th of May 1977. He received his education from Nalanda College, Colombo. He joined Sri Lanka Air Force in 1997 to the intake 34. Furthermore, he was deployed to No 5 Fighter Jet Squadron for Operational duties. The Officer was appointed as the Commanding Officer of No 12 Jet Squadron from 19th January 2014 to 17 July 2014. In addition to his flying duties, he was deployed as a Staff Officer for United Nations Peace Keeping Missions at Central African Republic during the year of 2014. Afterwards, he has commanded many flying squadrons and presently commanding Sri Lanka Air Force Base Vavuniya as the Base Commander. Furthermore, the Officer is awarded with gallantry awards such as, Weera Wickrama Vibhushanaya Padakkama (twice), Rana Wickrama Padakkama, Rana Sura Padakkama and Uththama Seva Padakkama for his unblemished conduct and the services rendered during the humanitarian operations. In addition to his military accomplishments the Officer holds a Masters in Military Science and Military Command, Masters in Strategic Studies, Post Graduate Diploma in Defence Management and a Diploma in Professional Diplomacy and World Affairs.

STRATEGIZING SPACEPOWER FOR NATIONAL SECURITY: CHALLENGES AND OPPORTUNITIES FOR SRI LANKA AIR FORCE

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ABSTRACT

The traditional geographical domains of land, sea and air have been used as the medium for economic development. Technological advancements in each domain saw the changing character of war. The nature of war remained the same irrespective of the domain. The dependency of the domains heightened the interest of nations to protect such domains and wage war through them. Space is now becoming a vital national interest for many nations for their commerce, and protection of the space domain has therefore become imperative. In this context, it has become a highly debatable topic through the academic realm if space would be a sanctuary or a warfighting domain. From a realist perspective of protecting the nation and leveraging power through space, the term "spacepower" has been coined. Within this context, Sri Lanka is gradually dependent on space for the daily needs as well as for economic development. Further, Sri Lanka's gradual technological development in space has made the country part of the space club as a "less capable spacefaring nation". In this backdrop, lack of a viable military strategy to protect space is a major lacuna. Considering the technical similarities, Air and spacepower has been interlinked with many air forces around the world and Sri Lanka Air Force needs to take the lead in defending space assets through a coherent strategy. While protecting space is a challenge for a nation like Sri Lanka, with the inherent potential of diplomacy, the Sri Lanka Air Force can devise a military strategy of diplomacy to reap the benefits of space for the benefit of the citizens.

Key words: Air power, Diplomacy, Military, Space power, Space, Satellite, Strategy, Technology

I. INTRODUCTION

"Even the space, as we know, has become a scene of conflict. So what is our role and what the armed forces and what we are going to do"

- Wickremesinghe Ranil (2022)

Can Sri Lanka protect its space through spacepower? In 1957 the first satellite 'Sputnik 1' was launched into orbit by USSR. As of 1 April 2023 there are 10,290 satellites orbiting the earth, and the year 2022 saw 2050 satellites registered with United Nations (UN) Office for Outer Space Affairs (United Nations Office for Outer Space Affairs United Nations, n.d.). There is no specific demarcation line that separates air and space. Theodore Von Karman (1957) proposed what has come to be known as the "Karman primary jurisdiction line" where an object traveling 25,000 feet per second loses its aerodynamic lift and centrifugal force takes over, at about 100km above sea level (Oduntan, 2003). Unlike the airspace above a nation, the space is not legally demarcated for any nation, and it is open for free use by any nation. The open area above a nation gives an advantage unlike other domains to influence nations. While nature of war remains unchanged, the character of war through technological innovations and political interest changes dramatically. Waltz (2010) defines "power" as "the ability to get people to do what one wants them to do when otherwise they would not want to do". Muller (2003) explains how a state can use space to amass power to itself which gives meaning to the term "spacepower". The space domain is becoming a lifeline to many nations, and it is their interest to protect the space and leverage their power through space.

Nations protect space assets through soft and hard power. With the increasing demand to protect these assets, nations such as the China, Indian, Russia, and the United States have resorted to Anti Satellite (ASAT) weapons, and some nations have been lobbying for multinational agreements such as UN Committee on the Peaceful Uses of Outer Space. Just as the demand for satellites are increasing, it portrays that globally nations are gradually depending on space-based assets for socio-economic needs, and nations are pursuing for either military or diplomatic efforts in protecting their space assets.

Just as other nations, Sri Lanka too is gradually depending on space-based assets as influenced by spacefaring nations to leverage its power through space. While understanding this situation, it is best that Sri Lanka devise its own strategy for space to safeguard the national interest. But an obvious question would be: how can Sri Lanka protect space with minimum space capability? Technical resource deficiency is not an excuse as long as the country is dependent on space-based assets.

Therefore, the paper will first discuss if space will be used as a sanctuary or a warfighting domain, subsequently will discuss Sri Lanka's dependency in space, and finally recommend a military strategy for space in Sri Lanka.

Categorization of Space: Amongst the many categorizations of space activities Byrne, Dickey and Gleason, n.d. (2019) divides space activities into four main areas such as: civil, commercial, national security and intelligence. Civil space consists of activities sponsored and conducted by civil and government entities such as the National Aeronautics and Space Administration (NASA) and the National Oceanographic and Atmospheric Administration (NOAA) of the United States. Commercial space activities are conducted as a motivation of financial benefit such as Space X and Virgin Galactic. National security space refers to military and intelligence space activities which are funded and implemented by the military and intelligence agencies. While military space refers to operational and tactical use of space, intelligence refers to the strategical use of space assets (Byrne, Dickey and Gleason, n.d., 2019).

Sector	Example of Activities	Example of Actors
Civil Space	International Space Station, Hubble Telescope, Apollo Program, Artemis Human Lander Program	NASA, NOAA, FAA, FCC
Commercial Space	Launch industry, Earth observation, communications, broadband.	SpaceX, ULA, Iridium, Maxar, Lockheed Martin, Boeing, Blue Origin
National Security: Military	GPS, communication, missile attack warning satellites	Space Force, Air Force, Army, Navy, Coast Guard
National Security: Intelligence	Signals intelligence, reconnaissance	Intelligence agencies

Table 1: Space Sectors of 2020
Source : Space Policy Primer: Key Concepts, Issues, and Actors by Byrne, Dickey and Gleason, n.d., 2019

Satellite Orbital Characteristics: Space strategy depends on the understanding of the nature of the satellite orbits. Low Earth orbit (LEO) satellites operate from about 200 km to 2,000 km altitude. Medium Earth orbit (MEO) is generally considered to range from about 2,000 km to GEO altitude. Geosynchronous/ geostationary (GEO) satellites circle the equator at 35,785 km altitude (See Table 2).

Orbit		Altitude		Typical Mission
Low Earth Orbit (LEO)		200-2,000; nominal: 500-1,000		Remote sensing, communications, weather
Medium Earth Orbit (MEO)		2,000-GEO; nominal: 10,000-20,000		Positioning, navigation, and timing (PNT)
Geostationary Earth Orbit (GEO)		35,785		Missile warning, communications, weather, remote sensing
Highly Elliptical Orbit (HEO)	Molniya (12h)	~500	~40,000	Missile warning, communications, remote sensing
	Tundra (24h)	~24,000	~40,000	

Table 2: Satellite Orbital Characteristics
Source: Space Policy Primer: Key Concepts, Issues, and Actors by Byrne, Dickey and Gleason, n.d., 2019

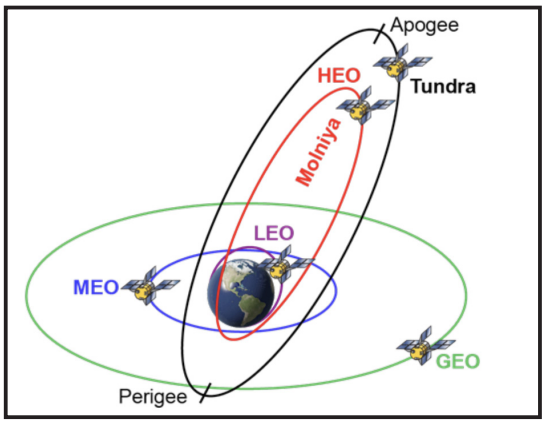

Figure 1: Orbital Characteristics
Source: Space Policy Primer: Key Concepts, Issues, and Actors by Byrne, Dickey and Gleason, n.d., 2019

II. STATEMENT OF THE PROBLEM

The most common use of satellite in Sri Lanka, is the use of navigational satellites for daily navigation and broad band satellite television. Sri Lanka is dependent on satellite imagery for forecasting weather which is a vital national interest for the development of the Sri Lankan economy and for remote sensing activity that would be useful during disasters. Yapa (2015) argues that although Sri Lanka has signed many of the multinational space law agreements, they are not ratified, and because of recent national and global developments, there is an urgent requirement to have space laws enacted in Sri Lanka. Around the globe, nations have understood the value of space-based assets and are gearing to protect their assets through their own means. Sri Lanka is no exception, and it should be the interest of the nation to protect its space-based assets. However, there is no proper national military strategy to protect the vital assets in space so that it does not affect the national socio-economic interest. Therefore, as for national defence, the lack of coherent national military strategy in space is viewed as a major lacuna in the national defence strategy.

Thus, problem of the study underscored that Sri Lanka is becoming dependent on space-based assets and there is no national military strategy to protect space assets which opted resesarchers to conduct this study.

III. RESEARCH QUESTIONS

Following research questions were derived to drive through the research.

a. How is the space domain primarily used: as a sanctuary or a warfighting domain?

b. What is the national interest of Sri Lanka in space?

c. What is the suitable space security strategy for Sri Lanka?

IV. METHODOLOGY

The study resorted to a **qualitative exploratory** study where researchers employed **interpretivism** as the study philosophy. This permitted to interpret reasons and meanings of the observed phenomenon. **Inductive** research approach was used to explore solutions to the existing problem. Data collection was done through survey reports, post war analysis reports, research articles, publications, newspaper articles and online publications whilst conformed to **cross-sectional** time horizon. The contemporary scenario is thoroughly analysed using **thematic analysis** as the analysis tool. Recommendations produced within the proposed context based on study findings. The key objective of the paper is to find a suitable military strategy for space in the Sri Lankan context which conformed the study into the **grounded theory** strategy.

V. DATA COLLECTION

Space as a Sanctuary or Warfighting Domain: RAND analyst Mueller (2003) in his noteworthy article "Totem and Taboo: Depolarizing the Space Weaponization Debate" observed that opinions within the space policy and strategic analysis literature can be broken into two basic camps surrounding the space weaponization debate as the "pro-sanctuary camp", which argues that not weaponizing space preserves or engenders more power to the state than weaponizing and the "pro-weaponization camp' which argues the opposite. Theorists in these two divergent camps regularly debate on the space weaponization both nationally and internationally.

Mueller (2003) further divides the camps into three subcategories. The pro-weaponization camp includes the pre-emptive, utilitarian, and hegemonist perspectives. The pro-sanctuary camp is further broken down into the idealist, internationalist, and nationalist perspectives. As figure 2 illustrates, at the root of Mueller's six categories is a spectrum of political

thought that can be described as spanning from the far left to the far right. The dividing point, as it relates to spacepower, revolves around the decision to weaponize space or not. From an international relations perspective, it is pertinent to understand the current global trends that influence the individual state activity either from pro-weaponization or pro-sanctuary.

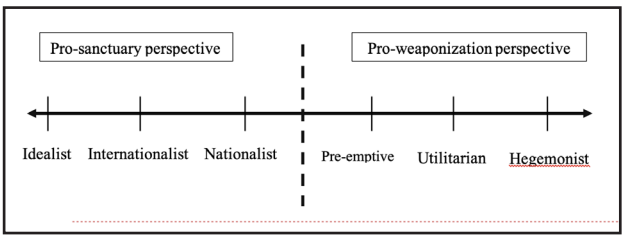

Figure 2: Spacepower Weaponization Debate
Source : Muller (2003) Totem and Taboo: Depolarizing the Space Weaponization Debate

Pro-Weaponization Camp: From the dividing point to the far right, the Pro-weaponization camp is divided as: Pre-emptive, Utilitarian, and Hegemonist. The Pre-emptive group "seek to avoid rivals gaining military or political advantage by developing space weapons before they do." Mueller points out that Pre-emptives are generally the least extreme on the issue of weaponization, but they do not necessarily share the most common ground with the sanctuary crowd, describing them as "reluctant" weaponization advocates. Theorists such as Klein (2019) analyse that polities go to war based on fear, honour, and interest, and argue that it will be same in the space domain. Klein (2019) believes great, medium, and emerging spacepower nations should have the right to self-defence and provides strategies for the same.

Mueller's second pro-weaponization perspective belongs to the "Utalitarian." They "favour development of space weapons when and insofar as they would usefully enhance (state) military capabilities." Theorists such Ziarnick (2015) could be included in this category as he provides a military type strategy by enhancing spacepower capabilities to maximizing political, economic, and military advantages for the United States. This is probably the dominant perspective shared by military space professionals who seek to secure their medium in wartime as surely as sailors seek to control the sea, airmen the air, and soldiers the land.

The third and final pro-weaponization perspective that Mueller identifies is that of the "Space Hegemonists." They "favour intense development of (state) space weapons in order to make (state) military and political preponderance unassailable." As such, they argue the state must weaponize space as soon as possible, not only to assure its success in future military and economic ventures, but to prevent being dominated by other states if they succeed in gaining absolute control first.

Theorists such Dolman (2002) argue that the United States should deny other nations operating in space and that the United States should dominate space through spacepower to influence other nations.

Space as a Sanctuary: Space activities for peaceful purposes encompass a wide range of endeavours that contribute to global cooperation, scientific advancement, and the betterment of humanity. Mueller (2003) calls the first of the sanctuary proponents "Idealists," and says they "oppose all space (and typically other new) weapons, for reasons transcending defence policy considerations." He notes that this is perhaps the most commonly held belief, particularly outside the United States. Moltz (2020) argues that there is a compelling logic to exercise of military restraint by all actors in space because of their shared national interest in maintaining safe access to critical regions in space. Muller's second group of sanctuary, "internationalists" "oppose space weapons because they would cause or contribute to general arms race, and crisis instability." Frees (2007) strongly believes that the race for space weapons and the US quest for exclusive or at least dominant ownership of strategic space assets have alienated the very allies that the United States needs in order to maintain its leading role in space exploration and that US space security should be through cooperation rather than competition. "Internationalists" support the rule of law, but believe security in space requires treaties espousing peaceful uses, weapons bans, and international cooperation.

The third sanctuary perspective identified by Mueller is that of the "Nationalists." They "seek to avoid space weapons because it would reduce (state) power and/or security relative to potential adversaries". Stemming from the tradition of classical realism, Nationalists are not worried about the possible destabilizing effects of space weapons, rather they prefer space sanctuary to preserve the status quo. They point to the United States, which is the predominant spacefaring state. Along with its allies, it has become dependent on space-derived services for its security and economic well-being.

1) Historical perspective: The height of the Cold War saw the United States and the Soviet Union racing to dominate space. The Soviets were successful in launching Sputnik I as the orbital object in 1957 and the United States followed suit by launching Explorer I in 1958. While there were launches of orbital objects into space, the United States tested its Anti Satellite (ASAT) weapon in 1958, while the Soviets tested its ASAT weapon in 1963. As per Klein (2019), the United States developed an ASAT weapon due to the fear of the Soviets placing nuclear weapons in orbit. In addition, in 1962 the United States conducted a 1.4 megaton nuclear detonation in high altitude causing premature failure of several satellites in low Earth orbit, as well as significant communications disruptions.

While the United States continued to develop military capability against satellites, Eisenhower Administration created its official "US Policy in Outer Space" in 1959, reinterpreting its use of outer space for exclusively peaceful purposes (Policy, Oul' and Space, 1959). The policy is careful to note that the peaceful use of outer space does not necessarily exclude military applications (War on the Rocks, 2021). With the interpretation of the peaceful use of outer space, the United States entered into negotiations with the Soviet Union and the other nations of the UN committee to develop the "Outer Space Treaty" which entered into force in October 1967. The treaty calls upon States to refrain from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction or from installing such weapons on celestial bodies (ex: moon) (UNOOSA, 2019). Since the Outer Space Treaty was established, several other nations have joined in developing their own ASAT weapons such as China in 2007 and India in 2019. While the US Space Force advocates peaceful use of space, it recognizes the country's inherent right to self defence (USSF, 2021). Therefore, although there are treaties for the peaceful use of outer space, there are no binding restrictions on military activities in space.

Whilst treaties attempt to control weaponization of space, civil and commercial sectors keep improving for human development. Communication satellites facilitate global telecommunications, including television broadcasting, internet access, and long-distance phone calls. Companies such as Intelsat, SES, and SpaceX's Starlink provide satellite-based communication services. Earth-observing satellites monitor and collect data which is used in agriculture, forestry, climate monitoring, disaster management, and urban planning. Companies like Planet and DigitalGlobe lead this field. Global Navigation Satellite Systems (GNSS), such as GPS (Global Positioning System), GLONASS, and Galileo, enable precise positioning and navigation for aviation, maritime, agriculture, and location-based services. Commercial space tourism is an emerging industry, actively promoted by companies like Blue Origin, Space, and Virgin Galactic, that aims to provide suborbital and orbital spaceflight experiences. Mining asteroids and celestial bodies for valuable resources like rare metals, water, and minerals was also explored by pioneers such as Planetary Resources (now Redwire Space). A wide range of scientific experiments and research in space, including studying microgravity's effects on biology, physics, and materials science are carried out by civil space agencies like NASA with international collaborations while exploring the Moon, Mars, and other celestial bodies for potential future human colonization as well. With crowding in space, useful mechanisms such as debris monitoring services to track and manage space debris to prevent collisions with operational satellites have also been created. Projects like SpaceX's Starlink and OneWeb aim to create megaconstellations of satellites to provide global high-speed internet access.

Programs like the International Space Station (ISS) often include educational outreach raising the significance of space research as educational tools. Satellite technology is used in search and rescue operations with particular assistance in locating individuals.

Sri Lanka's National Interest in Space: Sri Lanka's interest in space activity is in commercial and national security. The most common use of satellite in Sri Lanka, is the use of navigational satellites such as Global Positioning System (GPS) . The Meteorological Department uses LEO and GEO satellites of China and South Kora to directly receive data for weather forecasting and uses web based satellite imagery of Indian and Japan (Department of Meteorology). The Survey Department of Sri Lanka uses satellite imagery for remote sensing activity (Sri Lanka Survey Department). The use of space assets in the fields of meteorology and remote sensing will contribute to the national development and avoidance of disasters. On the part of military use, space assets were used for communication and intelligence gathering. In the year 1998, when Elephant Pass fell into the hands of the LTTE, the Air Force did not have means of communication between the North and Colombo. By the use of V Sat communication method, the Air Force was able to establish contact with its personnel in the North. The speciality of V Sat is that it could connect to the land line of the end user. In addition, the Armed Forces used Satellite communication in thick jungles and during deep sea operations. A more strategic advantage was the ability to gain high resolution imagery of LTTE hide outs. The nullification of hideouts by air strikes had strategic effect to the LTTE. One may argue, the same imagery could be received through surveillance aircraft. However the advantage of satellite imagery was that the enemy was not aware that they were been observed. In the year 2010 the LEO satellite that was to be launched by the Sri Lanka Telecom Regulatory Commission (TRC) for communication, broadcasting and defence related activities was halted due to the high cost of building and annual maintenance (Gunawardene, 2010). If the LEO satellites were available, Sri Lanka would have been able to monitor the vast Exclusive Economic Zone effortlessly.

Nevertheless, Sri Lanka safeguarded its ambitions to launch its own satellites into space. Sri Lanka joined the spacefaring nations in 2019 when Arthur C. Clarke Institute for Modern Technologies (ACCIMT) of Sri Lanka and the Kyushu Institute of Technology (Kyutech) of Japan launched Ravana-1 nano satellite (Ministry of Education, 2020). Ravana-1 was primarily developed for educational and research purposes. While it aimed to provide hands-on experience for Sri Lankan students and researchers in satellite technology and space-related fields, the satellite was also designed to capture images of Sri Lanka and other regions using an onboard camera. The second nano satellite, KITSUNE Nano Satellite, was successfully deployed into the orbit from the International Space Station (ISS) on the 24th of March 2022. (Newsfirst, 2022).

Kitsune is 6 times larger than the Ravana-1 satellite and the specialty of this satellite is that although it was created jointly by 5 international companies, the engineering and technical contribution was made by the engineers at the ACCIMT. The satellite is mainly used for imagery and data communication. It is significant that the ACCIMT became a partner of this project with no financial commitment, purely in exchange of the services of the ACCIMT's Engineers in the design and development activities of the satellite (ACCIMT, 2022). ACCIMT-Kyutech space-technology collaboration venture, the Nano-Satellite BIRDS-X, primarily a communication-technology research mission, is scheduled to be launched in mid-2024. The advancement of satellite technology in Sri Lanka demonstrated the country's growing interest and involvement in space science and technology. Panawennage (2023) argues that with the discovery of nanosatellites, many emerging spacefaring nations can launch their own nanosatellites because of the low cost.

In future, internet facilities would not mainly depend on undersea fibre optic cables. As of 2021 statistics, 67% of the population of Sri Lanka have access to the internet (World Bank, 2021). Internet for Sri Lanka is currently accessed through fibre optic submarine cables, which is a critical vulnerability to the Island. The government is currently in discussion with Starlink Internet Systems to provide internet through satellites (Newsfirst, 2021). It I snoted that a space-based transmission network is difficult to be constrained compared to underground cables, and information dispersion would be impossible to control (Dolman, 2002).

With technological developments, a nation requires legal enactments. Sri Lanka is party to three international space treaties; Outer Space treaty, the Convention on International Liability for Damage Caused by Space Objects and the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space. Yapa, (2015) argues that because of recent national and global developments, active involvement of private sector and commercialization of space activities, having space law in Sri Lanka has become crucial. However, Sri Lankan government has not enacted any space related laws in Sri Lanka (Yapa, 2015).

In considering balance of power, Hans Morgenthau is perhaps the most systematic of all modern theorists in this respect, and his approach has been followed by numerous other theorists since his work "Politics Among Nations" was first published in 1948. In describing the "elements of national power," he systematically includes and assesses geography, natural resources (especially food and raw materials), industrial capacity, military preparedness (especially technology, leadership, and quantity and quality of the armed forces), population (especially the distribution and trends), national character, national morale, and the quality of diplomacy and government, while warning against, among other things, efforts to attribute "to any single factor an overriding importance" in the measurement of power.

However, as far as the key world powers in a particular domain is concerned, according to Hans Morgenthau, there are four methods of balancing power; Divide and Rule, Territorial composition, Armaments, Alliances. Under Armaments, Hans Morgenthau states that "the principal means, however, by which a nation endeavours with the power at its disposal to maintain or re-establish the balance of power are armaments". The armaments race in which Nation A tries to keep up with and then to outdo the armaments of Nation B and vice versa is the typical instrumentality of an unstable, dynamic balance of power. The necessary corollary of the armaments race is a constantly increasing burden of military preparations devouring an ever greater portion of the national budget and making forever deepening fears, suspicions and insecurity (Morgenthau 1967). Therefore, it becomes rather challenging and an enduring mission for a weaker but strategically important state to establish an equilibrium between international influences and preserving national interests.

Space Strategy for Less Capable Spacepower Nation: Out of the four methods of balancing power, Hans Morgenthau states that the two principal means by which a nation endeavours to maintain or re-establish the balance of power are armaments and alliances (Morgenthau, 1967). Therefore, the military of a nation is vital to gain and balance the power of a region by using alliances or armaments or by a combination of both. If a nation is not militarily superior to the adversary, the latter would be an obvious option in safeguarding their interest. Emerging spacepowers will have non-military levers of power to advance national interests. By definition: "a less capable space power will be more challenged in influencing those considered more capable; nonetheless, non-military actions can be used to achieve some strategic objectives" (Klein, 2019). Less capable spacepower has several options that they could leverage in space: diplomatic actions; promoting national pride; and benefits created from a more technologically educated work force.

Emerging powers may use diplomacy to contest the power and influence of another. One potential venue for emerging space powers to advance individual or collective interests is the Committee on the Peaceful Uses of Outer Space (COPUOS). There are over 50 countries that could be considered as influential in the use of space, even without having a significant space-related capability themselves. Canadian officials see the Committee's role as being an essential element in space governance to increase the socio-economic benefits of space. As a result, Canada has used its position on COPUOS to advance issues that it views in its interest, as well as that of the global community. The purpose of the European Space Agency (ESA) to provide and to promote, for exclusively peaceful purposes, cooperation among European states in space research and technology and their space applications, with a view to their being used for scientific purpose and for operational space applications systems (ESA, 1975). With such ambitious space agencies, the regional cooperation among neighbouring states will be enhanced.

For emerging space powers, an ambitious space program may not be an option, but they can use space-related activities to bolster national pride. In the case of Canada, the Canadarm-2 and Dextre – robotic arms and manipulators to build and maintain ISS are both featured in the Canadian five-dollar bill. When joining other counties' ambitious endeavour in space, an emerging spacepower can gain a sense of benefit stemming from active participation (Klein, 2019). Modest achievements in space can be communicated through traditional media outlets or social media, depending on the desired strategy, long-term advocacy through public affairs and strategic communications.

Because of this view, some governments have sought to increase the percentage of their population which is educated and trained in science, technology, engineering, and mathematics fields. Such education and training are often deemed essential for a growing and robust domestic economy, especially one that is able to weather global economic downturns. Emerging space powers may also use this strategy of developing a highly educated, technology-savvy workforce that enables the growth of a space industry. The hope is such results will enhance a country's economic instrument of national power, which can potentially lead to improved effectiveness in diplomatic initiatives and basic research, and development as well.

VI. DATA ANALYSIS AND FINDINGS

Space as a sanctuary or warfighting domain: When studying the evolution of spacepower, it is observed that space is used as a sanctuary as well as a warfighting domain. Scientists have been able to place satellites into several orbits in space for various purposes of supporting the human advancement on surface and air. These advancements have been in the fields of civil, commercial, and national security. During the height of the Cold War, it was a race towards space to demonstrate the scientific development by both parties from United States (US) as well as the Soviet Union (USSR). In any situation, the access to the higher ground has a strategic advantage in maximising the influence against the adversary. The US suspicion of USSR capability of placing a nuclear weapon in space is natural when viewed from the lens of a realist. The armament race between rival nations during the Cold War was evident through the domain of space when the United States also launched their orbital satellite a few years later. Interestingly, both parties understood the shier destruction caused by nuclear weapons and came to an agreement not to place weapons of mass destruction in orbital space, through the "Outer Space treaty". The treaty was a significant milestone that was not seen in any other land, sea or air domains which limited the use of the domain for warfighting as soon as the domain was introduced. The caveat in the treaty is that although nuclear and weapons of mass destruction in orbit are prohibited, wide range of conventional weapons and military satellites are permitted. The development of ASAT weapons post-Cold War by countries such as China and India, denotes

that nations have continued to view the threat that can be posed by nations.

Whilst development is made to protect space assets, the efforts by commercial and civil space entities is noteworthy for the development of space exploration in the scientific realm. The significant development of the commercial and civil sectors can be viewed as enhacing the economic and scientific exploration capability of a nation. Although there has been development in weaponization of space, it has not hindered the rapid development of space in the use for peaceful purposes. When studying the utilisation of space assets, it can be argued that many space assets are of dual use in peace as well as in support of military. The compelling argument provided by pro-sanctuary theorists and pro-weaponization camps cannot be negated. Nevertheless, unlike the other domains, the rate at which space is being used as a warfighting domain has been comparatively low. Some reasons could be high cost, accessibility to space technology, the high technical knowledge, inhospitableness of the domain of space and legal restrictions reducing the arms race in space.

National Interest of Sri Lanka in Space: Similar to many other developed nations, Sri Lanka is also dependent on space-based assets for dual use of peaceful and military use. Sri Lanka, a country which is affected by monsoons and other adverse weather conditions, needs accurate weather predictions for fields such as agriculture, fisheries, aviation, and emergency management to prepare and mitigate hazards and economic downfalls. The use of satellite imagery for meteorology and survey for development and disaster avoidance will directly contribute to the national and economic development and safety of Sri Lankan citizens. The historical experience of using satellites for military operations can be utilised for national security such as monitoring the Exclusive Economic Zone (EEZ) for illegal activities and search and rescue purposes.

The launch of nanosatellites by Sri Lankan scientists, portrays the potential human resource that the country has in the field of space. Although, the country is not in a sound economic state to build satellites of its own, the discovery of nano satellites and the support that Sri Lanka receives from friendly nations imply that Sri Lanka can be part of the emerging spacefaring nations.

As technologies develop and commercial space operators emerge, it could be a challenge as violent non-state actors (VNA) or terrorist organisations could also develop nanosatellites to be launched under the guise of private companies. VNAs could use their own satellites for secured and global communication. They could use encrypted communication channels to coordinate activities, share information and plan activities. Terrorist organisations having access to high resolution imagery satellites can be valuable for planning attacks in security sensitive installations. With private companies providing internet access in the

future for Sri Lanka, this reduces the dependence on undersea cables. On the other hand, it will attract security concerns such as the risk of interference by malicious actors and potential misuse of the cyber domain by VNAs. In addition, the lack of a coherent domestic space law attracts technologically capable violent non-state actors to operate freely in Sri Lanka, which can be a security risk for the country as well discredit to the nation in face of the international community. As Sri Lanka is a dualist country, strengthening national legislation is an added responsibility for the nation besides ratifying treaties of significance.

Building partnerships regionally and globally would yield opportunities to harness complementary to grow capabilities and capacities in relation to the space domain. In such case India would be the primary choice though other power players would also desire to extend the hand of cooperation. However, Sri Lanka is deemed necessary to identify and adjust according to the regional and global sentiments in the geopolitical realm. Air diplomacy is another tool that SLAF can be leveraged in this regard with other Air and Space power forces. With the increasing competitive nature in producing satellites by private companies, and advancement in technology, the cost of the nanosatellite could be reduced. With the reduction of the cost in future, Sri Lanka may develop its own satellites. Sri Lanka can use these satellites for civil, commercial, and national security purposes in the future. With the dual use of satellites, will bring the requirement of the nation to protect space assets through means other than military capability such as lobbying for international legal bindings in space within Sri Lanka and the international community.

National Military strategy for space: For nation states to further their national interest, security is a paramount factor. From the factors derived, it is understood that Sri Lanka is dependent on space for socio-economic and military activities, and has the potential to grow in the field of science and technology in space. In future, the dependency of space would grow in the country. It is the responsibility of the armed forces to support the nation in securing the space domain for the benefit of the country. Gray (2015) in his 26th air power dicta notes that air power, spacepower and cyberpower are united in warfare. Future air power will be supported by spacepower and cyberpower. The Sri Lanka Air Force is currently the leading organization in cyber security for the nation. With the expertise at hand the SLAF is partially geared to lead the space domain. In consideration of present space activities, it could be concluded that space will not be exclusively a sanctuary and would be between a sanctuary and warfighting domain. Sri Lanka should identify this position in the international arena and the SLAF should take the lead in securing the critical capability. Considering the minimum means available to carry out a strategy for spacepower, the feasible strategy for the SLAF is to engage in spacepower diplomacy as a strategy.

VII. RECOMMENDATIONS

Enacting Space Law for Sri Lanka Enacting Space Law for Sri Lanka: The initial step in making the military strategy pragmatic, Sri Lanka should develop domestic space laws to comply with the obligations of the treaties that Sri Lanka has become a signatory. Sri Lanka needs to study the space laws of emerging, medium and leading spacefaring nations critically and objectively, to frame and adopt its own space law. This will support in enforcing laws pertaining to actions violating interntioal space law, giving due consideration to the treaties that Sri Lanka is already party to and the contemporary developments in other space related treaties.

To Leverage Space Diplomacy: Wickremesinghe (2022) re-affirmed that Sri Lanka does not take part in power rivalry and stood firm with the nonaligned strategy. Diplomatic channels can be used to negotiate agreements, resolve disputes, and promote peaceful cooperation in space, and aim to encourage compliance with international agreements and norms. Through diplomatic efforts, The development of space norms and best practices can help guide responsible behaviour in space and prevent actions that could lead to conflicts or accidents. Sri Lanka should collaborate through organizations such as the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) to develop guidelines and recommendations for responsible space activities. This includes amending and updating Outer Space Treaty for more detailed binding rules could be a cruisial and productive step.

To Create a Technically Superior Work Force: To secure the nation through space domain, the SLAF should possess technically competent personnel. The SLAF should promote the growing importance of the space domain within the service to build the enthusiasm of spacepower amongst its personnel. The gradual expansion of the human resource knowledge in space will be a stimulus for the future personnel joining the military. The recognition that is given by the military for space will be helpful internally to the country as it will encourage space enthusiasts, while externally it would provide a connecting element for regional and extra regional spacefaring nations to collaborate with SLAF to develop the manpower of the SLAF. Subsequently, every achievement in spacepower should be extensively publicised to boost the national pride of the state.

Transparency and Confidence-Building Measures: Sri Lanka should engage in transparency and confidence-building measures (TCBMs) to enhance trust and reduce the risk of misunderstandings or misperceptions related to space activities. This includes sharing information about space policies, activities, and intentions. Security cooperation among regional and extra regional states through space involves collaborative efforts to address security challenges, enhance situational awareness, and promote stability by leveraging space-based assets

and technologies. Neighbouring spacefaring nations such as India, can share satellite imagery and intelligence data to monitor border regions, track illicit activities, and enhance situational awareness. This can be particularly valuable for counterterrorism efforts, border security, and addressing cross-border threats.

Space-based technologies, such as maritime surveillance satellites and Automatic Identification System (AIS) data, can be used to monitor maritime activities, detect illegal fishing, combat piracy, and enhance search and rescue operations in coastal and maritime regions shared by neighbouring states. Space-based assets like Earth observation satellites can provide real-time data on natural disasters, helping neighbouring states respond more effectively to emergencies. Sharing such information and coordinating disaster relief efforts can save lives and minimize the impact of disasters. Neighbouring states can collaborate on monitoring and addressing environmental challenges, such as deforestation, pollution, and climate change impacts. Such traditional and non-traditional security threats can be mitigated through security cooperation among regional and extra regional states on spacepower. The vast Exclusive Economic Zone (EEZ) cannot be monitored and secured by Sri Lanka by its limited capabilities. Sri Lanka is also not capable of launching its own imagery satellite for surveillance due to high cost. Until nanosatellite technology capability is increased by Sri Lanka, security cooperation through shared intelligence through regional and extra regional LEO satellites will help to secure the IOR region.

Cybersecurity: Space assets, including ground stations and communication systems, are vulnerable to cyberattacks. Governments and organizations invest in robust cybersecurity measures to protect space-based infrastructure from unauthorized access and cyber threats.

Space Debris Mitigation: Despite anti-satellite testing by four spacefaring nations, and the thousands of pieces of incredibly dangerous, long-lived debris resulting from some of those tests, no nation has taken an official position that such tests are unlawful under the space treaties (or any existing space law). Sri Lanka needs to voice its opinion in enacting international binding treaty or agreement against anti-satellite testing.

To Enhance Space Domain Awareness (SDA): Although the SLAF should take the lead in the security of the space-domain, it should be a joint effort through national and international stake holders. Enhancing Space Domain Awareness requires a multi-faceted approach that involves technological advancements, international cooperation, responsible behaviour, and the commitment of various stakeholders, including governments, space agencies, private companies, and international organizations. With the enhanced expertise, in the field of space, the SLAF can be the focal point to collaborate and coordinate matters in respect

to SDA for the security of space. SLAF requires not only suitable programs but also sustainable financing from the Sri Lankan government. Corrective measures and technical developments should be planned to be in par with foreign military technology in order to achieve interoperability in a combined environment. Further, there will undeniably be concerns among regional stakeholders to establish a mutual platform for the cause due to incompatibility of their individual interests. It is our responsibility to convince all stakeholders to work towards the common goal of security and mutual respect towards individual interests by promoting this concept on regional forums in a persuasive manner using our diplomatic soft power.

VIII. CONCLUSION

Space like any other domain, has been used for power projection and states like Sri Lanka should have its own unique strategy in space. The national interest for space by nations is increasing in civil, commercial, intelligence and military fields. The necessity of safeguarding the national interest in space is growing and space becoming a warfighting domain is inevitable. Sri Lanka is gradually depending on space, and the necessity to secure the space domain becomes a vital interest for Sri Lanka in the future. SLAF with its technical expertise and being the force that is most dependent on space, requires to lead securing the space domain. With the limited space assets available, the human resource is the main asset that the SLAF has to invest on. Diplomatic power being the strongest power of Sri Lanka, the SLAF should device its military strategy to be 'diplomatic military strategy' until such time that Sri Lanka is able to have a formidable capability in space. With this strategy, yes, Sri Lanka will be able to protect its space with with a pragmatic and coherent military strategy.

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WAY FORWARD FOR SMALL AIR FORCE TO SUSTAIN ITS PROFESSIONALISM IN THE FACE OF GLOBAL ECONOMIC CRISIS

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ABSTRACT

Air power has repeatedly demonstrated its effectiveness as a military option for nation-states to end armed conflicts. However, the advent of information and network systems, contemporary air/surface delivered stand-off, precision-guided surface attack weapons and unmanned aerial systems have defined a new air power equation among the competitors. The enhancement of resources and the capability of the Air Force has been questioned in the face of economic crisis whilst the majority of nations struggle to maintain a complete Air Force with versatility and depth. As such the concept of a small Air Force, which has the full spectrum of capabilities but absences in depth, has emerged as a saviour. The scale of military air power operations in financially scuffling nations is relatively small in terms of force size, total sortie potential, resource consumption and availability, and overall support costs. The contribution of air power is vital to the success of the internal defence strategy of nations rather than expeditionary efforts which are highly unlikely due to economic crisis. Due to the limited number of aircraft owned by governments, it is crucial to consider airframe availability, maintenance turnaround times, flight safety and sortie generation rates. In the modern day, air power is called not just for wars in traditional armed conflicts but also to maintain peace and security in many unstable nations throughout the world and provide Humanitarian Assistance and Disaster Relief (HADR) to those who have been affected by natural and fabricated calamities.

Clausewitz's concept is still applicable in the execution of these expanded missions that actions by the military should ultimately culminate to serve politics. SLAF needs to find immediate solutions to execute said missions successfully as it is affected by the global economic crisis. Initially, the study focuses on the term small Air Force and the importance of a small Air Force to the nations during the economic crisis. To this end, it contends that air power should not only serve as a useful operational tool for nations to achieve a swift victory in war, but that to begin with, the nonlethal aspects of air power are equally important in helping them to preserve peace. In parallel, the study also discusses several challenges and opportunities for the small Air Force that may enhance or impede their professionalism in the current complicated global economic crisis.

It also suggests ways in which such Air Force may build upon their strengths or overcome their weaknesses. Through prudent decision-making and a steadfast commitment to professionalism, even amidst financial challenges, the Air Force can navigate the storm and emerge stronger, ensuring the defence and security of the nation. The military as an instrument of national power must be able to influence the international agenda, by enabling several options for the government to contribute as a potential member of the international community. Considering the options, air power should specifically suit to meet the criteria for flexibility, speed, reach and height.

The study found that such a capability is enhanced by the ability of nations to take a long-term view of their force structuring requirements and rapid force modernisation. Small Air Forces need to project non-lethal air power initially to preserve peace since they do not have the resources to wage protracted wars, especially during this global economic crisis. The contribution of developing nations to HADR and peace support activities enhances their character thus small Air Forces can overcome their lack of training and technological facilities by cooperating with other nations while maintaining positive defence relations and military diplomacy with them. Further, the collaboration of regional nations would provide an additional layer for their defences and balance relations with prominent state and global non-state actors would ensure comfortability in the geopolitical pendulum.

Keywords: Small Air Force, Air power, professionalism, Defence, Non-lethal Force, Economic Crisis, HADR, Peacekeeping.

BACKGROUND OF THE STUDY

A. Small Air Force

Historically, the Air Forces were classified based on their numerical assets. However, the Six-day War between Arab States and the Israel (1967), the Kosovo War, Russo-Ukraine War demonstrated that the contemporary classification should not only based upon the numerical assets of such a force. The considerations also to be given to the industrial capabilities, sustainability, versatility and redundancy. The Royal Australian Air Force has graphically demonstrated the status of a small Air Force by adhering to the steps of Kanikira.S,(2009)

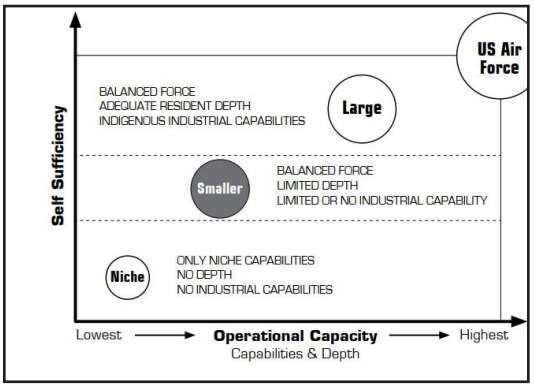

Figure 1: Classification of the Air Forces
Source: Air Power Development Centre, Royal Australian Air Force (2009)

Further, according to Mackenzie.S,(1994), a small Air Force is one which chooses not to conduct operations in the complete spectrum of due to its limitations. The limitations would act upon the politics, financially and the same as based on the competency of the individual.

The wars in the contemporary scenario mostly wage with the coalition and as per Jason. R,(2013) that NATO has faced the rigorous challenge of interoperability during the Libiyan Campaign. It is essential to develop regional and global alliances since the small Air Forces have limited operational depth. As such, interoperability is a growing concern and skilled human resources are undoubtedly important for the same.

However, during an economic crisis, the majority of Air Forces face difficulties in force generation and force preparation. As such, governments should be concerned about the financial limitations more than ever whilst maintaining a small Air Force. Training of the personnel, acquiring of technologies and even alliances have become questionable due to the economic crisis. Therefore, the contributing factors for a small Air Force have differed from the Kanikira era to the contemporary scenario when the economic crisis has affected the nation's ability to project air power.

B. Professionalism

Sustaining and enhancing the professionalism of a small Air Force during a global economic crisis requires strategic planning, resource optimization, and adaptability. In the dynamic landscape of global security and ever-evolving technological advancements, the role of a small Air Force remains pivotal in safeguarding a nation's sovereignty and security interests (Smith, 2018). To achieve this critical mission, maintaining and elevating the professionalism of the personnel within a small Air Force become paramount.

Professionalism goes beyond technical proficiency; it encompasses a holistic approach that includes rigorous training, ethical conduct, strong leadership, and a culture of excellence (Johnson, 2020). In this context, this endeavour requires strategic planning, resource allocation, and a commitment to continuous improvement. This concept delves into the strategies and measures essential for sustaining and enhancing the professionalism of a small Air Force, ensuring its unwavering readiness and effectiveness even in the face of challenges, be they economic, technological, or geopolitical (Jones, 2019). By prioritizing training, fostering leadership development, nurturing a culture of professionalism, and embracing innovation, a small Air Force cannot only navigate complexities but also excel in its mission to secure the skies and beyond.

The introduction delves into the strategies and measures that underpin the sustained and enhanced professionalism of the Sri Lanka Air Force (SLAF). By investigating the importance of training programs, leadership development initiatives, and the cultivation of a professional culture, this discourse seeks to provide insights into the ways in which small Air Forces like SLAF can rise to the occasion even amidst economic and geopolitical uncertainties (Brown, 2021). Drawing from both historical lessons and contemporary best practices, this exploration sheds light on how a small Air Force cannot only preserve its professionalism but also flourish in its mission to secure the skies and contribute to national security (Anderson, 2017).

C. Economic Crisis and SLAF

In the face of a global economic crisis, sustaining and continuing the professionalism of SLAF demands strategic ingenuity and adaptive measures. As highlighted by Smith (2019), a crisis environment necessitates innovative approaches to ensure the Air Force's capabilities remain intact while efficiently managing resources. This paper outlines a way forward for SLAF to uphold its professionalism during economic challenges, drawing upon insights from academic and strategic literature.

In times of economic strain, strategic prioritization is crucial. Identifying core missions that align with national security interests is imperative, enabling the allocation of limited resources to essential tasks while postponing or reducing non-essential activities (Johnson, 2020). Integrating advanced simulation technologies for training purposes minimizes operational costs. Investing in virtual training environments and simulators allows for cost-effective skill maintenance without extensive flight hours, as discussed by Brown (Brown, 2018). Building partnerships with allied nations, regional security organizations, and industry entities can foster resource-sharing, joint training exercises, and collective capability development.

Anderson's research underlines the significance of collaborative efforts in the small Air Force's sustainability (Anderson, 2017).

Developing a comprehensive financial plan that accounts for varying economic scenarios ensures the Air Force's resilience. Miller's work underscores the importance of robust financial management strategies during economic turbulence (Miller, 2021). Engaging in transparent communication with the public and stakeholders about the Air Force's efforts to manage resources during the crisis fosters understanding and support. Parker emphasizes the significance of public relations strategies during challenging times (Parker, 2020).

The impact of an economic crisis on the air power capabilities of SLAF is a subject of significant concern and study. Economic constraints can profoundly affect the ability of SLAF to maintain, upgrade, and operate their aircraft fleet, ultimately influencing their operational readiness and effectiveness. Economic crises can significantly affect the air power capabilities of SLAF. The reduction in budgets, training opportunities, maintenance, and technological modernization can collectively lead to diminished operational readiness and effectiveness. While these challenges are substantial, SLAF can mitigate their impact through strategic resource allocation, collaboration with partners, and prudent decision-making to ensure that their air power capabilities remain as resilient and effective as possible.

In conclusion, the pathway to sustaining and continuing the professionalism of SLAF during a global economic crisis requires a multifaceted approach. By strategically allocating resources, embracing technology, nurturing partnerships, and maintaining open communication, small Air Forces can navigate economic challenges without compromising their professionalism or mission readiness.

D. Overview of the Study

An economic crisis, characterized by financial instability, recession, and reduced government budgets, can exert a profound influence on the capabilities and operations of SLAF. These effects encompass a range of areas including training, maintenance, modernization, personnel, and overall operational readiness. The following overview provides insights into the impact of economic crises on SLAF, supported by academic sources.

1) Training and Readiness: Economic downturns often force SLAF to scale back training exercises and reduce flying hours due to budget constraints. This can lead to a decline in pilot proficiency and operational readiness (de Lima & Simões, 2020).

Type of Operation	Year					
	2016	2017	2018	2019	2020	2021
Operations	6,961.93	-	4,448.40	3,793.25	3,337.85	3,969.50
Joint Operations	-	-	112.20	264.45	-	-
Operations Foreign	-	-	2,077.55	2,165.13	2341.64	-
Training	6,588.00	5,875.38	6,412.19	7,890.14	6868.40	5,757.01
VVIP	-	601.30	618.15	641.50	329.85	221.05
VIP	-	281.35	220.15	153.05	84.3	131.50
Commercial	396.20	278.35	117.50	235.00	35.80	37.50
Overseas	-	-	20.00	-	64.25	67.15
Others	-	5,685.50	617.40	86.05	-	751.57
Total	**13,946.13**	**12,721.88**	**14,645.14**	**15,229.37**	**13,062.09**	**10,926.48**

Figure 2: Decrement of Training and Operational flying hours of SLAF
Source : Sri Lanka Air Force Annual Performance Report (2021)

2) Maintenance and Upkeep: A lack of funds can hinder routine maintenance and repairs, resulting in longer downtime for aircraft. Reduced funding may also prevent the timely replacement of ageing parts, impacting fleet availability and reliability (Davis, 2020).

Purpose	2013 (LKR Mn)	2021 (LKR Mn)
Aircraft repair and maintanence	12,886.00	4,518.24

Figure 3: Budgetary allocation for aircraft repair and maintanence
Sources : Sri lanka air force annual performance report (2013), Sri lanka air force annual performance report (2021)

3) Modernization and Procurement: Economic crises can curtail investment in modernization programs and the procurement of new aircraft and technologies. As a result, small Air Forces might be forced to operate with outdated equipment and limited capabilities (Gady, 2020).

Purpose	2013 (LKR Mn)	2021 (LKR Mn)
Aircraft spares	626.72	687.42

Figure 4: Budgetary allocation for aircraft spares
Source : Sri Lanka Air Force annual performance report (2013), Sri Lanka Air Force annual performance report (2021)

Although the allocation for aircraft spares was slightly increased in 2021 compared to the dollar exchange rates in 2013 and 2021, the dollar rates have increased from $70 within these 8 years. So, the budgetary allocation in 2013 was equivalent to USD Mn. 4.7, and the 2021 allocation was equivalent to USD Mn. 3.38, which actually represents a decrease in allocation for 2021.

4) Personnel Challenges: Budget constraints can impact personnel retention and recruitment efforts due to uncertainty over pay, benefits, and job security. This can lead to a loss of skilled personnel and a decrease in operational expertise (Johnson, 2018).

Description	Approved Cadre	Actual Cadre	Excess / (Vacancies)
Officers	1,786	1,755	(31)
Other Rank (Regular)	33,523	22,473	(11,050)
(Volunteer)	2,691	13,136	10,445
Civil Staff Officers	16	5	(11)
Civil Subordinate Officers	199	106	(93)
Minor Staff	3,302	2,709	(593)
Total	**41,517**	**40,184**	**(1,333)**

Figure 5: The cadre information of the Sri Lanka Air Force as at 31st December 2013

Source : Sri lanka air force annual performance report (2013)

Description	Approved Cadre	Actual Cadre	Excess (Vacancies)
Officers (Regular / Volunteer)	2,557	2,257	(300)
Other Rankers (Regular / Volunteer)	34,381	30,552	(3,829)
Total	**36,938**	**32,809**	**(4,129)**

Figure 6: The cadre information of the Sri Lanka Air Force as at 31st December 2021

Source : Sri lanka air force annual performance report (2021)

5) Innovation and Technological Advancement: Reduced funding during an economic crisis can hinder research and development efforts, slowing down the adoption of innovative technologies that are crucial for maintaining air power effectiveness (McCarthy, 2019).

S/No	Project Name	Directorate
1	Development of an Open Source Intelligence System to Enhance the Intelligence Capability of Sri Lanka	Dte of IT
2	Development of ADS – B Aircraft Monitoring System at SLAF	Dte of ETE
3	Development of IP Based Ground to Air Communication Monitoring System for ADC&CC, SLAF Station Mirigama	Dte of ETE
4	Development of an Indigenous Radar Receiver for Indra MK II Radar at SLAF	Dte of ETE
5	Acquiring of Real Time Radar Data of Indra MK II Radar in SLAF to Main Air Defence Operations Centre at Mirigama	Dte of ETE
6	Upgrading of Air Defence Simulator System at Air Defence Operations Centre (ADOC)/AD Radar Squadrons	Dte of ETE
7	Development of a Bird Repellant Unit for SLAF	Dte of ETE

Figure 7: R&D projects funded by CRD in year 2021
Source : Sri Lanka Air Force annual performance report (2021)

6) Force Projection and Partnerships: SLAF may find it difficult to project power beyond their borders during economic crises. This can limit their ability to contribute to international operations and alliances, affecting their strategic influence (Hartmann, 2017). The principal collaborative field training exercise, orchestrated by the Sri Lankan Army in collaboration with affiliated services, was unfortunately suspended as a consequence of the prevailing economic crisis. The last instance of this exercise took place in the year 2021. In summary, economic crises can significantly disrupt the capabilities and effectiveness of small Air Forces across various domains. The impact ranges from reduced training and maintenance to limitations in modernization and innovation. While these challenges are substantial, strategic planning, prudent resource allocation, and collaboration with allies can help mitigate the adverse effects and maintain operational readiness.

E. Research Gap

While research on the strategies for sustaining and enhancing the professionalism of small Air Forces in the face of a global economic crisis is essential, there is still a notable research gap in this area. A comprehensive analysis of this specific topic is relatively limited, and further investigation can provide valuable insights for policymakers and military strategists. While existing research touches upon the impact of economic crises on small Air Forces, there is a lack of in-depth case studies that provide a comprehensive understanding of how different small Air Forces navigate economic challenges while maintaining their professionalism. Furthermore, there is a need for more specific strategies and guidelines that SLAF can adopt to sustain their professionalism during economic crises. By conducting thorough case studies of different small Air Forces facing

economic crises and examining the strategies they have employed, researchers can contribute to a deeper understanding of effective ways to sustain and enhance professionalism. Such research could provide actionable insights that help SLAF better prepare for and manage economic downturns while maintaining their operational effectiveness and professionalism.

LITERATURE GAP

The literature on the specific topic of sustaining and continuing the professionalism of small Air Forces in the face of a global economic crisis is relatively limited. While there is research on aspects of economic challenges and military professionalism, there is a gap in the literature when it comes to a comprehensive exploration of strategies tailored specifically to SLAF in this context. Current literature offers insights into the impact of economic crises on military capabilities and professionalism, but there is a lack of comprehensive studies that delve into the unique challenges faced by small Air Forces. Specifically, there is a gap in terms of detailed strategies, frameworks, and best practices that SLAF can adopt to ensure the continuity of their professionalism during economic crises. By addressing this literature gap, researchers can contribute to a more nuanced understanding of the challenges small Air Forces face during economic crises and offer evidence-based recommendations that account for the specific context and constraints these forces encounter. Such research could provide valuable guidance for policymakers and military leaders tasked with maintaining professionalism in SLAF under challenging economic conditions.

A. Research Problem

The global economic crisis poses significant challenges to the sustainability and professionalism of the small Air Forces. These forces are confronted with the imperative to uphold their operational readiness, maintain their personnel's proficiency, and foster a culture of excellence, all while navigating resource constraints imposed by economic downturns. However, the existing literature offers limited guidance on tailored strategies that SLAF can adopt to effectively navigate these challenges and sustain their professionalism amidst economic adversity.

B. Hypothesis

The economic crisis will negatively impact on way forward in sustaining and continuing the professionalism of a small Air Force.

METHODOLOGY

This research will employ a qualitative research design, as it aims to gather in-depth insights into the Sri Lanka Air Force's strategies for sustaining professionalism during a global economic crisis. A combination of exploratory and descriptive research will be used to understand the current state, challenges, and potential solutions. Semi-structured interviews will be conducted with key stakeholders within the Sri Lanka Air Force, including senior officers, training instructors, maintenance personnel, and administrative staff. These interviews will provide first-hand perspectives on the challenges faced and strategies employed. Relevant documents, reports, budget allocations, and official publications from the Sri Lanka Air Force will be analysed to provide context and support the findings. By employing this research methodology, the study aims to provide valuable insights into how the Sri Lanka Air Force can navigate the challenges posed by a global economic crisis while continuing to uphold its professionalism and operational readiness.

A. Sampling

The purposive sampling technique was used and the selection of participants was based on their expertise, roles, and experience within the Sri Lanka Air Force, ensuring a comprehensive understanding of the topic. Combining data from interviews, documents, and reports will enhance the credibility and validity of the findings by cross-verifying information from multiple sources.

B. Limitations

1) Generalizability: Due to the qualitative nature of the research and the specific context of the Sri Lanka Air Force, the findings may not be directly generalizable to other Air Forces or countries.

2) Subjectivity: Interpretation of data and identification of themes could be influenced by researchers' subjectivity.

FINDINGS

The Sri Lanka Air Force has strategically allocated limited resources to areas critical for operational readiness, such as training, maintenance, and core capabilities. Budget allocations and expenditure patterns show a focus on maintaining essential capabilities even in the face of economic constraints. The Sri Lanka Air Force places a strong emphasis on continuous professional development and cross-training of personnel. Training records and programs reveal a commitment to enhancing personnel skills and versatility, contributing

to an adaptable and efficient workforce.

Collaborations with allied Air Forces and the sharing of resources have helped optimize operational effectiveness while reducing costs. Joint exercises, maintenance facilities shared with other forces, and cooperative agreements demonstrate a strategy of pooling resources to overcome economic challenges.

Joint exercises, maintenance facilities shared with other forces, and cooperative agreements demonstrate a strategy of pooling resources to overcome economic challenges.

The Sri Lanka Air Force has employed adaptive procurement approaches, including leasing and modular acquisitions, to manage budget limitations. Procurement records and official statements indicate a shift towards flexible acquisition strategies in response to economic uncertainty.

The Sri Lanka Air Force has streamlined administrative processes and implemented lean operational practices to optimize resource utilization. The Sri Lanka Air Force has streamlined administrative processes and implemented lean operational practices to optimize resource utilization. The Sri Lanka Air Force has developed comprehensive contingency plans to navigate economic uncertainties and potential budget cuts.

DATA ANALYSIS

A. Resource Allocation and Prioritization

The strategic allocation of limited resources to critical areas such as training, maintenance, and core capabilities indicates a prudent approach to managing economic challenges. This finding highlights the Air Force's commitment to maintaining operational readiness even in resource-constrained environments. By prioritizing these essential aspects, the Air Force ensures that it can respond effectively to security demands despite financial limitations.

B. Human Capital Investment

The emphasis on continuous professional development and cross-training of personnel underscores the Sri Lanka Air Force's recognition of the importance of its human capital. By investing in skill enhancement and versatility, the Air Force prepares itself to adapt to changing circumstances while minimizing the need for extensive external recruitment. This finding reflects a long-term perspective that values personnel as a valuable asset, leading to a more agile and capable workforce.

C. Partnerships and Collaborations

Collaborations with allied Air Forces and resource sharing indicate a proactive approach to cost management and capability enhancement. The Air Force's willingness to collaborate demonstrates its commitment to maintaining its operational edge through mutual support. This finding aligns with the broader trend of international defence cooperation, contributing to a more efficient use of resources and the exchange of best practices.

D. Technological Innovation

The adoption of technology, including simulation training and modern equipment, highlights the Air Force's adaptability in leveraging advancements to maintain readiness. This finding suggests that the Air Force recognizes the potential of technology to enhance training effectiveness and operational efficiency. By integrating innovative solutions, the Air Force can optimize training costs while ensuring its personnel are equipped with the latest skills and tools.

E. Adaptive Procurement Strategies

The use of adaptive procurement strategies, such as leasing and modular acquisitions, indicates a flexible approach to managing budget constraints. This finding reflects the Air Force's ability to adjust its acquisition methods to align with economic realities. Such adaptability ensures that the Air Force can modernize and acquire necessary capabilities without overburdening its budget.

F. Operational Efficiency Enhancement

Streamlining administrative processes and implementing lean operational practices demonstrate the Air Force's commitment to optimizing resource utilization. This finding implies that the Air Force is taking proactive steps to eliminate inefficiencies and reduce wastage, ultimately leading to improved operational effectiveness even during an economic crisis.

G. Public Perception and Advocacy

Maintaining public support through effective communication and highlighting contributions to national security underscores the Air Force's awareness of the importance of public perception. This finding suggests that the Air Force acknowledges the role of public sentiment in budget allocation decisions. By engaging with the public and demonstrating

its value, the Air Force can garner continued support for its mission.
H. Resilience and Contingency Planning

The development of comprehensive contingency plans highlights the Air Force's proactive approach to managing uncertainties. This finding indicates that the Air Force recognizes the need to be prepared for unforeseen circumstances. By having well-defined contingency plans, the Air Force can respond swiftly to budget cuts or other challenges while minimizing disruptions to its operational capabilities.

RECOMMENDATIONS

Based on the analysis of the findings, specific recommendations can be made across key areas.

In terms of resource allocation and prioritization, it's essential to establish a cross-functional committee to review and allocate resources in line with strategic priorities and operational needs. Additionally, a dynamic resource allocation model should be developed, capable of adjusting based on changing economic conditions and mission requirements.

Regarding human capital investment, a structured career development pathway should be introduced, emphasizing skill diversification and promoting a culture of continuous learning. Implementing a performance-based incentive system to reward personnel actively seeking professional growth and contributing to multiple roles is also crucial.

In the realm of partnerships and collaborations, efforts should focus on expanding international partnerships, including joint research and development projects aligned with the Air Force's technological needs. Furthermore, creating a knowledge-sharing platform that facilitates communication among partner Air Forces can encourage innovation and efficiency improvements.

For technological innovation, establishing an innovation centre within the Air Force is recommended, focusing on identifying and integrating innovative technologies into operations. Allocating a portion of the budget specifically for research and development efforts aimed at cost-effective technological solutions is imperative.

In terms of adaptive procurement strategies, a comprehensive procurement strategy outlining guidelines for adopting adaptive procurement approaches based on specific requirements should be developed. Collaboration with relevant industries to explore opportunities for joint procurement can significantly reduce

costs through economies of scale.

To enhance operational efficiency, it's essential to implement a continuous improvement program encouraging personnel to identify and address operational inefficiencies. Establishing key performance indicators related to operational efficiency and regularly tracking progress towards their improvement is vital.

In the context of public perception and advocacy, launching a public awareness campaign is recommended, highlighting success stories, disaster relief efforts, and the Air Force's role in protecting the nation's interests. Collaborating with media outlets to produce informative content educating the public about the Air Force's contributions and challenges is essential.

In terms of resilience and contingency planning, conducting regular scenario-based drills to test the effectiveness of contingency plans and identify areas for improvement is crucial. Additionally, establishing a dedicated task force responsible for monitoring economic indicators and recommending appropriate actions in response to changing conditions is necessary for effective contingency planning.

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AIR POWER STRATEGIES ADOPTED BY DEVELOPING NATIONS UNDER POLITICAL AND ECONOMIC CHALLENGES: FROM DOMESTIC AND REGIONAL PERSPECTIVES

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ABSTRACT

This research explores the air power strategies employed by developing nations in the face of multifaceted political and economic challenges, focusing on both domestic and regional dimensions. Developing nations grapple with limited resources, complex political landscapes, and varying security concerns, making the utilization of air power a critical component of their defence and foreign policy. Through a literature review, this study aims to shed light on the adaptive and innovative approaches taken by these nations in leveraging air power.

The research examines the interplay between political factors and economic constraints as they shape the formulation and execution of air power strategies. It also delves into the significance of domestic considerations, such as governance structures, and technological capabilities, in shaping these strategies. Furthermore, the study investigates the regional dynamics that influence developing nations' air power choices, including the impact of developing countries, and security threats.

This research provides a framework for understanding the nuances of air power strategies. It elucidates how these nations tailor their approaches to their unique circumstances, whether by prioritizing defensive capabilities, pursuing asymmetric tactics, or seeking regional partnerships. Additionally, the study examines the implications of these strategies on regional stability and global security.

The findings from this research contribute to a deeper understanding of the complex relationship between political and economic challenges, domestic considerations, and regional dynamics in shaping the air power strategies of developing nations. This knowledge is crucial for military policymakers to develop effective strategies and foster cooperation in regions where air power plays a pivotal role in national security and international relations.

Key Words: Air Power Strategies, Developing Nations, Political and Economic Challenges, Domestic and Regional Perspectives

I. INTRODUCTION

The political and economic difficulties a nation encounters on the domestic and regional domains should be considered while studying air power strategy. Since air power in developing nations depends entirely on its sustainability, assimilating their strengths and weaknesses is important. 'Developing nations' is a term that refers to countries with lower levels of economic development, industrialization, and standards of living when compared to more developed countries (Christopher Oniku, 2021). These nations often face numerous challenges such as poverty, inadequate healthcare, limited access to education, and lower levels of infrastructure. The United Nations (UN) often classified the developing nations based on the Human Development Index (HDI). The HDI considers factors such as life expectancy, education, and per capita income to provide a more comprehensive picture of development beyond just economic indicators (Kelley, 1991). Accordingly, India, Indonesia, Nigeria, Pakistan, and Sri Lanka are considered as developing nations.

Air power strategies of developing nations can vary not limited to the political and economic challenges, but based on their geopolitical circumstances, technological capabilities, and strategic goals. Developing nations often struggle to balance defence priorities with other national development needs. Some common air power strategies that developing nations might pursue include force multiplication and asymmetrical warfare, air defence and homeland security, humanitarian, and disaster relief, regional defence and deterrence, partnerships and alliances, indigenous technological development, counterinsurgency and counterterrorism, training, and professional development, limited contingency operations, and civil-military dual use.

Political and economic challenges often hinder the progress and development of developing nations. These challenges are often interconnected and can have wide-ranging impacts on various aspects of society. Common political challenges that developing nations grapple with include political instability, weak institutions and governance, corruption, ethnic and religious tensions, lack of political will and human rights issues.

Due to the above reasons, the domestic and regional contexts of developing nations play a significant role in shaping their political, economic, social, and developmental trajectories. These contexts encompass a wide range of factors that influence the opportunities, challenges, and strategies available to these nations. In the domestic context, the developing nations experience their historical background, cultural diversity, political system, institutions and rule of law, economic structure, social services, urbanization and rural development, gender equality, and youth demographics.

Similarly in the regional context, the developing nations experience geopolitical relations, conflict and security, trade and integration, resource sharing, migration and refugees, health and disease, environmental concerns, and cultural and religious ties.

Since this is a vast subject, the authors make their best efforts to concise the contents of this paper for better understanding purposes.

II. STATEMENT OF THE PROBLEM

Developing nations face a multitude of complex political and economic challenges that significantly impact their ability to formulate and execute effective air power strategies. These challenges encompass limited financial resources, unstable political environments, diverse regional threats, and varying levels of technological and industrial capabilities. Understanding how these nations adapt and innovate in the realm of air power strategy is crucial for enhancing both their national security and regional stability. Accordingly, the problem statement of this research is "How do developing nations navigate and adapt their air power strategies in the face of intricate political and economic challenges, taking into account domestic considerations and regional dynamics, to effectively safeguard their national interests and contribute to regional stability?"

III. RESEARCH OBJECTIVES

The objectives of this research are as follows.

a. To evaluate the effectiveness of existing air power strategies of developing nations under the current political and economic challenges.

b. To identify the challenges encountered by developing nations in sustaining air power with sufficient technological advancements under unprecedented political and economic pressures.

c. To analyze the domestic and regional influence on the development and projection of air power by developing nations.

IV. RESEARCH QUESTIONS

The questions of this research are as follows.

a. What is the effectiveness of existing air power strategies of developing nations under the current political and economic challenges?

b. What are the challenges encountered by developing nations in sustaining air power with sufficient technological advancements under unprecedented political and economic pressures?

c. What are the domestic and regional influences on the development and projection of air power by developing nations?

V. LITERATURE SURVEY

The current political, economic, and financial challenges across the world have given numerous difficulties in maintaining sufficient air power not only for superpowers but also for the developing nations across the world. This makes all forces restraining the acquisition of new air machines and equipment to maintain the power balance in the Indian Ocean Region (IOR). Hence, developing nations especially must face domestic and regional challenges that can be harnessed only through comprehensive strategic approaches.

Strategic air power approaches in developing nations As indicated, air power strategies across the world are widely vary based on their geopolitical circumstances, technological capabilities, and strategic goals. The key strategies that countries including developing nations use in maintaining sound air power include:

a. Force Multiplication and Asymmetrical Warfare: Developing nations often focus on using air power as a force multiplier (Curtis E. Lemay Center, 2020). They invest in technologies that allow them to achieve disproportionate effects on the battlefield, such as precision-guided munitions, unmanned aerial vehicles (UAVs), and electronic warfare systems. These capabilities help offset the technological advantages of more advanced adversaries.

b. Air Defense and Homeland Security: Protecting national airspace and critical infrastructure from external threats is a priority for many developing nations. They invest in air defense systems, RADAR networks, and anti-aircraft weaponry to deter or repel potential aerial attacks. This strategy aims to safeguard the nation's sovereignty and prevent external interventions (LaCrosse, 2005).

c. Humanitarian and Disaster Relief: Air power plays a crucial role in delivering humanitarian aid and disaster relief during emergencies. Developing nations focus on building airlift capabilities, medical evacuation capabilities, and search and rescue operations to respond effectively to natural disasters and emergencies (LaCrosse, 2005).

d. Regional Defence and Deterrence: Developing nations often face regional security challenges and may work to establish a credible deterrent through air power. This involves building a mix of offensive and defensive capabilities to discourage potential adversaries from engaging in hostile actions (LaCrosse, 2005).

e. Partnerships and Alliances: Collaborating with more advanced nations through defence partnerships or alliances provides developing nations with access to advanced technologies, training, and intelligence sharing (NATO, 2023). This enhances their air power capabilities and contributes to regional stability.

f. Indigenous Technological Development: Some developing nations invest in developing their own indigenous air power technologies, including aircraft, avionics, and weapons systems (NATO, 2023). This approach aims to reduce dependency on foreign suppliers and foster a domestic defense industry.

g. Counterinsurgency and Counterterrorism: Developing nations facing internal security threats might employ air power for counterinsurgency and counterterrorism operations. This could involve using UAVs for surveillance, intelligence gathering, and targeted strikes against militant groups (LaCrosse, 2005).

h. Invest in Training and Professional Development through education: Effective utilization of air power requires well-trained personnel. Developing nations prioritize training programs for pilots, maintenance crews, air traffic controllers, and other key personnel to ensure the optimal functioning of their air force (NATO, 2023). Developing nations need to invest in the training and education of their air force personnel to ensure that they have the necessary skills and knowledge to operate and maintain modern aircraft and systems. This will require significant investment in both human and financial resources (Curtis E. Lemay Center, 2020).

i. Limited Contingency Operations: Developing nations maintain a smaller, specialized air force capable of rapid response to specific contingencies. This could involve maintaining a small fleet of agile aircraft for tasks such as reconnaissance, special operations support, or border security (Kainikara, 2009).

j. Civil-Military Dual Use: Developing nations explore ways to use civil aviation infrastructure for military purposes during times of crisis. This dual-use approach can optimize resources and ensure rapid mobilization of air power assets (LaCrosse, 2005).

Ultimately, the air power strategy chosen by a developing nation will depend on its specific circumstances, threat perceptions, available resources, and long-term goals. Balancing these factors while considering regional dynamics and international relations is essential for formulating an effective and sustainable air power strategy.

Political and economic challenges Some of the common political challenges that developing nations grapple with are listed below (Kainikara, 2009).

Political Challenges

a. Political Instability: Many developing nations experience political instability due to factors such as weak governance, corruption, power struggles, and lack of effective institutions. Instability can deter foreign investment, disrupt economic activities, and impede development efforts.

b. Weak Institutions and Governance: Insufficiently developed institutions, including judiciary, law enforcement, and regulatory bodies, can lead to ineffective governance, inconsistent rule of law, and challenges in enforcing contracts, which can discourage both domestic and foreign investment.

c. Corruption: Corruption can undermine economic growth, erode public trust, and divert resources away from essential services. It also creates an uneven playing field for businesses and investors, hindering fair competition.

d. Ethnic and Religious Tensions: Developing nations often have diverse populations with varying ethnic, religious, and cultural backgrounds. If not managed properly, these differences can lead to tensions, conflicts, and social unrest, which negatively affect stability and development.

e. Lack of Political Will: The commitment of political leaders to prioritize development, reduce inequality, and invest in social services can greatly impact a nation's progress. Lack of political will leads to inadequate allocation of resources and hinders development efforts.

f. Human Rights Issues: Violations of human rights, including civil and political rights, can lead to social unrest and international condemnation. Upholding human rights is essential for fostering a just and equitable society.

The above political challenges often disrupt the capacities of the governments of the developing nations in maintaining sufficient air power capabilities that hinder the ability to acquire modern air assets.

Economic Challenges

Some of the common economic challenges that developing nations grapple with are listed below (Kainikara, 2009).

a. Poverty and Inequality: Developing nations often struggle with high levels of poverty and income inequality. Insufficient access to education, healthcare, and basic services can perpetuate these disparities and hinder upward mobility.

b. Unemployment and Underemployment: Limited job opportunities, particularly for the growing youth population, can lead to high unemployment rates and underemployment. This can lead to social unrest and hinder economic growth.

c. Lack of Infrastructure: Inadequate infrastructure, including transportation, energy, and telecommunications, can impede economic development by increasing production costs and limiting market access.

d. Debt Burden: Many developing nations face challenges in managing their external debt. High levels of debt repayment can limit resources available for development projects and social services.

e. Trade Barriers: Limited access to international markets and trade barriers imposed by developed nations can hinder export-led growth and economic diversification for developing nations.

f. Dependence on Primary Commodities: Reliance on the export of primary commodities, such as oil, minerals, or agricultural products, can make developing nations vulnerable to fluctuations in global commodity prices.

g. Lack of Access to Finance: Limited access to credit and financial services can hinder entrepreneurship, small business growth, and investment in productive sectors.

h. Brain Drain: The emigration of skilled professionals from developing nations to more developed countries can lead to a "brain drain," depleting the nation's human capital and hindering innovation and economic growth.

i. Climate Change and Environmental Challenges: Developing nations are often disproportionately affected by climate change and environmental degradation, which can disrupt agriculture, water resources, and infrastructure, further exacerbating economic challenges.

j. Lack of Good Governance: Lack of good governance refers to the absence of inadequacy of effective and ethical leadership, decision-making processes, and systems within a government or organization. Good governance is characterized by transparency, accountability, rule of law, inclusiveness, responsiveness, and efficiency. When these principles are lacking, it can have significant negative

impacts on various aspects of society and can lead to a range of problems. Some consequences of a lack of good governance include corruption, inequality, inefficient service delivery, political instability, economic decline, social unrest, environmental degradation, and human rights abuses (McKinnon, 2011).

k. Poor Social Inclusion: Poor social inclusion refers to the exclusion or marginalization of certain individuals or groups within a society. It occurs when specific populations are denied access to resources, opportunities, and participation in social, economic, political, and cultural activities that are available to most of the population. This exclusion can lead to various negative consequences for both the marginalized groups and society (Hedetoft, 2013). Key factors contributing to poor social inclusion include discrimination and prejudice, lack of access to education, unemployment and under-employment, limited healthcare access, housing disparities, cultural and social isolation, political exclusion, and inadequate economic inequality.

l. Weak Policies on Sustainable Development: Weak policies on sustainable development refer to inadequate or insufficient measures and strategies put in place by governments, organizations, and institutions to address the challenges posed by environmental degradation, social inequality, and economic instability while ensuring the well-being of current and future generations. Sustainable development seeks to balance economic growth, social equity, and environmental protection, but weak policies can hinder progress toward these goals (Gibbs, Longhurst and Braithwaite, 1998). Some characteristics of weak policies on sustainable development include lack of integration, short term focus, inadequate environmental regulations, limited social equity insufficient investment in renewable resources lack of monitoring and accountability, failure to consider global impacts, and inadequate stakeholder engagement.

m. Lack of Investment in Human Capital: The lack of investment in human capital refers to the insufficient allocation of resources, such as education, healthcare, skills development, and overall well-being of individuals within a society. Human capital encompasses the knowledge, skills, health, and productive capabilities that people possess, and investing in it is crucial for individual and societal development. When there's a lack of investment in human capital, it can lead to a range of negative consequences. Some consequences of inadequate investment in human capital include education disparities, skills mismatches, poor health outcomes, lower economic productivity, increased poverty, social inequality, underdeveloped innovation, and social unrest.

n. Uncreating a Conducive Environment for Economic Growth: Uncreating a conducive environment for economic growth refers to the actions, policies, and conditions that undermine or reverse the factors that typically support

and stimulate economic development within a country or region. A conducive environment for economic growth typically involves factors such as stable governance, supportive infrastructure, investment-friendly policies, access to education and healthcare, innovation, and a favorable business climate.

However, uncreating this environment can lead to a decline in economic activity and potential negative outcomes. Some ways in which a conducive environment for economic growth can be uncreated include political instability, corruption, weak rule of law, lack of infrastructure, unfavorable regulatory environment, inadequate education and skills development, limited access to finance, neglect of innovation and research, environmental degradation, and social unrest.

Addressing these political and economic challenges are essential to adopt sufficient air power strategies in developing nations.

Selected Strategies to Encounter Unforeseen Challenges

Out of many, some of the selected strategies that can be adopted to encounter unforeseen challenges are.

a. Invest in training and education: Developing nations need to invest in the training and education of their air force personnel to ensure that they have the necessary skills and knowledge to operate and maintain modern aircraft and systems. This will require significant investment in both human and financial resources (Curtis E. Lemay Center, 2020).

b. Focus on affordability: Developing nations need to focus on affordability when it comes to acquiring and maintaining their air power capabilities. This means prioritizing cost-effective solutions that provide the greatest value for money, rather than simply pursuing the latest and most advanced technology (Olsen, 2014).

c. Adopt a joint approach: Air power capabilities are just one component of a larger defense strategy. Developing nations need to adopt a joint approach that integrates air power capabilities with other defence assets, such as ground forces, naval assets, and intelligence capabilities (Moseley, 2016).

d. Foster regional partnerships: Developing nations can benefit from regional partnerships and alliances that provide opportunities for cooperation and collaboration in the development and sustainment of air power capabilities. This can help to reduce costs and build capacity through shared training and exercises (Gray, 2001).

e. Leverage technology: Developing nations can leverage technology to improve the effectiveness and efficiency of their air power capabilities. This includes the use of Unmanned Aerial Vehicles (UAVs), advanced sensors and targeting systems, and sophisticated communication and information systems (Curtis E. Lemay Center, 2020).

f. Emphasize logistics and sustainment: Developing nations need to focus on logistics and sustainment to ensure that their air power capabilities remain operational and effective over the long term. This includes investing in maintenance and repair capabilities, building supply chain networks, and ensuring that spare parts and equipment are readily available (Curtis E. Lemay Center, 2020).

Generally, the Air commanders across the IOR conduct Foreign Internal Defence (FID) operations to evade the differences in organizational and personnel policies of other nations. When preparing for and conducting FID operations training, these variations should be regarded as assistance and advice. Since military traditions are frequently both highly centralized and decentralized in developing countries, strategies to ensure the sustenance of air power within the region must be handled considering the above challenges.

VI. METHODOLOGY

In this study, the authors have conducted a qualitative study using the desk research method which involves gathering and analyzing existing information, data, and resources to address research questions (Jackson, 1994). It is also commonly referred to as "secondary research" because it relies on information that has already been collected and published by other sources. In desk research, the authors should define research objectives, identify sources, search, and gather information, evaluate sources, extract, and record data, synthesize, and analyze, cross-reference, and validate, and cite sources. Cost and time efficiency, and a broader overview of the subject are some of the benefits of desk research.

Conceptual framework
The conceptual framework of this study is as follows.

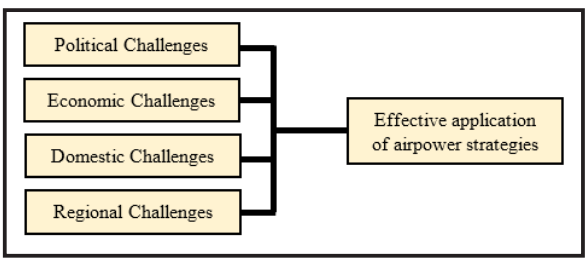

Figure 1 - Conceptual Framework
Source: Constructed by the researchers

VII. DATA ANALYSIS

Based on the above variables, the literature was explored to identify the difficulties encountered by the developing nations in establishing effective air power strategies in the political, economic, domestic, and regional contexts.

During the literature review, it was noted that developing nations are encountering many difficulties when adopting air power strategies. If the following strategies are adopted, the developing nations can overcome those challenges.

Means of overcoming the political challenges: To overcome political challenges, a country should consider the following points/hurdles/perceptions.

a. National Security Strategy: Developing countries must develop comprehensive national security strategies that outline the role of air power in safeguarding national interests. This strategy should articulate the benefits of air power in enhancing defense capabilities, deterring aggression, and contributing to regional stability.

b. Diplomatic Engagement: Engage in diplomatic efforts to build partnerships with neighboring countries and regional organizations is essential to address concerns related to territorial integrity, airspace management, and cross-border security to mitigate potential conflicts.

c. Civil-Military Relations: Establish clear lines of communication and coordination between civilian leadership and the military. Develop a transparent decision-making process that involves policymakers, defense officials, and experts in air power strategy.

d. Public Awareness and Support: Educate the public about the importance of air power in national security and development. Building public support can create a favorable environment for the allocation of resources and the implementation of air power strategies.

e. Institutional Development: Strengthen defense institutions and establish specialized units or departments focused on air power strategy and development. Build the expertise necessary to formulate, implement, and evaluate air power strategies effectively.

f. Capacity Building: Invest in training programs for military personnel, focusing on air power operations, maintenance, and strategy. Develop a skilled workforce capable of utilizing air power assets efficiently.

g. Resource Allocation: Advocate for adequate budget allocation for air power capabilities, including aircraft acquisition, maintenance, and infrastructure development. Highlight the long-term benefits of air power in terms of defense preparedness and regional stability.

h. Technology and Infrastructure: Collaborate with international partners to access advanced technologies and expertise. Develop modern infrastructure, such as airbases, runways, hangars, and communication systems, to support air power operations.

i. Joint Operations: Foster cooperation and joint operations between air, land, and naval forces. Emphasize the role of air power in supporting integrated military campaigns and enhancing overall defense capabilities.

j. Regional Security Cooperation: Participate in regional security initiatives and forums to build confidence and promote cooperation among neighboring countries. Address concerns through dialogue and collaborative solutions.

k. Capacity for Humanitarian Assistance: Highlight the role of air power in disaster relief and humanitarian assistance efforts. Showcase how air assets can be employed to deliver aid, medical support, and supplies during emergencies.

l. Transparency and Accountability:Establish mechanisms for transparent reporting on air power strategy implementation and outcomes. This can build trust among citizens and ensure effective use of resources.

Ultimately, overcoming political challenges to adopt air power strategies in developing nations requires a combination of strategic planning, effective communication, and the demonstration of the positive impact that air power capabilities can have on national security, economic development, and regional stability.

Means of Overcoming the Economic Challenges. To overcome economic challenges, a country should consider the following points/hurdles/perceptions.

a. Prioritization and Planning: Develop a clear national security strategy that outlines the role of air power in defense objectives. Prioritize critical air capabilities that align with national security priorities and operational needs.

(1) Phased Approach: Implement a phased approach to building air power capabilities. Begin with essential assets and gradually expand the fleet and infrastructure based on available resources and strategic requirements.

(2) Cost-Benefit Analysis: Conduct thorough cost-benefit analyses to identify the most cost-effective air power solutions. Evaluate the long-term benefits of air power in terms of defense deterrence, regional stability, and economic development.

(3) International Partnerships: Collaborate with international partners for joint development, acquisition, and training. Sharing costs and resources with allies can help reduce the economic burden of building air power capabilities.

(4) Technology Transfer: Seek partnerships that allow for technology transfer and knowledge sharing. Developing indigenous capabilities through technology transfer can reduce dependence on expensive imports.

(5) Defense Budget Allocation: Advocate for adequate defence budget allocation while maintaining a balanced approach to other economic priorities. Highlight the importance of defense preparedness in ensuring national security and stability.

(6) Procurement Efficiency: Developing nations must adopt cost-effective procurement methods, such as government-to-government agreements, lease arrangements, or offset agreements. Negotiate favorable terms for aircraft acquisition and support.

(7) Local Industry Development: Promote the development of a domestic defense industry that can contribute to the manufacturing, maintenance, and upgrade of air power assets. This can create jobs and stimulate economic growth.

(8) Training Efficiency: Develop efficient training programs that optimize the use of resources. Focus on building a skilled workforce capable of maximizing the operational potential of air power assets.

(9) Maintenance and Sustainability: Prioritize maintenance and sustainment programs to ensure the longevity of air power assets. Regular maintenance can extend the operational life of aircraft and reduce replacement costs.

(10) Public-Private Partnerships: Explore partnerships with the private sector to invest in defense capabilities. Public-private collaboration can provide innovative financing solutions and leverage private sector expertise.

(11) Export Potential: Consider the export potential of domestically developed air power assets. Generating revenue through defense exports can offset development costs and contribute to economic growth.

(12) Resource Sharing: Collaborate with other branches of the military to share resources and infrastructure. Joint use of facilities and equipment can lead to cost savings.

(13) Economic Diversification: Link defense investments to broader economic development goals. For instance, investing in defense infrastructure can contribute to regional economic growth and job creation.

b. Means of Overcoming Domestic Challenges. To overcome domestic challenges, a country should consider the following points/hurdles/perceptions.

(1) Political Consensus: Engage in dialogue with political stakeholders to build consensus on the importance of air power for national security and development. Explain how air power capabilities can contribute to deterrence, sovereignty, and regional stability.

(2) Institutional Capacity Building: Strengthen the institutions responsible for defense planning, acquisition, and implementation. Develop the expertise necessary to formulate and execute effective air power strategies.

(3) Public Awareness and Education: Educate the public about the role of air power in defense and development. Highlight the positive impact of air power on national security, disaster response, and economic growth.

(4) Bureaucratic Streamlining: Simplify bureaucratic processes related to defense procurement, training, and operations. Streamline decision-making to expedite the adoption of air power strategies.

(5) Technology Transfer and Collaboration: Collaborate with advanced nations and international partners to access technology, training, and expertise. Leverage partnerships for technology transfer and joint exercises.

(6) Capacity Development: Invest in training programs to build a skilled workforce capable of operating, maintaining, and innovating air power assets. Develop indigenous capabilities to reduce dependency on foreign expertise.

(7) Stakeholder Engagement: Involve various stakeholders, including civil society, academia, and industry, in the process of developing air power capabilities. Garner support and input from diverse perspectives.

(8) Budget Reallocation: Advocate for the allocation of funds to support air power capabilities while maintaining a balance with other essential sectors. Highlight the long-term benefits of defense preparedness.

(9) Local Industry Development: Encourage the growth of a domestic defense industry that can contribute to the manufacturing, maintenance, and innovation of air power assets. This can stimulate economic growth and create jobs.

(10) Public-Private Partnerships: Collaborate with the private sector for financing, technology, and expertise. Public-private partnerships can provide innovative solutions for building air power capabilities.

(11) Transparency and Accountability: Establish mechanisms for transparent reporting on defense spending and air power strategy implementation. Foster public trust through accountability.

(12) Infrastructure Development: Invest in the necessary infrastructure, such as airbases, runways, and communication systems, to support air power operations. Plan for long-term infrastructure needs.

(13) Community Engagement: Engage local communities in areas where airbases or facilities are located. Address concerns, provide benefits, and foster positive relationships.

(14) Technology Adaptation: Adapt technology to fit domestic needs and operational environments. Prioritize capabilities that align with the nation's unique security challenges.

(15) Risk Management: Develop risk management strategies to address potential challenges and setbacks. Anticipate obstacles and plan for contingencies.

c. Means of Overcoming the Regional Challenges. To overcome regional challenges, a country should consider the following points/hurdles/perceptions.

(1) Diplomatic Outreach: Engage in diplomatic efforts to build constructive relationships with neighboring countries. Open channels of communication to discuss shared concerns and potential cooperation.

(2) Confidence-Building Measures: Initiate confidence-building measures (CBMs) to enhance transparency, reduce misunderstandings, and foster trust among regional nations. This can include sharing information about defense capabilities and intentions.

(3) Multilateral Forums: Participate in regional and international forums where neighboring countries come together to discuss security issues. These platforms provide opportunities for dialogue and cooperation.

(4) Conflict Resolution: If there are ongoing conflicts or disputes, work towards peaceful resolution through negotiation, mediation, or international arbitration. Addressing root causes of conflicts can improve regional stability.

(5) Shared Threat Assessment: Collaborate with neighboring nations on assessing shared security threats and challenges. A common understanding of threats can lead to joint strategies and responses.

(6) Mutual Benefits: Emphasize the mutual benefits of air power capabilities for regional stability, disaster response, and collective defense. Highlight how stronger defense can contribute to the overall security of the region.

(7) Joint Training and Exercises. Organize joint military training exercises and simulations with neighboring countries. This can help build interoperability, familiarity, and trust among armed forces.

(8) Arms Control and Limitation: Explore arms control agreements or arms limitation talks with neighboring countries to manage arms races and reduce tensions.

(9) Transparency in Defense Policies: Be transparent about defense policies, military exercises, and procurement plans. This can reduce suspicions and misunderstandings.

(10) Track II Diplomacy: Engage in unofficial diplomacy through non-governmental channels, such as academic institutions, think tanks, and civil society organizations. These channels can facilitate informal dialogue and understanding.

(11) Economic Cooperation: Highlight the economic benefits of regional stability and cooperation. Emphasize how air power capabilities can contribute to economic growth, trade, and investment in the region.

(12) Bilateral Agreements: Establish bilateral agreements with neighboring countries to address specific security concerns or cooperation areas related to air power.

(13) Neutral Mediators: If tensions are high, involve neutral third-party mediators to facilitate dialogue and negotiation. Neutral parties can help build trust and find common ground.

(14) Humanitarian Cooperation: Collaborate on disaster relief and humanitarian assistance efforts. Highlight the role of air power in responding to natural disasters and providing aid to affected regions.

(15) Cultural Exchanges: Foster cultural exchanges and people-to-people interactions among regional countries. Promote understanding and build connections beyond security concerns.

VIII. CONCLUSION

This study is undertaken to explore the air power strategies that can be adopted by the developing nations under existing political and economic challenges, moreover, the study focused on the influences of domestic and regional concerns when using the air power in their designated territories. Since most of the developing nations are exposed to sea, they must maintain sustainable land, maritime and air arms to protect their sovereignty from internal and external threats. Since developing nations must ensure the wellbeing of the people through various measures, the finance is insufficient to maintain sound land, maritime and air arms. Due to these reasons, many developing nations are struggling to adopt the latest air power strategies in their domestic and regional settings. Hence, the developing nations should adopt systematic air power strategies considering national security priorities, available resources, technological capabilities, and regional dynamics.

IX. RECOMMENDATIONS

The maintain adequate air power strategies in developing nations, the authors would like to document the following recommendations.

a. Assessment of National Security Needs: Before implementing air power strategies, a developing nation should evaluate the nation's security challenges, threats, and vulnerabilities. Moreover, it is required to identify the role of air power in addressing challenges, such as deterrence, defence, disaster response, and regional stability.

b. Defining Strategic Objectives: Developing nations should set clear and achievable strategic objectives for air power development aligned with national security priorities. Moreover, it is required to determine the specific roles of air power assets, such as fighter aircraft, transport planes, reconnaissance platforms, and air defense systems.

c. Resource Allocation and Budgeting: Developing nations should allocate funds for air power development within the broader defense budget. Moreover, it is required to prioritize funding based on strategic objectives, ensuring a balanced approach that considers other defense needs and economic priorities.

d. Capacity Building and Training: Developing nations should invest in training programs for pilots, maintenance crews, and support personnel. Collaboration with experienced air forces or international partners for training and capacity development is also important.

e. Technology Acquisition and Development: Developing nations should assess available technological capabilities and explore options for acquiring advanced aircraft, radar systems, communication equipment, and munitions. Moreover, it is required to develop indigenous technological capabilities through research and development initiatives.

f. Infrastructure Development: Developing nations should build or upgrade airbases, runways, hangars, and communication systems to support air operations. Moreover, it is required to establish maintenance facilities, repair shops, and training centers.

g. Doctrine and Strategy Formulation: Developing nations should develop air power doctrines that define the principles, tactics, and strategies guiding air operations. Formulation of strategies for air defence, offensive operations, surveillance, reconnaissance, and support is also important.

h. Integration with Other Military Branches: Developing nations should ensure effective coordination and interoperability with ground forces, naval assets, and intelligence agencies. Moreover, it is required to develop joint operational concepts that leverage air power in integrated military campaigns.

i. Regional and International Engagement: Developing nations should engage in diplomatic efforts to address regional concerns, build confidence, and foster cooperation. Moreover, it is required to collaborate with neighboring countries on joint exercises, information sharing, and confidence-building measures.

j. Public Awareness and Support: Developing nations should educate the public about the importance of air power in national security and development. Moreover, it is required to garner public support for defence initiatives and resource allocation.

k. Institutional Strengthening: Developing nations should strengthen defence institutions responsible for air operations, planning, procurement, and strategy development. Moreover, it is required to develop expertise in air power-related areas through training and collaboration.

l. Economic Linkages: Developing nations should highlight the economic benefits of air power development, such as job creation, technology transfer, and potential export opportunities.

m. Continuous Review and Adaptation: Developing nations should regularly review air power strategies to adapt to changing security environments, technological advancements, and operational experiences.

n. Public-Private Partnerships: Developing nations should collaborate with the private sector for technology transfer, financing, and expertise in areas such as aviation, maintenance, and logistics.

o. Long-Term Vision: Developing nations should develop a long-term vision for air power capabilities that aligns with the nation's overall development goals and security objectives.

p. Planning: Developing nations should realize that adopting air power strategies is a multifaceted endeavor that requires careful planning, cooperation, and effective resource management. Developing nations should tailor their approaches to their unique circumstances, balancing defence needs with economic priorities and regional dynamics.

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PURSUING AIRLINE ALLIANCES AS A SOFT POWER TOOL IN PROMOTING REGIONAL CONNECTIVITY

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ABSTRACT

The developing and the sustaining of air power strategies for Sri Lanka in the face of unprecedented political and economic challenges requires a comprehensive approach that takes into account both domestic and regional contexts. Domestically years of mismanagement exacerbated by several external shocks; the 2019 Easter bombings and the COVID-19 pandemic resulted in total economic collapse, leaving Sri Lanka facing budget and current account deficits, hyperinflation, a devalued currency and a huge sovereign debt that it can no longer pay. The Indian Ocean Region (IOR) which lies at the crossroads of Africa, Asia, and Australia, housing a number of littorals that play critical roles in the region have become a home for economic developments, disputes, conflicts, and competition for regional influence by regional and extra regional powers. The Indian Ocean is strategically significant due to its vital shipping lanes, abundant natural resources, and geopolitical importance. Moreover, it continues to be one ofaviation's busiest regions with its eye-catching tourist developments and proximity to rising economies in both Asia and Africa. As such in the face of these challenges today, soft power is now more important than ever, and aviation will play its crucial part in contributing to a country's soft power strategy. Many countries have recognized the potential of air power to project influence, conduct surveillance, and engage in diplomatic activities in this region. Sri Lanka remains easily the biggest destination in the Indian Ocean. Located strategically in the heart of the Indian Ocean, Sri Lanka can act as a hub for air travel and a gateway for regional connectivity. One such strategic mechanism is the pursuing of airline alliances where Sri Lankan airlines can explore partnerships and alliances with other regional carriers. Collaborative efforts, such as code-sharing agreements or joint ventures, can enhance connectivity options, expandroute networks, and improve travel experiences for passengers flying to and from Sri Lanka. Suchcollaborative efforts can lead to the creation of a robust air transportation network, increasing connectivity and facilitating economic growth in the region.

This article explores the strategic utilization of airline alliances as a soft power instrument to enhance regional connectivity, focusing on the case of Sri Lanka. The research objectives of this study are to examine the potential benefits of pursuing airline alliances in Sri Lanka's context and to provide policy recommendations for the government and stakeholders to effectively harness regional connectivity as a means of bolstering Sri Lanka's soft power.

I INTRODUCTION

The significance of soft power lies in its capacity totranscend beyond borders, building bridges, and bringing the world together through dialogue and mutual understanding. In the face of global challenges today, soft power is now more important than everwith a focus towards the development of unique tacticsin promoting a country's image in the international system. As a result, attention has been directed towards aviation and its potential as a soft power tool.

States since the late 1990's have often utilized airline alliances albeit collaborative schemes to develop a wider international network. It entails a partnership between two or more airlines to expand routes, share resources, and establish a seamless travel experience for international passengers who get access to multiple destinations and more convenient airway connections.

The participating airlines carry out mutually-agreed upon commercial policies, coordinate the scheduled flights, and ensure high quality of services and security standards. At the same time, they maintain a high degree of financial independence and preserve brand identity. Such alliances can be of bilateral, multilateraland global in nature.

The main objective of airline alliances is to contribute to long-term airline profitability and development, far beyond what any airline or airlines could achieve individually or bilaterally (Castiglioni,2018) This in turn has sought to facilitate advantages in the form of economic, financial and managerial development, expansion of flight networks and increasing market share (GÖV,2020) and it reach.

The increasing prevalence of global alliances and code sharing partnerships among airlines has led to their embeddedness into networks of multilateral "coopetitivity" (Zou and Chen, 2017) albeit the concurrence of cooperation and competition activities among allied partners. This is because in the search of potential revenue gains or cost savings, more and more airlines have formed closer and deeper partnerships with allied partners (from the same global alliance), looking for resource sharing and joint marketing and branding.

It is important to note however those airlines have also maintained and developed bilateral relationships with non-allied carriers, or even with airlines from rival alliances.

The question therefore is as to its relevance to soft power?

While admittedly the primary goal of airline alliances is to enhance operational efficiency and passenger convenience, they can also serve as powerful tools for projecting a nation's soft power. The culmination of strategic partnerships formed among airlines have often been used as a platform for states to clout on the global stage. Through enhanced connectivity, economic growth, strengthened diplomatic ties, and cultural exchange, these alliances can shape a nation's international image and relations. As will be discussed in the articles examples of successful alliances demonstrate how countries strategically utilize aviation cooperation to project their soft power and achieve broader foreign policy objectives

I.I Types of Airline Alliances

Cooperation between airlines can be characterized as taking the form of either tactical or strategic alliances.Tactical alliances, also called marketing or commercial alliances, have usually consisted of bilateral agreements between airlines, which by joining efforts in a limited number of routes gain access to the other airline's network. This type of alliances first began with airlines cooperating at the marketing level through interline/pro-rating agreements and code sharing, and then the more coordinated joint ventures (JVs), described here:

Interline consists of the transfer of passengers and cargo from one airline to another on the passenger's route, and while each airline maintains its own identity and there is a very limited coordination between airlines, the passenger is charged a single fare for the route and the airlines share the revenues by pro-rating.

Code sharing is the sharing of capacity between carriers on a given flight that has a code for each of the airlines involved in the agreement, earning consumer recognition that the flight corresponds to the carrier to whom the itinerary was purchased. This is the most widely used form of alliance in the airline industry. There are two mechanisms for placing interline passengers on each other's flights: airline A can sell an itinerary involving airlines A and B and pay airline B for accepting the passenger on one or more of the flight legs; or airline A can have some seats reserved in airline B to sell at the price it sees fit, the so called "blocked space arrangement"

Joint ventures (JVs) are revenue-sharing or profit sharing partnerships between carriers on international routes, so that a partner's revenue or profit generated from a passenger does not depend on which airline provided the service. In fact, JVs can be recalled as "metal neutral" alliances, as each airline gets its revenue portion regardless of who operates the actual aircraft in a route-to-route basis.

The full implementation of this cooperative strategy on a given route requires the granting of antitrust immunity by the regulatory bodies to allow partner alliances to set schedules and prices together.

II Problem Statement and hypothesis

It is the opinion of this author that airline alliances can serve as a soft power tool; an effective means to project soft power, to enhance the state's influence and global presence. The question therefore is as how to such alliances could better aid Sri Lanka in projecting its soft power in these challenging times.

III Methodology

The study seeks to utilize a qualitative methodology and will therefore engage in a qualitative assessment of types of airline alliances. The respective typology of will be utilized as a base so as to compare and contrast the airline strategies utilized by Sri Lankan Airlines and Singapore Airlines within the context of airlinealliances.

IV Data

IV.I Singapore and Airline Alliances

Singapore Airlines (SIA), the flagship carrier of Singapore, has been actively involved in airline alliances to expand its global reach, enhance its services, and strengthen its influence in the aviation industry. For this purpose, it has sought to obtain membership in prominent global alliances whilst simultaneously entering in to joint ventures with other airlines.

Singapore Airlines is a prominent member of the Star Alliance, which is one of the world's largest and most significant airline alliances. Founded in 1997, Singapore Airline's role as a founding member signified its commitment to global collaboration and connectivity. Through its membership in the Star Alliance, Singapore Airlines offers passengers access to an extensive network that covers destinations around the world; 1,250 destinations and 195 countries (Star Alliance: Singapore Airlines, 2023). This in turn has allowed passengers to book multi-carrier itineraries and seamlessly transfer between different airlines within the alliance. Moreover, the alliance also facilitates code sharing between member states i.e., placing their flight codes on each other's flights, making it easier for travelers to book flights across multiple carriers. The alliance facilitates cooperation among member airlines for better operational efficiency, including baggage transfers and interline agreements. This in turn has allowed Singapore to

enter in to code sharing agreements with 31 airline carriers across the globe(Our Code Share Partners: Sri Lankan Airlines,2023).

Interesting to observe was how the airline alliance has sought to facilitate a collaborative atmosphere that allows member airlines to showcase their respective cultures and traditions. In its official website it has sought to hark upon the need to maintain cultural diversity with regards to in-flight services, amenities, and entertainment options to reflect the diverse backgrounds of the member countries (Members-Star Alliance,2023).

Membership in such a global alliance has allowed Singapore to be involved in joint venture airline alliances, primarily in the form of code-share agreements and partnerships with airlines such as Lufthansa, Air New Zealand etc. Most recently in May 2023 Garuda Indonesia (GA) and Singapore Airlines announced its plan to enter into a joint venture arrangement that would deepen the cooperation between the two carriers, to increase passenger capacity between Singapore and Indonesia, and offer customers more travel options between the two countries. These arrangements accordingly involvecollaboration between airlines to offer coordinated services on certain routes, allowing passengers to seamlessly connect between the two carriers' networks.

IV.II Sri Lanka and Airline Alliances

In comparison Sri Lankan airlines, a state-owned company (state owned enterprise), functioning as the carrier of Sri Lanka, is the largest international airline serving the Maldives and southern India. A One-world member since 2014, it operates to 112 destinations in 58 territories (Sri Lankan Airlines-One-world Member Airline,2023) The latter alliance is the smallest global airline alliance established in 1999. At present, One world consists of 13 airlines serving in more than 900 destinations and 170 territories globally (About One World Alliance,2023).

In addition, has mutual code-share services with Air Canada, Alitalia, Etihad Airways, Finnair, Japan Airlines, Jetstar Asia Airways, Malaysia Airlines, Myanmar Airways, Oman Air, Qantas, Qatar Airways, Air India and most recently Kuwait (Sri Lankan Airlines.come,2023).These agreements allow passengers to book flights involving multiple airlines on a single itinerary, enhancing connectivity and travel options.

At present Sri Lanka has not entered into any joint venture agreements with any airline. However, the current government in its process of restructuring the airline has call for expressions of interests to manage and run the airline.

V Analysis and Findings: Soft Power and Airline Alliances

V.I Singapore and airline alliances as a soft power tool

Aviation has political significance towards sovereignty, defense, and national status with its diplomatic significance from the unprecedented growth of the global air travel industry due to the waves of deregulation in the 1970s and the 1980s. The 1990's saw the emergence of many collaborative strategies and arrangements in the Asia Pacific air travel scenewith the development of new markets, air agreements and airline alliances. In 1997, Singapore successfully concluded Open Skies Agreements with three countries, signing its first agreement with the USA for cargo, becoming the first Asian country to do so.

Since then, Singapore, has sought to recognize the potential of using airline alliances as a soft power tool to enhance its global image, promote economic growth, and strengthen diplomatic ties.Singapore Airlines, the country's flagship carrier, is a key player in this strategy. SIA has consistently been one of the most profitable airlines globally, and has always had the reputation of being a trendsetter and industry challenger. One of the keys for the airline's success is its brand positioning, centering the Singapore Girl; being the leading figure in the international marketing and advertising campaign of Singapore Airlines. In 1993, the Singapore Girl's wax model became the only commercial figure installed at Madame Tussaud in London alongside the world leaders and personalities (Heracleous, Wirtz & Pangarkar, 2006) and Its status as a national treasure and as a state-owned enterprise; with the government of Singapore and its investment arm, Temasek Holdings holding majority ownership (Singapore Airlines Group: CAPA - Centre for Aviation,2023), has aided in its perseverance during difficult times such as the Covid 19 pandemic with state investors such as Temasek Holdings and others injecting as much as 19 billion Singapore dollars ($13.27bn) (Al Jazeera,2020).

Instrumental with regards to the airline's success and popularity is its strategic partnerships with other airlines and aviation-related companies. Being a founding member of the Star Alliance, one of the world's largest and most prestigious airline alliances,Singapore Airlines through this has been able to bolsterthe reputation of the state of Singapore within the international arena. The fostering of commercial partnerships via alliances in turn has sought to provide the basis for diplomatic and economic relations among member countries. This in turn has led to cooperation beyond aviation matters thereby allowing Singapore toengage diplomatically with other nations, strengthening its diplomatic influence.

Indeed, it can be argued that Singapore Airlines (SIA) has historically played a significant role in promoting regionalism in Southeast Asia and beyond via soft power diplomacy. The 'regional' concept developed by Star Alliance in 2004, which helped it penetrate markets comprising of smaller regional carriers has been influential with regards to this. Instrumental therefore has been its regional arm SilkAir through which Singapore Airlines has sought to connect to the former's regional routes encompassing networking cities such as Xiamen, Bangalore and Koh Samui. The aim is to reach or surpass pre-Covid Flight frequencies. As such by turning towards regional cities and increasing regional capacity across Asia and the Australia, Singapore Airlines has been able to drive its growth and in turn support Singapore in its existence in this ever-anarchicinternational system.

By being part of an airline alliance, Singapore Airlines offers an extensive network of routes that connect various international destinations. Singapore Airlines' participation in the Star Alliance has strengthened Changi Airport's status as a global aviation hub. The alliance's extensive network enhances connectivity to and from Singapore, making it an attractive transfer point for travelers from various parts of the world. This showcases Singapore's commitment to global engagement and fosters connectivity, making it an attractive destination for both business and leisure travelers.

Singapore Airlines' reputation for innovation and modernity in its services and aircraft design reflects positively on the nation as a whole. It presents Singapore as a forward-thinking and technologically advanced society, reinforcing its image as a hub for cutting-edge industries. Thus, its membership in Star Alliance has contributed to Singapore Airlines' global reputation for quality service, innovation, and efficiency. This positive image aligns with Singapore's soft power objectives, projecting the nation as a modern and well-connected hub.

In particular its In-flight services that showcase Singaporean culture, cuisine, and hospitality contribute to cultural diplomacy. Passengers from various parts of the world experience Singapore's diversity and traditions, creating a positive image that extends beyond the aircraft cabin. Moreover, Singapore Airlines' network and reputation as a premium carrier attract travelers to Singapore as a stopover or destination. This boosts tourism, exposing people to Singapore's culture, architecture, and attractions, thus enhancing its soft power. In particular, Singapore Airlines' iconic logo and consistent branding provide a visible representation of Singapore on a global scale creating the perception of Singapore Airlines as a premium airline; consistently portrayed an image of luxury, sophistication, and reliability through its branding efforts with its signature Singapore Girl has becoming an iconic figure in the aviation industry, representing the airline's commitment to excellent service and hospitality. This branding serves as a reminder of the nation's presence and achievements.

This in turn has facilitated means for shaping the country's image, which has been used by the government in projecting the state's national identity internationally. In the case of Singapore its airline has successfully become a symbol of national pride. Every year, the Singapore Girl -the cabin crew and the airline icon -is showcased during the Singapore National Day Parade wearing a traditional dress, blue sarong kebaya, the trademark of Singapore Airlines.

The success of Singapore Airlines and its role in airlinealliances has also contributed significantly to the country's economy. A strong aviation sector drives economic growth through tourism, trade, and business activities. The Singapore Airlines Group accordinglygenerated a revenue of about 17.76 billion Singapore dollars in the fiscal year 2022/2023 (Seet,2023) posting the highest-ever full-year net profit in its nearly eight decade-long history. This economic prosperity hassought to enhances Singapore's soft power by demonstrating its stability and prosperity. This is clearly explicated when considering Singapore high rank in the Global Soft Power Index 2023; ranking 21 (Global Soft Power Index,2023).

V.II Sri Lanka and Airline Alliances as a soft power tool

In comparison it can be said that through its membership in One-world, Sri- Lankan Airlines has to facilitate improved connectivity to and from Sri Lankaenhancing Sri Lanka's international image as a modernand well-connected nation. Moreover, as evident from the alliances' slogan-"An alliance of the world's leading airlines working as one", the latter like Star Alliance has enabled its airline carriers including Sri Lankan Airlines to showcase Sri Lankan culture, cuisine, and hospitality,thereby fostering cultural exchange and a better understanding of the nation among travelers.Moreover, its membership has sought to boost Sri Lanka's tourism industry by attracting travelers from various parts of the world. This exposure to the country's natural beauty, historical sites, and unique culture contributes has contributed to its soft power.

Moreover, One-world like its Star Alliance has facilitated close cooperation among member airlines, which can extend beyond aviation matters to diplomatic engagements, fostering closer relations and partnerships with other member countries.As a national carrier Sri Lankan Airlines has also contributed to the national economy as well as supported key industries such as tourism as well as exporters over the years.

However unlike in the case of Singapore Airlines, Sri Lankan has failed to deliver on the side of sustainability by focusing on commercial viability. It must be borne in mind that it was a profitable airline for the ten years that it was operated as a joint venture with the Dubai based Emirates Airline.

Then Emirates sold its share in 2008 and questions have been raised as to how it has been managed since its re-transformation in to a state owned enterprise. Aside from lack of consistency in strategy the frequent changes witnessed in relation to the boards of management appears to have contributed to this situation. Political interference in its affairs is also another aspect that has contributed to the current status of the airline. This in turn has compounded its financial woes and credibility in the eyes of funding agencies. As of 2023 Sri Lankan Airlines has a debt of US$ 1.2 billion and even defaulted on its $175 million bond, having failed to amend the terms of the debt amid the worst economic crisis faced by the country.

The inadequacies of the country's foreign policy appear to have also contributed to this situation. This in turn has sought to hamper on Sri Lanka's projection of soft power as reflected by its low ranking in the Global Soft Power Index 2023, ranking 115 (Global Soft Power Index,2023).

VI Recommendations

With regards to the sustainability, it is imperative that the airline is managed and run as a commercial

venture. It therefore cannot only be considered as a service to the host nation. In the case of Sri Lankan Airlines, it is recommended that;

(a) The Airline enters in to a partnership with another global airline as it once did with Emirates;

(b) Due consideration should also be given in finding the best formula in enhancing as well as managing the fleet;

(c) The airline should also take advantage of the global positioning of its home base as well as the investments made by the government with regards to the construction of several other international airports in the island in managing its affairs;

(d) It should divest and even find suitable business partners with regard to servicing of aircraft as well as catering to take full advantage of the underlining capacities mentioned earlier.

VII Conclusion

As such in the case of aviation as a tool of soft power, whilst its utilization remains mostly in the hands of states, they often need other actors for effective deliverance, such as airlines and commercial partnersdue to the particular status and modus operendi of the airline industry. National flag carriers can become symbols for national identity. The design of airports
and air shows can bolster a states' image to international audiences. This shows that diplomacy has been substantially shifted beyond state actors, with the emergence of non-state actors playing a significant role in diplomatic processes.

By leveraging airline alliances within its aviation diplomacy strategy, Sri Lanka can leverage its geographical advantage and actively promote regional connectivity in the Indian Ocean. This will not only benefit Sri Lanka but also enhance the overall economic, cultural, and diplomatic integration of the region. In particular the research seeks to proposes that airline alliances can be utilized as a soft power tool so as to enable Sri Lanka to better maneuver thecomplexities engulfing the Indian ocean region. These alliances can therefore provide a platform for diplomatic engagement, knowledge sharing, and collaboration among countries in the region, ultimately fostering closer ties and enhancing connectivity.

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COHERENCE WITH REGIONAL AIR FORCES TO SUSTAIN AIR POWER CAPABILITIES UNDER VUCA ENVIRONMENT IN A REGIONAL SECURITY LANDSCAPE

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ABSTRACT

The volatility, uncertainty, complexity and ambiguity (VUCA) environment always need to be considered when planning and attainment of military strategies and objectives. Thus, the deeper application of each element of VUCA serves to enhance the tactical, operational and strategic foresight of national objectives to reach the desired end state. When it comes to contemporary context, the VUCA environment are being considered for planning and policy decision making in order to avoid confusion, leave at a loss or even sharpen the capacity and capability to look ahead, plan ahead and move ahead. The recent development of financial and political turmoil in Sri Lanka revealed the volatile, uncertain, complex and ambiguous nature of the country which created a requirement of developing the coherence with other nations especially within the region. Sri Lanka being an island nation and tourism and commercial hub, the proper connectivity and cohesion with other countries especially with regional countries will certainly boost the security parameters especially in relation to protecting and securing the EEZ (Exclusive Economic Zone). Therefore, strengthening of Sri Lanka Air Force to meet its national objectives in this context is of paramount importance for its national security and also for development as an island nation. It is essential for regional air forces to be ready and prepared to face the challenges that arise under the VUCA environment. Therefore, the Sri Lanka Air Force also needs to prepare themselves to perform effectively and efficiently under VUCA environment by building strong alliances and partnerships with other air forces in the region by means of sharing the technology, resources and knowledge which can gear up to respond the challenges in future. The key to enhance the readiness to perform effectively and efficiently under VUCA environment is to formulate defense strategy that can accommodate the requirement of other nations and as well as enhance the capabilities and resources of the military forces. In this backdrop, this paper intended to study how Sri Lanka Air Force sustains its air power capabilities in a regional security landscape through coherence with regional air forces in order to perform effectively and efficiently under VUCA environment.

Keywords— coherence, regional air forces, air power capabilities, VUCA environment, regional security landscape.

I. INTRODUCTION

"VUCA environments become invitations for inaction-people are befuddled by the turmoil and do not act. And to succeed, you must act" - General George Casey

In recent decades, crises including individual, group and all of society arise more frequently, and globalization has led to an increasing interconnectedness of different states and coalitions (Pott, 2023). It is significantly impacting on the daily lives of many people. Not only wars, terrorism and internal conflicts, but also the economic and social crises are changing the world order remarkably. These challenges are often characterized by the dynamic evolution of the world under the so-called VUCA environment.

It could say that today we are living in a VUCA environment (Kodippili, 2022). The acronym called 'VUCA' was first introduced by the US military in the 1990s to describe the post-Cold War world in order to prepare to face the increase of challenges from asymmetric adversaries such as non-state militias and other loosely organized militias (Takano, 2021). VUCA stands for volatile (the accelerated rate of change), uncertain (the lack of predictability), complex (the interconnectedness of cause and effect) and ambiguous (the high probability of misinterpretation) (Norup, 2020). However, today it is not just a mere acronym but a widely used concept by most contemporary organizations such as government, business, military, education, healthcare, etc...

The VUCA concept was applied immediately after the September 11 attacks in Iraq and Afghanistan, as well as in efforts to deal with other VUCA situations, such as the threat of pirates off the coast of Somalia and the intervention of military in Libya etc... (Meri, 2021) However, this application really worked well in the private sector with the outbreak of the financial crisis in 2008 to 2009, when companies and organizations around the world suddenly faced similar turmoil in their business environment and, later in their business models (Meri, 2021). Therefore, this has evolved to address the dynamics and rapid changes due to the big forces of geopolitical power shifts, war and terrorism, globalization and technology, rapid trade and economic changes, climate change, etc...

In the context of Sri Lanka, to name it as a country that is currently in its most volatile, uncertain, complex and ambiguous phase is an understatement. Sri Lanka is facing unprecedented challenges as a result of a series of incidents, such as the 2019 Easter bombings, the global COVID-19 pandemic, the economic crisis and the sudden political downturn. Considering these challenges, it is of utmost importance for the Sri Lankan Armed Forces to strengthen national security and also enhance countermeasures in island and regional level to respond to the VUCA

environment. Therefore, the Sri Lanka Air Force (SLAF) is also in a juncture to focus more and more to operate effectively and efficiently in the VUCA environment by building strong alliances and partnerships with other air forces in the region.

During the recent past, SLAF was tasked to undertake HADR (Humanitarian Assistance and Disaster Response) mission in Nepal; as C-130 aircraft was flown to Nepal for the first ever inter theatre operation to render humanitarian assistance and disaster relief assistance during the earthquake in 2015. In addition, SLAF transported essential needs to Pakistan during the floods and earthquakes of 2010and 2015, the water purification crisis in Male in 2014 have been some of the notable missions carried out in the recent past. The role played by neighbouring countries during the tsunami situation in 2004 to assist Sri Lanka for the search and rescue missions also emphasize the requirement of coherence with regional air forces to sustain air power capabilities in a regional security landscape under the VUCA environment.

A. Significance of the Study

The study undoubtedly enhances understanding in the field and assists in bridging the knowledge gap between sustenance under VUCA environment and coherence with regional air forces. Further, this study would be very beneficial in creating a framework for the SLAF's future air strategy to ensure coherence with regional air forces and be in line with the dynamics of air power.

B. Problem Statement

The VUCA context has specific implications and challenges in a regional security landscape. Organizations like SLAF have to deal with the volatility associated with the prevalence of technology, the uncertainty associated with various disruptions, the complexity associated with the adoption of new strategies and ambiguity associated with high probability of misinterpretations. In the midst of all these challenges, the question that arises is: How can air power capabilities of SLAF be optimized in order meet the challenges of the VUCA environment while fulfilling the consistency with regional air forces?

Thus, it is essential to identify relevant aspects of coherence with regional air forces that can provide opportunities and advantages for the SLAF to survive in VUCA environments. Therefore, if the gap between the application of air power capabilities and sustenance under VUCA environment could be bridged, it would surely bring new opportunities to the SLAF and as well as the country. Therefore, it is imperative to formulate a framework for the Sri Lanka Air Force to sustain its air power capabilities in a regional security landscape through coherence with regional air forces in order to perform effectively and efficiently under VUCA environment

in order to open new windows in support of the government's policy framework.

C. Aim

To investigate how the Sri Lankan Air Force can sustain its air power capabilities in the regional security context by coherence with regional air forces in order to function effectively and efficiently in a VUCA environment.

D. Objectives

i. To identify the present security landscape of Indian Ocean Region (IOR).

ii. To explore the challenges for the SLAF in contemporary VUCA environment.

iii. To investigate the present role of the SLAF in IOR in coherence with regional Air Forces.

iv. To determine the strategies for the SLAF to sustain its air power capabilities in a VUCA environment by coherence with regional air forces in the regional security context.

II. METHODOLOGY

The research is an exploratory qualitative study. Authors used a pragmatic approach and followed axiological assumptions and used qualitative method as the strategy. Cross sectional time horizon was employed. Data collection has been done by collection of primary data through interviews conducted with the experts in respective fields. Secondary data was collected through SLAF publications, publications of regional and global counterparts, web sites related to the subjects, journals, articles and previous researches. This study intended to identify the present security landscape of IOR, the challenges and the present role of the SLAF in IOR in coherence with regional Air Forces with a focus on case studies of such collaboration, especially in humanitarian missions and disaster relief operations. These included the SLAF's humanitarian missions to Nepal in 2015, its assistance to Pakistan during the 2010 and 2015 floods and earthquakes, as well as the water purification crisis in the Maldives in 2014. This study also offered some strategies for the SLAF to sustain its air power capabilities in a VUCA environment by coherence with regional air forces in the regional security context.

III. FINDINGS

E. Present security landscape of South Asian Region

Progress in tackling the traditional security challenges of IOR has historically been impeded by the conflicting priorities of countries in the region, both on domestic and foreign policy fronts. The South Asian Association for Regional Cooperation (SAARC), which currently serves as the platform for state-level collaboration, has demonstrated limited effectiveness and is frequently hindered by political tensions among the member nations (Karim, 2013)

Virtually all South Asian countries are facing a range of non-traditional security threats (Nepal Centre For Security Governance, n.d) These include cybercrimes including cyber terrorism, pollution due to industrialization and various other effects, terrorist group attacks, outbreaks of contagious diseases, severe poverty, inequality, the emergence of political ideologies advocated by ethnic and religious factions, extremism, corruption, drug trafficking and narcotics, a growing culture of violence, crime, disregard for law and order, human smuggling and human trafficking, the manipulation of government institutions for political gain, and the intertwining of criminal elements with politics (Nepal Centre For Security Governance, n.d) Alongside these challenges, piracy, issues related to information security, environmental security concerns, as well as various crises spanning floods, earthquakes, and landslides, pose critical and escalating issues. Moreover, the restricted access to education, gender inequality, unemployment, and health problems are often direct or indirect outcomes of the aforementioned non-traditional security threats.

Last few decades, IOR has remained a focal point for various types of conflicts, encompassing ethnicity, politics, religion, and societal matters (Karim, 2013). Inter-state disputes, notably the enduring tension between India and Pakistan, have contributed to the volatility of the subcontinent. These two nations share a deep rooted, complex and predominantly hostile relationship due to historical and political reasons. The strategic dynamics in the Indian subcontinent underwent an irreversible transformation when both India and Pakistan officially proclaimed themselves as nuclear-armed states. Pakistan's possession of nuclear capabilities served to limit India's conventional superiority within the region (Ganguly & Mistry, 2022).

Within South Asia, internal security challenges encompass a range of factors, including traditional insurgencies rooted in issues of marginalization and identity, the proliferation of violent extremism, and insurgent movements that shift between conventional and "violent extremist" modes (Pant & Taneja, n.d). The influence of the Islamic State extends all over the region and Islamic State's

involvement in orchestrating the Easter Sunday attacks in Sri Lanka illustrates that the group's territorial setbacks have not diminished its global reach, tactics, or appeal(Pant & Taneja, n.d). Since the resurgence of the Taliban in Afghanistan in August 2021, the threat posed by terrorism in the region has escalated. The growth potential of South Asia has been undermined by the tightening financial circumstances, leading to significant downside risks in most nations (The World Bank, n.d). These risks are worsened by limited fiscal flexibility and diminishing reserves. Additionally, addressing the devastating socioeconomic disparities has hampered the region's economic potential. The region's economies are experiencing downward pressure due to escalating interest rates and uncertainties in financial markets (The World Bank, n.d). Many countries in the region have revised their growth forecasts downward (The World Bank, n.d)

The global interest in the region is substantial due to its strategic, economic, geopolitical, and environmental significance. Within the Indian Ocean lies some of the planet's most critical maritime trade routes that interconnect major economies across Europe, Asia, and Africa. The South Asian area is home to numerous growing economies that offer considerable potential for trade and investment collaborations (Modern Diplomacy, 2023).

The region stands as a focal point for geopolitical rivalry among major global players. China's Belt and Road Initiative (BRI) has triggered concerns among other major players. Several countries, encompassing the United States, China, India, and regional powers such as Iran and Saudi Arabia, have strategically positioned naval bases and vested interests in the Indian Ocean to safeguard their maritime concerns. The Quad (Quadrilateral Security Dialogue) emphasizes its concerns in Indo-Pacific region. Simultaneously, BRICS countries also exhibit their interests in this region. India's participation in both alliances significantly influences the geopolitical landscape of South Asia. Organizations such as the Indian Ocean Naval Symposium (IONS) and the Indian Ocean Rim Association (IORA) foster regional collaboration on diverse matters ranging from maritime security to trade facilitation. Situated at the heart of the Indian Ocean, Sri Lanka has been significantly impacted by the proximity of major maritime trade routes and the strategic considerations of both global and regional powers. The country's pursuit of economic growth hinges on harnessing the trade potential of its harbours, underscored by numerous bilateral agreements with prominent Asian economic giants. Consequently, the importance of Sri Lanka cannot be understated when considering the stability, security, peace, and mutual growth within the Indian Ocean Region (IOR).

F. Challenges faced by Sri Lanka Air Force in contemporary situation

The Sri Lanka Air Force (SLAF) has confronted with a range of complex survival challenges that arise from regional geopolitical dynamics, internal economic factors, and the evolving trends in global security, including the emergence of new technologies. These challenges present considerable obstacles to the maintenance of the aircraft fleet and augmentation of air power capabilities, necessitating strategic adjustments and collaborative endeavours to effectively counter them. Dynamic events within the region, such as regional conflicts, terrorist incidents, or political upheavals, demand the SLAF to maintain constant readiness and respond swiftly by adapting to abrupt shifts in the security landscape. As a consequence, SLAF requiring substantial resource allocation is imperative. Compounded by prevailing economic constraints within the country, reallocating funds and assets have proven infeasible, thus compromising long-term modernization and readiness initiatives. The existing budgetary limitations and economic turmoil have also hindered the SLAF's ability on retaining the experts on the service, recruitments, deliver specialized training, thus hampering the human resource build up. Continuous learning and adaptation to evolving tactics and new technologies prove to be particularly challenging for a smaller air force like the SLAF, primarily due to financial constraints.

Navigating the complex nexus of geopolitical, technological, economical and operational complexities presents its own set of challenges for the SLAF. Changing geo-politics and alliances has overwhelmed the limited capabilities of SLAF. In the contemporary geopolitical landscape, the resources of SLAF have strained due to restricted access for maintenance, primarily due to the scarcity of spare parts. Notably, the Russia-Ukraine conflict has significantly impacted the airworthiness of aircraft with Russian-Ukrainian origins. The on-going socio-economic and socio-political upheaval in the region introduces complexities in accurately interpreting the progression of unfolding events (Bajpai, 2022). Such ambiguities can lead to hesitations in decision-making and response, potentially impinging on the ability to safeguard national security interests. Consequently, adapting to evolving threat scenarios has become an extremely challenging endeavour. Collaboration with other military branches and nations poses difficulties, as interoperability is hampered by differences in equipment, tactics, and communication systems.

Achieving equilibrium in the management of risks while sustaining operational effectiveness is a delicate undertaking from the SLAF's standpoint. Effective prioritization of resource allocation and the comprehension of potential vulnerabilities hold paramount importance. The combination of resource constraints and the imperative for swift adaptation to intricate and unforeseeable circumstances has kept the SLAF on the ebb.

G. Future challenges for SLAF in VUCA environment

SLAF is likely to face several significant challenges in the coming years, as it continues to evolve to meet changing security dynamics and technological advancements that require strategic planning, modernization efforts, and adaptability to ensure its effectiveness and relevance in an evolving security landscape. The rapid pace of technological advancements in aviation, such as Advanced Fighter Jets, Remotely Piloted Vehicle (RPVs), Drones, Urban Air Mobility (UAM) Automation and Artificial Intelligence (AI) digital mapping applications, Augmented Reality (AR), Automation in Maintenance, Robotics and Cyber Warfare Capabilities, presents the challenge of staying up-to-date with the latest technologies. SLAF will need to invest in modernizing its fleet and infrastructure to effectively counter emerging threats. With the increasing reliance on technology, the SLAF must also be prepared to address threats in the digital domain. Developing cyber security measures and techniques to counter information warfare and cyber-attacks is imperative. Adequate funding is essential to maintain and upgrade aircraft, equipment, and infrastructure. The SLAF must navigate budgetary constraints to ensure that it can invest in the necessary resources to remain effective.

As air travel and commercial aviation continue to expand, the challenge of maintaining robust airspace security becomes more critical. SLAF must enhance its air defence capabilities to address potential threats from unauthorized or hostile aircraft entering Sri Lanka's airspace. This would particularly be difficult as non-state actors will have the potential to gain access to Remotely Piloted Vehicle (RPVs), Drones or Urban Air Mobility (UAM) in future. The evolving nature of security threats, including terrorism, cyber-attacks, and hybrid warfare, requires the SLAF to broaden its focus beyond traditional military scenarios. Developing strategies to counter these non-traditional threats effectively will be essential.

Given its strategic location in the Indian Ocean, SLAF challenges related to maritime security and the protection of its maritime borders are significant. The SLAF must collaborate with sister services and regional partners to address illegal fishing, bottom troweling, piracy, smuggling, human trafficking, drug trafficking, sea dumping, potential territorial disputes or any other traditional or non-traditional threats by state or non-state actors. Recruiting, training, and retaining skilled personnel will be a consistent challenge for SLAF. It will need to invest in comprehensive training programs and competitive compensation packages to maintain a highly capable and motivated workforce. The aviation industry is under increasing pressure to reduce its environmental impact. The SLAF will need to explore ways to make its operations more eco-friendly, such as adopting fuel-efficient technologies and optimizing flight routes.

Regional and international geopolitical shifts can impact security dynamics and require the SLAF to adapt its strategies and partnerships accordingly. Maintaining diplomatic ties and collaborations with neighbouring countries will be important for regional stability. SLAF's role in disaster response and humanitarian assistance requires continuous readiness and preparedness. Developing and refining protocols for rapid and effective response to natural disasters and emergencies will be crucial.

In navigating these challenges, the SLAF will need to pursue a comprehensive approach that includes technological innovation, strategic planning, international collaboration, and a commitment to continuous improvement. Flexibility and adaptability will be more crucial as the SLAF strives to meet the evolving security demands of the future.

H. Present Role of SLAF in IOR in coherence with regional Air Forces

In recent years, the Sri Lanka Air Force (SLAF) has undergone a transformative process to effectively deter non-state actors and ensure the protection of the nation's borders. Playing a pivotal role, the SLAF is of utmost significance in upholding the security of Sri Lanka's maritime boundaries and responding to situations that could potentially destabilize both the nation and its neighbouring countries.

Regional air forces, notably the Indian Air Force (IAF), Pakistan Air Force (PAF), and Bangladesh Air Force (BAF), share common attributes and functions that contribute to regional security and defence in collaboration with the SLAF. These forces share a mutual interest in regional security, with a specific focus on areas such as intelligence, surveillance, and reconnaissance, as well as search and rescue operations and humanitarian assistance and disaster response (HADR).

The collaboration between regional air forces and the SLAF extends across various avenues, encompassing joint exercises, reciprocal training programs, information sharing, and maintenance and logistic support (Shivamurthy 2013). These cooperative efforts aim to enhance inter-operability, bolster regional security, and foster diplomatic relations through air diplomacy.

SLAF's engagement in joint military exercises with other air forces, like the "Pacific Air Lift" and "Samvedana," involves simulated combat scenarios, aerial manoeuvres, and assessments of inter-operability. Such interactions not only augment the operational capabilities of the SLAF but also facilitate the exchange of valuable tactics, techniques, and procedures. Furthermore, the SLAF personnel's participation in foreign training programs, enable them to receive instructions in the training centres of regional air forces and vice versa. This cross-training approach cultivates enhanced skills, mutual understanding, and a sense of companionship among air force personnel.

Additionally, SLAF's participation in regional and international forums, conferences, and seminars facilitates meaningful discussions on security challenges, experience-sharing, and exploration of collaboration opportunities.

Information sharing is integral to maintaining regional security, and the SLAF plays an active role in this regard. Collaborating with its counterparts, the SLAF engages in the exchange of intelligence, information, and best practices to collectively address emerging non-traditional threats within the Indian Ocean Region (IOR). The integration of Indian Dornier aircraft for Maritime Surveillance and Reconnaissance operations has significantly bolstered Sri Lanka's surveillance capabilities within the IOR.

Collaboration between regional air forces becomes particularly pivotal during humanitarian assistance and disaster relief operations. In times of natural disasters or emergencies, neighbouring air forces provide logistical support, expertise, and resources to aid affected countries. Noteworthy examples include the SLAF's humanitarian missions to Nepal following the earthquake in 2015 and its support to Pakistan during floods and earthquakes in 2010 and 2015, as well as the water purification crisis in the Maldives in 2014. Collaborative search and rescue missions in distress situations, particularly within the Colombo Search and Rescue Region (SRR), exemplify how regional air forces combine assets and expertise to locate and assist individuals in need. These collaborative efforts have contributed to strengthening diplomatic ties between countries. The concept of air diplomacy fosters improved understanding, trust, and communication among nations, thereby cultivating a more stable and peaceful regional environment.

The SLAF benefits from stronger air forces such as the IAF and PAF within the region. The provision of technical guidance, training, and logistical aid by these air forces has notably bolstered the operational capabilities of the SLAF. PAF's assistance in the maintenance of C-130 aircraft and the recent donation of two sets of AN-32 propellers from the IAF have notably elevated the operational potential of the Sri Lanka Air Force. Both air forces' support during humanitarian operations and in the post-conflict era, through technical guidance, training, and logistical assistance to the SLAF, has greatly contributed to enhancing operational effectiveness. Ultimately, the partnership between the SLAF and regional air forces contributes to a more secure and stable regional environment. These collaborations not only build trust but also enhance operational capabilities, serving the shared goals of maintaining peace and security in the region.

IV. ANALYSING THE STRATEGIES FOR THE SLAF TO SUSTAIN ITS AIR POWER CAPABILITIES IN A VUCA ENVIRONMENT

Understanding the national security environment of Sri Lanka requires a single, integrated framework that incorporates the country's defence, law enforcement, foreign policy, and economic policy (Rajapaksa, 2014). The creation of an all-encompassing national security strategy requires the integration of these four sectors. If Sri Lanka is to maintain its current peace and stability and reach its full potential, this is crucial. The long-running ethnic conflict and the on-going internal turmoil have had a significant negative impact on Sri Lanka's political, economic and security stability. The military and the government recently encountered several difficulties. To effectively address these challenges to national security, the government must identify its top priorities and work with other stakeholders to do so.

Strengthening the capabilities and expanding the cohesion with regional countries is crucial for the military operations in the current security environment. The SLAF as an instrument of National Power is also required to adopt this phenomenon to improve coordination and boost its capabilities especially in VUCA environment. The Sri Lanka Air Force would utilize the different concepts listed below, which are well-established in the field of strategic studies, to sustain its air power capabilities in a VUCA environment by cooperating with regional air forces in the context of regional security. Thus, establish and maintain a secure and healthy national security environment in Sri Lanka.

I. Interoperability

In the modern landscape of defence and military operations, the concept of interoperability has gained paramount importance within air forces worldwide. Interoperability in this context refers to the seamless coordination and collaboration between different aircraft, units, and even allied forces to achieve mission success effectively and efficiently. The complexities of contemporary warfare demand that air forces transcend traditional boundaries and systems to ensure a unified approach to combat and security.

Challenges in IOR in future would require in multinational operations, where different SLAF need to work together towards a common goal with regional Air Forces. Interoperability ensures that aircraft, communication systems, and strategies can be seamlessly integrated, enabling cohesive actions in coalition environments. In a coalition environment, the range of platforms utilized by various forces in the region should ensures that they can communicate, share data, and coordinate actions effectively, creating a force multiplier effect. This must extend beyond air domain, involving coordination with ground and naval forces.

Common communication protocols and equipment would ensure that aircraft, ground stations, and command centres can share real-time information seamlessly. Standardized communication protocols are crucial for effective coordination. Sharing and fusing data from various sources, such as radar systems, satellite imagery and intelligence reports, provides a comprehensive situational awareness for commanders and pilots.

J. Collective research and development

Technological advancements drive the evolution of air power, the concept of collective research and development (R&D) has emerged as a powerful tool to enhance the capabilities of two distinct air forces. By pooling resources, expertise, and innovation, two air forces can embark on a collaborative journey that not only leverages each other's strengths but also yields significant advancements in technology, strategy, and operational effectiveness. By combining the knowledge, skills, and experiences of researchers, engineers, and strategists from both air forces, collective R&D creates a synergy that accelerates technological breakthroughs and solution development.

R&D efforts can be resource-intensive. Collaborating on research projects allows air forces to share the financial burden, making it possible to invest in cutting-edge technologies that might have been otherwise unattainable for small Air Forces. Cross-pollination of ideas and expertise stimulates innovation. When researchers from different air forces collaborate, they can identify novel approaches and perspectives that lead to faster technological advancements. Developing new technologies carries inherent risks. By sharing these risks between two air forces, the potential negative impacts of failures are minimized, enabling more ambitious projects to be pursued.

K. Cross-Border Operations

Cross-border operations expand in various domains such as military, law enforcement, disaster response, and more. These operations require collaboration and effective communication between different countries or entities to address challenges that transcend geographic borders. Whether it's addressing to the security threats, natural disasters, or humanitarian crises, cross-border operations play a pivotal role in maintaining stability, safety, and cooperation in the region.

Cross-border operations in IOR to address common challenges which include combating transnational crime and managing migration flows, or providing humanitarian aid can be coordinated between regional Air Forces. Close cooperation not only between different countries but also between various agencies within those countries must be established. Natural disasters, such

as earthquakes, tsunamis, and hurricanes, often require swift and coordinated international responses. SLAFs reediness to ensure that timely delivery of aid and resources such as medical supplies, and shelter to affected populations. Collaborative efforts ensure that aid reaches those in need quickly and efficiently.

L. Pool Exchange of Aircraft Spares and provision of overhauling facilities

In the aviation industry, the pool exchange of aircraft spares has emerged as an innovative solution to optimize operational efficiency and maintain aircraft readiness. This concept involves the collaborative sharing and management of spare parts operators. By establishing shared pools of spare parts, regional Air Forces can reduce downtime, lower costs, and improve overall aircraft availability. This approach revolutionizes traditional spare parts management, ensuring that aircraft remain operational and meet demanding schedules. Operators participating in a pool exchange system should collaborate to collectively manage and share spare parts. Rather than each Air Force maintaining an extensive inventory of spare parts, pool exchange participants can access needed components on-demand. This reduces the need for excess inventory, leading to cost savings.

V. RECOMMENDATIONS

Regular joint training exercises with regional Air Forces and Air Arms should be conducted, involving multiple aircraft types and units foster familiarity with interoperable procedures, enhancing operational efficiency during actual missions.

Operational doctrines and procedures should be studied. Shared operational mind-set must be established.

Integrated command and control systems should be practiced for centralized decision-making, real-time updates, and dynamic mission adjustments based on changing scenarios.

Communication protocols should be standardized and gaps should be bridged by utilizing adoptable hardware and software solutions.

Sharing sensitive information across units and allied forces requires robust cyber security measures to protect data integrity and prevent unauthorized access. For that reason, secure channels for sharing information, data to be established.

Clearly define objectives and areas should be established to focus for collective R&D. For any R and D project, shared goals are the foundation of successful collaboration.

The collective R&D efforts are to be aligned with the long-term strategic objectives of regional air forces. Collaborative projects should directly contribute to enhancing the operational capabilities of air forces. Resources, including funding, personnel, and facilities, are to be allocated to support the collaborative projects.

Agreements, protocols, and procedures for effective sharing and replenishment of aircraft spares and overhauling should be established. These should be comprehensive agreements, outlining responsibilities, liabilities, access rights, and financial terms.

Effective coordination system is to be established for pool exchange. Clear communication, logistics management, and standardized procedures are to be considered.

Accurate and up-to-date information about spare parts availability, usage, and replenishment is essential to prevent delays and misunderstandings. Ensuring the quality and condition of shared spare parts is important to prevent operational issues and maintain safety standards.

VI. CONCLUSION

In a VUCA environment, the sustenance of air power capabilities is a critical imperative for the SLAF within the broader regional security landscape. The challenges posed by this dynamic environment demand a strategic approach that transcends national borders and fosters collaboration with regional air forces. VUCA environment underscores the necessity for air forces, including the SLAF, to embrace adaptability and flexibility. Rapid changes in geopolitical dynamics, technological advancements, and unconventional threats require air forces to not only develop advanced capabilities but also cultivate the agility to respond swiftly and effectively.

Regional security challenges are often interconnected, transcending national boundaries. In this context, collaboration and coherence among regional air forces assume paramount importance. Shared intelligence, joint training exercises, and pooled resources can collectively enhance the collective security of the region while enabling air forces to address challenges that are beyond the capacity of individual nations.Furthermore, multifaceted strategies are essential for sustained air power capabilities in the VUCA environment. This encompasses investing in modern technologies, fostering a skilled and adaptable workforce, and establishing strategic partnerships with both regional air forces and international allies. The synergy resulting from such collaborations enables air forces to not only deter potential threats but also provide prompt responses when the need arises.

In conclusion, the theme highlights that while navigating the VUCA environment poses formidable challenges, it also offers opportunities for air forces like the SLAF to evolve, innovate, and engage in mutually beneficial collaborations with regional partners. By fostering coherence and sharing expertise, resources, and best practices with neighbouring air forces, SLAF can sustain its air power capabilities effectively while contributing security and stability of the country and as well as regional landscape. As air forces embrace these principles and work together to ensure the readiness and effectiveness of their capabilities, they pave the way for a secure and resilient future in an ever-changing world.

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MAINTAINING EFFECTIVE AIRPOWER CAPABILITIES IN THE VOLATILE SECURITY LANDSCAPE OF THE INDIAN OCEAN REGION: THE IMPORTANCE OF INTER-RELATIONSHIPS BETWEEN AIR FORCES

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ABSTRACT

'VUCA' is an acronym that stands for volatility, uncertainty, complexity, and ambiguity where the nature of warfare was rapidly changing. Together, these four (04) elements represent a dynamic and challenging environment that requires individuals and organizations to be agile, adaptable, and innovative in their approach.

The Indian Ocean Region (IOR) is a vast area that includes numerous nations with different geopolitical interests and security challenges. Airpower capabilities are crucial in maintaining regional security, particularly in the IOR, where a volatile, uncertain, complex, and ambiguous security landscape prevails. In such an environment, it is essential for Air Forces to work together and maintain inter-relationships to sustain their capabilities.

The region is also characterized by multiple geopolitical conflicts and security challenges such as terrorism, piracy, and territorial disputes. To maintain effective airpower capabilities, Air Forces in the IOR must work together to overcome the challenges posed by this security landscape. This can be achieved through joint exercises, intelligence sharing, interoperability, and mutual support in operational and logistical matters. Joint exercises and training programs between different Air Forces can enhance mutual understanding and interoperability while improving the ability to operate in a joint or coalition environment.

Intelligence sharing can also play a crucial role in identifying and countering security threats. Furthermore, maintaining interoperability through common operational procedures, shared communications systems, and compatible equipment and technology can improve efficiency and effectiveness. This can help in achieving common goals and objectives, such as enhancing regional stability and deterring aggression. On par with the common goals; Identify and Analyze Volatile Security Challenges in the Indian Ocean Region (IOR), Evaluate the Diverse Capabilities of Air Forces Operating within the IOR and Evaluate the Diverse Capabilities of Air Forces Operating within the IOR were considered as the study objectives.

In conclusion, mutual support in operational and logistical matters can also help in sustaining airpower capabilities. Sharing resources, such as maintenance facilities and spare parts, can reduce costs and increase the availability of critical equipment.

Keywords – VUCA, IOR, Regional Security, Interoperability, Sharing Resources, Security Threats.

I. INTRODUCTION

Navigating the volatile security landscape of the IOR demands a comprehensive approach that transcends borders and encompasses collaborative efforts (Alpers; Edward A, 2014). The effectiveness of airpower in this context is complexly linked to the inter-relationships forged between the Air Forces of nations with stakes in the region (Hensel, 2020). This interconnectedness not only amplifies the collective capabilities of these forces but also fosters an environment of cooperation, information sharing, and strategic synergy (Natov, 2005).

This introductory exploration delves into the imperative of maintaining airpower capabilities within the dynamic security framework of the IOR, with a particular focus on the significance of inter-relationships between Air Forces. By examining the multifaceted dimensions of this theme, from the strategic importance of the IOR to the diverse security challenges it confronts, we endeavour to unravel the intricate tapestry of collaboration that reinforces regional stability. As tensions decline and flow and the security landscape evolve, the sustained relevance of airpower and the inter-relationships between Air Forces become ever more critical to upholding the integrity and prosperity of the Indian Ocean Region.

II. PROBLEM STATEMENT

In the dynamic and rapidly evolving security landscape of the IOR, the preservation of robust airpower capabilities stands as a critical imperative for ensuring regional stability, safeguarding maritime interests, and responding effectively to emerging security challenges. The multifaceted nature of threats, ranging from piracy and terrorism to geopolitical tensions and territorial disputes, underscores the necessity for Air Forces to be equipped with advanced technologies, well-trained personnel, and coordinated strategies. However, the vastness of the IOR, coupled with the diversity of security challenges, presents a formidable challenge for any single nation to address comprehensively. The problem statement at hand revolves around the pressing question of how Air Forces in the IOR can effectively maintain and enhance their airpower capabilities to meet the complex demands of the region's security environment.

Moreover, the emphasis lies on the role of inter-relationships between these Air Forces, which entail collaborative efforts, shared resources, joint exercises, and strategic partnerships.

In light of this, the central problem can be distilled into the following question: How can the inter-relationships between Air Forces in the IOR be optimized to ensure the sustained maintenance, enhancement, and effective utilization of airpower capabilities in the face of the region's volatile security landscape. Addressing this problem entails a comprehensive exploration of the strategic, operational, and diplomatic aspects that reinforce these inter-relationships, with the ultimate aim of bolstering collective security, deterring potential aggressors, and preserving stability in this strategically vital region.

III. RESEARCH QUESTIONS

The research team has derived the following research questions on par with the "Maintaining Airpower Capabilities in the Volatile Security Landscape of the IOR: The Importance of Inter-Relationships between Air Forces."

A. What are the Volatile Security Challenges prevalent in IOR?

B. What are the diverse capabilities of Air Forces operating within the IOR?

C. How to Assess the Degree of Interoperability Among Air Forces in Addressing IOR Security Challenges.

IV. RESEARCH OBJECTIVES

The research team has derived the following research objectives which would contribute to a deeper understanding of the security landscape of the IOR and the role of regional Air Forces on par with the subject matter.

A. To Identify and Analyze Volatile Security Challenges in the Indian Ocean Region (IOR).

B. To Evaluate the Diverse Capabilities of Air Forces Operating within the IOR.

C. To Evaluate the Degree of Interoperability Among Air Forces in Addressing IOR Security Challenges.

V. METHODOLOGY

A qualitative approach would provide insightful understanding and nuanced perspectives on the complex issue of maintaining airpower capabilities in the volatile security landscape of the IOR, focusing on the importance of inter-relationships between Air Forces. The research team has preferred a qualitative approach for the study to comprehensively address the subject matter. The team has conducted surveys/ questionnaires with expert interviews as its primary data, and an extensive literature review, historical data, compilation of air forces capability and review records of joint military exercises, and collaborative efforts among the regional Air Forces.

In addition, it has been done with thematic analysis of interview transcripts, and content analysis to extract key information from documents/ reports. Furthermore, case studies related to the IOR where air forces have to play a crucial role were considered. Finally, a comparative analysis by comparing the strength/ interoperability/ collaboration of the regional air forces was conducted by considering the case studies, ethical considerations, limitations with assumptions, data validation, conclusion and reporting.

VI. LITERATURE REVIEW

The Indian Ocean Region (IOR), with its vital maritime connections, abundant resources, and growing security issues, has become a strategically crucial region in the modern geopolitical environment. Air power capabilities and the interrelationships between air forces are among the many factors that contribute to the stability and security of the area, and they have drawn increasing attention. An overview of significant studies and insights on the dynamic interactions between air forces in the IOR and their function in preserving regional security are given in this review of the literature.

A. Issues with security in the IOR.

The unstable security environment in the IOR has changed dramatically over time. Its historical characteristics include piracy, smuggling, and regional strife. Territorial conflicts, maritime terrorism, and great power competition have all lately gained attention. According to Emdadul (2021), the strategic significance of the IOR is emphasised by a few journals, which also stress the need to have a thorough awareness of security problems

B. Air Forces' function within the IOR.

In order to handle these security issues within the IOR, air forces are crucial. According to Clodfelter (2014), sustaining situational awareness and deterrence in the marine sector depends on air power assets, including surveillance, reconnaissance, and rapid reaction capabilities. Khan (2020), who emphasises the significance of air forces in determining regional security dynamics, echoes this sentiment. This aligns with the sentiment expressed by Dutton (2015) about the importance of air power assets in sustaining situational awareness and deterrence in the marine sector. Both authors highlight the critical role of military capabilities in shaping regional security dynamics.

C. Air Forces' Relationships with One Another.

It is impossible to exaggerate the importance of the connections between the air forces in the IOR. According to Bailes and Cottey (2006) coordinated use of air forces from several states may considerably improve regional security. This is specially important in scenarios including counter-piracy operations, collaborative training exercises, and disaster relief. The naval exercises in the Malabar region, which involved the air forces of India, the US, and Japan, serve as an example of the potential advantages of such collaborations (Navy, 2023)

D. Operational Difficulties and Preparedness.

Studies and worries have been made on the operational preparedness and capacity of air forces operating in the IOR. The difficulties posed by regional air forces, such as resource shortages, maintenance problems, and training deficits, are explored (AirForceTimes, 2023). Understanding how well the air forces can respond to security threats requires an evaluation of their readiness and capabilities.

E. Regional Security and the Air-Sea Battle Theoretical Framework.

Understanding the changing character of hostilities in the IOR has increased the significance of the "Air-Sea Battle" concept and similar concepts. These ideas place a strong emphasis on how air and naval power may work together to prevent aggression and maintain regional security. Experts like Grissom (2023), explain this strategy as a way to fend off possible dangers and preserve air power supremacy in the area.The literature analysis highlights the fact that security concerns in the IOR are numerous and that air forces are essential to finding solutions. The significance of the interactions between air forces, the requirement for improved operational capabilities, and the applicability of theoretical frameworks in influencing regional security dynamics are all emphasised.

Building on this groundwork, this study aims to further explore and contribute to the conversation about "Maintaining Air power Capabilities in the Volatile Security Landscape of the IOR" by assessing the level of air force interoperability and offering useful suggestions for boosting regional security.

VII. COLLECTION OF DATA

To fully address the research aims and issues, the data collection approach for this study combines primary and secondary data sources. The technique guarantees the collection of pertinent data on the security issues in the Indian Ocean Region (IOR), the capabilities of air forces operating there, and the degree of interdependence among them.

VIII. DATA ANALYSIS

The data analysis procedure in this qualitative research study entails a detailed assessment of the textual information gathered from the interviews, open-ended survey questions, and content analysis of pertinent documents. In order to provide a thorough picture of air power capabilities and interrelationships among air forces in the Indian Ocean Region (IOR), it is important to identify reoccurring themes, patterns, and codes within the qualitative data. To give a comprehensive picture of air power capabilities and connections across air forces in the IOR, data from interviews, open-ended survey questions, and content analysis of documents were interwoven throughout the research. The approach of descriptive data analysis described above made it possible to find and investigate pertinent themes, patterns, and insights in the qualitative data. In order to meet the study goals and reach relevant conclusions on the role of air forces in the IOR's security environment and the significance of interrelationships in preserving regional stability and security, it was key to consider those results.

IX. FINDINGS

This chapter's goal is to include the study results based on the data covered in the chapter on data analysis. The study results under the three categories created in the previous chapter were discussed.

A. Recognize the Volatile Security Challenges prevalent in the Indian Ocean Region.

The volatile Security Landscape of the IOR refers to the rapidly changing and unpredictable nature of security challenges and concerns faced by countries and stakeholders in the Indian Ocean region.

This region encompasses a vast area with diverse geopolitical, economic, environmental, and social dynamics, leading to a complex and evolving security environment. The term implies that security conditions and threats in this region can change rapidly and may require constant adaptation and response.

i. Geopolitical Tensions.

The IOR is home to various countries with diverse interests and historical disputes. Geopolitical tensions can arise from territorial claims, maritime boundaries, and resource competition, potentially leading to conflicts or instability.

ii. Maritime Security.

The vast maritime expanse of the Indian Ocean poses challenges to ensuring maritime security. Issues include piracy, smuggling, illegal fishing, and other illicit activities that can impact regional stability.

iii. Terrorism and Extremism.

The presence of terrorist groups and extremist ideologies can lead to security threats, potentially disrupting stability and regional cooperation.

iv. Resource Competition.

The IOR is rich in natural resources, including oil, gas, minerals, and fisheries. Competition for these resources can lead to disputes and tensions among countries.

v. Climate Change and Environmental Concerns.

Rising sea levels, extreme weather events, and environmental degradation can exacerbate existing vulnerabilities, potentially leading to humanitarian crises and conflicts.

vi. Non-Traditional Security Challenges.

Issues like human trafficking, drug smuggling, and disease outbreaks can contribute to a volatile security landscape in the region.

vii. Great Power Competition.

The involvement of major global powers, such as the United States, China, India, and others, can influence regional dynamics and contribute to competition and cooperation.

viii. Lack of Maritime Domain Awareness.

Monitoring activities and ensuring maritime domain awareness across the vast Indian Ocean can be challenging, potentially facilitating illegal or destabilizing activities.

ix. Humanitarian Crises and Disasters.

The region is susceptible to natural disasters, such as tsunamis and cyclones, which can lead to humanitarian crises and require coordinated responses.

B. Evaluate the diverse capabilities of Air Forces operating within the Indian Ocean Region.

The Air Forces operating within the IOR possess a range of diverse capabilities that contribute to regional security, defence, and collaboration. Interoperability, collaboration, and information sharing among these Air Forces are essential to effectively address the diverse security challenges in the Indian Ocean Region. As threats evolve, these capabilities allow Air Forces to adapt, respond, and contribute to the collective security and stability of the region.

i. Aerial Surveillance and Reconnaissance.

Air Forces have aircraft equipped with advanced sensors and surveillance systems, enabling them to monitor maritime activities, detect threats, and gather intelligence over vast ocean areas.

ii. Strategic Airlift.

Air Forces can transport personnel, equipment, and supplies over long distances, facilitating rapid response to crises, disaster relief efforts, and joint exercises.

iii. Maritime Patrol and Anti-Submarine Warfare.

Aircraft equipped with anti-submarine warfare capabilities play a crucial role in detecting and countering underwater threats, enhancing maritime security.

iv. Combat and Strike Capabilities.

Air Forces maintain fighter aircraft capable of conducting air superiority missions, ground attacks, and precision strikes against both land and maritime targets.

v. Search and Rescue Operations (SAR).

Air Forces are often involved in search and rescue missions, using specialized aircraft and equipment to locate and assist distressed individuals at sea.

vi. Electronic Warfare and Signals Intelligence.

Airborne electronic warfare platforms can disrupt enemy communications, gather signals intelligence, and provide electronic countermeasures.

vii. Humanitarian Assistance and Disaster Relief (HADR).

Air Forces are equipped to provide humanitarian aid and disaster relief during natural disasters, including delivering supplies, evacuating affected populations, and conducting medical evacuations.

viii. Surveillance and Intelligence Gathering.

Airborne platforms gather critical information through signals intelligence, electronic warfare, and other surveillance methods to enhance situational awareness.

ix. Airborne Early Warning and Control System (AWACS).

AWACS aircraft enhance airspace management, surveillance, and command and control capabilities, improving coordination in joint and multi-national operations.

C. Examine the degree of Interoperability among Air Forces to effectively address the Challenges.

The degree of interoperability among Air Forces operating within the IOR varies on a combination of factors such as agreements, joint exercises, technology compatibility, shared protocols, and collaborative initiatives. Interoperability is crucial for effectively addressing the security challenges in the region.

i. Common Communication Systems.

Air Forces need compatible communication systems to share information and coordinate activities seamlessly. Standardized communication protocols facilitate real-time exchanges during joint operations.

ii. Shared Intelligence and Information.

Interoperability relies on the ability to share intelligence, surveillance, and reconnaissance data among Air Forces. This enables a comprehensive understanding of the operational environment and potential threats

iii. Joint Training and Exercises.

Regular joint training and exercises enhance familiarity with partner Air Forces' procedures, tactics, and capabilities. This builds trust, improves coordination, and refines interoperability during actual operations.

vi. Logistical Coordination.

Effective interoperability includes logistical support arrangements for aircraft maintenance, fueling, and resupply across different Air Forces' operations.

v. Standardized Procedures and Protocols.

Adhering to common operational procedures and protocols ensures smoother integration during joint missions and reduces the risk of misunderstandings.

vi. Technology Compatibility.

Air Forces need compatible equipment, sensors, and aircraft systems to facilitate data sharing and collaborative operations.

vii. Language Proficiency.

A shared proficiency in a common language, often English, helps overcome communication barriers and ensures effective information exchange.

X. RECOMMENDATIONS

The research has made a significant effort to propose recommendations at the policy level as well as the operational level. By implementing these recommendations, regional air forces can strengthen their collective ability to address the volatile security challenges in the IOR.

A. Establish Interoperability Agreements.

Regional Air Forces should work towards formalizing agreements that outline communication protocols, joint training exercises, and shared intelligence-sharing mechanisms. These agreements will provide a clear framework for collaborative efforts in addressing security challenges. Establishing interoperability agreements involves setting up mechanisms and protocols for different air forces to work together smoothly. These air forces may come from different nations with varying equipment, procedures, and communication systems.

B. Joint Training Programs.

Regular joint training programs should be conducted to familiarize Air Force personnel with partner forces' procedures, tactics, and capabilities. These exercises will foster mutual understanding, build trust, and improve coordination during real-world operations.

C. Language Proficiency Programmes.

Air Forces should invest in language proficiency programs to overcome language barriers, emphasizing a common language such as English. Effective communication is crucial for swift and accurate information exchange during joint endeavours. Different air forces may use different terminology, procedures, and codes. A Language Proficiency Program can include standardization of key terminology and communication protocols. This ensures that all participating air forces have a common understanding of essential terms and can follow standardized procedures, reducing the risk of misunderstandings and errors.

D. Shared Intelligence Platforms.

Create a centralized platform for sharing intelligence, surveillance, and reconnaissance (ISR) data. Shared Intelligence Platforms allow participating air forces to share ISR data, including real-time information about potential threats, aircraft movements, and maritime activities. This shared information enables all air forces to have a common operational picture, which is vital for coordinated responses to security challenges. This platform will provide a comprehensive operational picture, enhancing situational awareness and response capabilities.

E. Logistical Support Agreements.

Develop logistical support agreements that streamline maintenance, fueling, and resupply operations for participating Air Forces. This will ensure seamless operations and reduce downtime during joint missions.

This will enable resource sharing, cost efficiency, interchange of aircraft equipment, training and skill development, emergency response and supply chain coordination.

F. Engage in Multinational Exercises.

Participate in multinational exercises beyond the region to enhance interoperability with Air Forces from different parts of the world. This exposure will bring diverse perspectives and best practices to regional collaboration. This will sharpen the standardization of procedures, communication, integration of diverse equipment, operational coordination, crisis response, diplomacy and regional stability and networking.

G. Capacity Building and Training.

Invest in capacity-building programs to enhance the technical skills, leadership, and decision-making capabilities of Air Force personnel. Well-trained personnel are essential for effective interoperability. This will optimize with the standardized training, joint exercise simulation, cross-training, operational awareness and crisis management.

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Air Commodore Amal Perera enlisted to the Sri Lanka Air Force in 1995 as an Officer Cadet through Intake 13 of Kotelawala Defence University (KDU). He was commissioned as a Flying Officer in 1998. He graduated in 1998 with a BSc (Defence Studies) in Management and Technical Sciences. After successful completion of training at KDU, he began his career as a General Duties Pilot of Sri Lanka Air Force at No.01 Flying Training Wing SLAF Base Anuradhapura and completed his basic and intermediate flying training. Subsequently, he completed his advanced flying training in Y12 aircraft and afterwards, he was engaged in flying duties as an operational pilot at No.8 Light Transport Squadron in 1999. He completed his Defence Service Command and Staff Course in 2015. He graduated from the National Defence University in Washington DC, USA. After successfully completing the Counter Terrorism Fellowship Programme at CISA - (College of International Security Affairs), he secured MA SSS, ctf. For his act of bravery, he was awarded 'Rana Sura Padakkama' (RSP) twice. He has actively participated in air operations conduct since 1999 and logged more than 6500 flying hours. For his act, He has completed 62ndNational Defence College Course, New Delhi, India in the year 2022. He is a Transport Pilot and a VVIP captain and qualified in Y12, Beechcraft, MA60, AN32, C130 Hercules and Cessna 421 Golden Eagle as captain. At present, Air Commodore Amal Perera serves as the Base Commander at Sri Lanka Air Force Base Ratmalana.

ANALYSING THE IMPACT OF REGIONAL AIR POWER COOPERATION ON ENHANCING SECURITY AND DEVELOPMENT IN THE INDIAN OCEAN REGION

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ABSTRACT

This research explores the multifaceted dynamics of regional air power cooperation and its profound impact on security and development within the Indian Ocean Region (IOR). The study focuses on four key variables: Regional Cooperation Initiatives, Geopolitical Dynamics, Economic Benefits, Security Advantages, and the dependent variable, Regional Coherence and Interdependence in Air Power Augmentation.

The core argument of this research posits that regional air power cooperation, driven by common security concerns, geopolitical interests, and strategic imperatives, plays a pivotal role in enhancing security and fostering development among nations within the IOR. By evaluating these variables, researchers uncover a complex web of factors that contribute to the effectiveness of cooperation efforts, as well as the obstacles that hinder progress. Through an analysis of joint military exercises, confidence-building measures, and experience sharing initiatives, this study demonstrates how regional air power collaboration enhances operational efficiency, strengthens air defence mechanisms, and promotes trust among participating nations. Additionally, economic gains resulting from cooperation initiatives contribute to socio-economic development, while strategic imperatives drive nations to engage in collaborative efforts to safeguard their interests. By comprehensively understanding these variables and their interplay, this research offers actionable insights for policymakers, emphasizing the importance of trust-building measures, inclusive participation, and resource-sharing arrangements. The findings underscore the potential for regional air power cooperation to lay the foundation for a more secure, stable, and prosperous Indian Ocean Region, while the core argument highlights the critical role such cooperation plays in achieving these collective goals. This research not only advances our understanding of regional air power cooperation but also provides practical recommendations to promote effective collaboration among nations in the IOR. It serves as a valuable resource for policymakers, scholars, and stakeholders interested in the security and development dynamics of this vital region.

INTRODUCTION

CHAPTER OVERVIEW

The opening chapter serves as an introduction to the research area while delineating the study approach. Central to this section are the problem statement and the significance of the study, which lay the foundational framework for the entire research paper. Additionally, the chapter succinctly outlines the scope and limitations of the research, shedding light on the boundaries within which the study operates.

BACKGROUND OF THE STUDY

The Indian Ocean Region (IOR) has emerged as a critical geopolitical and economic landscape, drawing attention from nations worldwide due to its strategic location and abundant resources. As the region experiences increased interactions and interdependence, the concept of regionalism has gained significant traction. Developing nations in the IOR are increasingly recognizing the potential benefits of mutual cooperation and coordination to address shared challenges and leverage opportunities for growth and security.

IOR's geopolitical space, where multiple state and non-state actors vie for influence and control. This region encompasses diverse economies, cultures, and political systems, and is home to a significant portion of the world's population. The IOR is also a hub of global trade, energy transportation, and maritime activity, making it vital to the economic and strategic interests of many nations.

In this context, fostering shared air interests in the IOR has become a crucial objective for regional and global actors. Shared air interests refer to the convergence of national and regional interests in the air domain, where stakeholders seek to harmonize their efforts towards mutual benefits. This can include joint military exercises, confidence-building measures, experience-sharing sessions, and other collaborative initiatives aimed at enhancing regional security and stability.

The purpose of this paper is to explore the theme of fostering shared air interests in the IOR, with a focus on geopolitical cooperation, complexities, and compulsions. The paper will provide a comprehensive analysis of the literature related to this theme, drawing on a wide range of sources, including academic journals, policy papers, and other relevant publications.

The scope of this paper is limited to the air domain, with a specific focus on developing nations in the IOR. The review will examine the challenges and opportunities associated with promoting shared air interests in the region, including the role of great powers, regional powers, and transnational actors.

It will also explore strategies for air power augmentation in developing nations, as well as the benefits of regionalism and cooperation in overcoming the challenges that impede the realization of shared air interests.

Given the importance of air power augmentation and regional cooperation in the IOR, there is a need for comprehensive research to shed light on the drivers, challenges, and potential benefits of such initiatives. This study aims to delve into the background of regional coherence and interdependence concerning air power augmentation for developing nations in the IOR. By understanding the historical context, geopolitical dynamics, and current efforts toward regional cooperation in the air domain, the research seeks to provide a nuanced perspective on the potential pathways for promoting mutually beneficial collaboration and overcoming challenges. Ultimately, the findings of this study aim to contribute to informed policy decisions and strategies to enhance regional security and prosperity in the IOR.

OBJECTIVES OF THE STUDY

This study aims to understand why developing nations cooperate in the air domain, identify obstacles to effective cooperation, and highlight the advantages of regional air power collaboration. The research will offer actionable recommendations to promote effective cooperation and advance the collective interests of participating nations in the IOR.

a. To explore the reasons why developing nations in the IOR engage in regional cooperation for air power augmentation.

b. To assess the challenges and complexities that hinder effective regional cooperation in the air domain.

c. To evaluate the benefits of regional air power collaboration for developing nations, including improved operational efficiency and economic gains.

d. To provide practical recommendations for policymakers to enhance regional cooperation in the air domain and overcome identified challenges.

RESEARCH QUESTIONS

The research questions aim to understand the motivations for regional air power cooperation, identify challenges to effective collaboration, explore the benefits of such cooperation, and provide strategies for policymakers to strengthen regional coherence and interdependence in the IOR.

a. What factors drive regional air power collaboration among developing nations in the IOR, and how can policymakers address challenges to enhance this cooperation for mutual benefit and collective security?

b. What are the advantages and obstacles associated with developing nations in the IOR working together in the air domain, and how can policymakers optimize regional air power cooperation for the benefit of these nations?

PROBLEM STATEMENT

In the context of the IOR, developing nations have shown a growing inclination towards regional cooperation in the air domain to augment their air power capabilities. However, despite the potential benefits of such collaboration, there exist challenges and complexities that hinder its effective implementation. The motivations behind regional air power cooperation among these nations remain understudied, and understanding the driving factors is crucial to foster mutual understanding and strategic coherence. Additionally, geopolitical dynamics and the involvement of great powers and transnational actors create intricate power struggles and uncertainties, affecting the smooth progress of cooperation initiatives. Furthermore, the economic benefits and security advantages arising from regional air power collaboration demand further examination to encourage greater participation and investment. Therefore, this research aims to explore the reasons behind developing nations' engagement in regional air power cooperation, identify obstacles to its success, evaluate its benefits, and propose practical recommendations to enhance mutual cooperation for collective security and sustainable development in the IOR.

CORE ARGUMENT

As this research does not test a hypothesis, it focuses on a core argument.

a. Developing nations in the IOR are increasingly recognizing the potential benefits of regional cooperation in the air domain to enhance their air power capabilities. The core argument of this research is that despite the compelling motivations for such collaboration, challenges and complexities hinder its effective implementation. By investigating the driving factors behind regional air power cooperation, understanding the impact of geopolitical dynamics and the involvement of external actors, and evaluating the economic and security benefits, this study aims to shed light on the importance of fostering regional coherence and interdependence. The research contends that a comprehensive understanding of these factors will facilitate informed decision-making and enable policymakers to develop strategies for overcoming obstacles, encouraging greater participation, and maximizing the mutual advantages of regional air power collaboration.

Ultimately, the core argument emphasizes that by strengthening regional cooperation, developing nations in the IOR can collectively address shared challenges, promote sustainable development, and enhance collective security in the dynamic geopolitical landscape of the region.

SCOPE OF THE STUDY

The scope of this research encompasses a comprehensive analysis of regional coherence and interdependence in the context of air power augmentation among developing nations in the IOR. The study will explore the motivations, challenges, benefits, and policy implications of regional air power cooperation. It will include an examination of existing regional cooperation initiatives, bilateral and multilateral agreements, and joint military exercises to understand the extent and effectiveness of air power collaboration among participating nations. The research will focus on developing nations in the IOR, taking into account their diverse political, economic, and strategic interests.

Moreover, the study will consider the impact of geopolitical dynamics, the role of great powers, and the involvement of transnational actors on regional cooperation efforts. It will assess how these factors influence the success and limitations of regional air power collaboration. Additionally, the research will analyse the potential economic gains and security advantages arising from enhanced air power capabilities and improved connectivity within the IOR.

LIMITATIONS OF THE STUDY

While this research endeavours to provide valuable insights into regional coherence and interdependence in air power augmentation, it also acknowledges certain limitations. Firstly, the scope of the study may be restricted due to the vastness and complexity of the IOR and the diversity of participating nations. Comprehensive coverage of all regional cooperation initiatives and case studies may not be feasible within the given timeframe. Therefore, research will be more focusing towards developing countries in IOR.

Secondly, the study heavily relies on available literature, data, and expert opinions, which may have inherent biases or limitations. The accuracy and reliability of the information gathered are subject to the quality and availability of existing sources.

Thirdly, the geopolitical landscape and dynamics in the IOR are continuously evolving, and the research may not capture real-time developments and emerging trends. Changes in political alliances, security threats, and economic conditions may impact the conclusions drawn from the study.

Finally, while efforts will be made to propose practical recommendations for policymakers, the implementation of these suggestions may face various political, bureaucratic, and financial constraints that are beyond the scope of this research.

CHAPTER TWO

LITERATURE REVIEW

SHARED AIR INTERESTS IN THE IOR

Characterisation of Shared Air Interests: Shared air interests refer to the mutual benefits and common objectives that states, organizations, and other stakeholders in the IOR seek to achieve through cooperation and collaboration in the air domain. These shared interests can take various forms, including but not limited to airspace management, air traffic control, joint military exercises, and humanitarian assistance and disaster relief operations.

Importance of Shared Air Interests in the IOR: The IOR is one of the most strategically important regions in the world, linking major maritime trading routes and serving as a critical energy transit zone. Given the vast expanse of the region and the multitude of actors involved, air power plays a crucial role in securing and advancing the shared interests of all stakeholders. These interests include enhancing regional security, promoting economic development, and protecting human rights and freedoms.

Shared air interests are particularly important for developing nations in the region, who face numerous challenges in the air domain due to limited resources and capabilities. By pooling their resources and expertise, these nations can effectively counter security threats, respond to natural disasters, and promote sustainable development. Additionally, shared air interests can help promote trust and confidence among states and other stakeholders, reducing the likelihood of conflict and promoting regional stability.

Regional and Global Trends in Shared Air Interests: The concept of shared air interests is not new, and it has been a central feature of regional and global air power strategies for decades. In the IOR, shared air interests have become increasingly important due to the rise of regionalism and the growing recognition of the interdependence between states and other stakeholders. This has led to the formation of various multilateral and bilateral partnerships and initiatives, such as the Indian Ocean Rim Association and the Quadrilateral Security Dialogue.

At the global level, the importance of shared air interests has been underscored by a number of developments, including the emergence of non-state actors with advanced air capabilities, the growing use of unmanned aerial vehicles, and the increasing integration of air power into multi-domain operations. As such, shared air interests are likely to remain a critical component of regional and global security and development strategies for the foreseeable future.

GEOPOLITICAL COOPERATION IN THE IOR

Overview of Geopolitical Landscape in the IOR: The IOR has been subject to various geopolitical pressures, including maritime and territorial disputes, piracy, transnational terrorism, and power struggles among global and regional powers. The complex geopolitical landscape of the region is marked by the presence of significant powers such as India, China, the United States, Japan, France, and the United Kingdom. Furthermore, regional powers such as Pakistan, Iran, Saudi Arabia, and the United Arab Emirates also play a significant role in shaping the regional security architecture.

Regional Cooperation Initiatives in the IOR: Given the complexity of the geopolitical landscape in the IOR, regional cooperation initiatives have emerged as a significant mechanism to address security challenges and promote shared interests. One such initiative is the Indian Ocean Rim Association (IORA), which was established in 1997 as a forum for regional cooperation among littoral and hinterland states of the IOR. IORA aims to promote trade, investment, and sustainable development in the region through various working groups, including the Maritime Safety and Security Working Group, the Tourism and Cultural Exchanges Working Group, and the Blue Economy Working Group. Similarly, other regional initiatives such as the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), the Indian Ocean Naval Symposium (IONS), and the Indian Ocean Naval Exercise (IONEX) also promote regional cooperation among stakeholders.

Bilateral and Multilateral Agreements for Shared Air Interests: In addition to regional initiatives, states in the IOR have also signed various bilateral and multilateral agreements to promote shared air interests. For instance, India and France signed a strategic partnership agreement in 1998, which includes cooperation in the fields of defence, civil nuclear energy, and space. Similarly, India and the United States signed the Defence Framework Agreement in 2015, which outlines areas of cooperation, including defence trade, technology transfer, and research and development.

Other agreements such as the India-Australia Air Services Agreement, the India-Qatar Air Services Agreement, and the India-Singapore Comprehensive Economic Cooperation Agreement also promote shared air interests among the signatory states. These agreements provide a platform for states to share resources, capabilities, and knowledge to promote air safety, security, and interoperability.

COMPLEXITIES OF SHARED AIR INTERESTS

The pursuit of shared air interests in the IOR is not without its complexities. There are several challenges that must be addressed in order to ensure a stable and prosperous regional air environment.

Challenges to Shared Air Interests in the IOR: One of the main challenges is the vastness of the IOR and the diversity of the region. With multiple stakeholders involved, it can be difficult to coordinate and harmonize interests. The region is also prone to natural disasters, piracy, and terrorism, which further complicates the security environment.

The Impact of Economic Recession and Global Crises: The economic recession and global crises, including the ongoing COVID-19 pandemic, have created additional challenges for shared air interests in the IOR. Economic instability has led to a decrease in military spending, which has impacted the capability of nations to maintain air defence readiness. The pandemic has also led to restrictions on travel and movement, which has impacted the conduct of joint military exercises and other cooperative efforts.

Role of Great Powers, Regional Powers, and Transnational Actors: The role of great powers, regional powers, and transnational actors is another complicating factor. Great powers such as the United States, China, and Russia have strategic interests in the region, which can sometimes run counter to the interests of regional powers. Transnational actors such as terrorist organizations and criminal networks also pose a threat to shared air interests in the region.

Despite these challenges, there are still opportunities for fostering shared air interests in the IOR. Through regional cooperation initiatives and bilateral and multilateral agreements, the region can work towards creating a stable and prosperous air environment that benefits all stakeholders.

COMPULSIONS FOR SHARED AIR INTERESTS

Regional cooperation in the air domain has the potential to generate numerous benefits for developing nations in the IOR. One of the key benefits is the enhancement of operational efficiency and effectiveness. By working together, developing nations can better coordinate their efforts, share information and intelligence, and conduct joint operations. This can lead to improved situational awareness, faster response times, and more effective use of resources.

Reducing duplication of efforts is another benefit of regional cooperation in the air domain. Developing nations often face resource constraints, and by cooperating in the air domain, they can avoid duplicating efforts and wasting resources. This is particularly important when it comes to investing in expensive air platforms and equipment. By pooling resources, developing nations can maximize their limited resources and achieve economies of scale.

In addition to operational efficiency and resource optimization, regional cooperation in the air domain also provides opportunities for joint training and experience sharing. This can help developing nations improve their capabilities and increase their operational readiness. Joint exercises, for example, can simulate real-world scenarios and provide valuable experience and knowledge that can be shared among participating nations.

Moreover, regional cooperation in the air domain can facilitate the pooling of resources and capabilities, enabling developing nations to address common security challenges. By working together, nations can combine their resources and capabilities to tackle shared security threats such as piracy, terrorism, and illegal trafficking. Developing nations can also leverage regional cooperation to enhance their diplomatic and strategic engagement with other nations, including great powers.

Developing nations in the IOR have strategic imperatives to cooperate in the air domain to safeguard their national interests. The challenges faced by these nations in the air domain, including limited resources and capabilities, require cooperation to address common security challenges. Furthermore, the IOR is increasingly becoming a theatre of geopolitical competition, and developing nations must cooperate to maintain their strategic autonomy and safeguard their interests in the region.

AIR POWER AUGMENTATION IN DEVELOPING NATIONS

Air power Augmentation in Developing Nations: Air power augmentation refers to the process of strengthening the air power capabilities of a nation through various means, such as acquiring new aircraft, upgrading existing ones, enhancing training and maintenance capabilities, and expanding infrastructure. Developing nations often face significant challenges in building and maintaining a modern and effective air force due to limited resources and expertise.

Air power plays a crucial role in a nation's defence and security, as well as in its ability to project power and influence. Developing nations face unique security challenges that require a robust air power capability, including the need to protect territorial sovereignty, respond to regional threats, and support peacekeeping and humanitarian missions. Air power can also serve as a deterrent against potential aggressors and enhance a nation's diplomatic standing in the region.

To augment air power capabilities in developing nations, various strategies can be employed. One approach is to acquire new or refurbished aircraft from foreign suppliers through foreign military sales, leasing agreements, or direct purchases. This approach allows developing nations to rapidly modernize their air forces with advanced technology and equipment. However, it may come at a significant cost, both in terms of financial resources and dependence on foreign suppliers.

Another approach is to focus on building domestic capabilities through investments in training, maintenance, and infrastructure. Developing nations can establish partnerships with other nations or private contractors to gain expertise and knowledge transfer. Developing nations can also focus on upgrading existing aircraft and systems to extend their service life and enhance their capabilities.

In addition to these strategies, developing nations can also leverage regional cooperation initiatives to share resources, expertise, and capabilities with other nations. This approach can help reduce the burden of maintaining a modern Air Force and provide access to shared resources, such as training facilities and maintenance centres. Developing nations can also seek to participate in joint exercises and training programs with regional partners to enhance interoperability and strengthen relationships.

Overall, air power augmentation is an essential component of a developing nation's defence and security strategy. By implementing effective strategies, investing in domestic capabilities, and leveraging regional cooperation initiatives, developing nations can build and maintain a modern and effective Air Force that can support their national security interests and contribute to regional stability and security.

OVERCOMING CHALLENGES THROUGH REGIONALISM

The Concept of Regionalism in the IOR.Regionalism refers to the process of countries in a specific geographical region coming together to achieve a common goal. In the context of the IOR, regionalism plays a vital role in promoting cooperation among the nations in the region. The region is diverse, with different languages, cultures, religions, and political systems, which makes it challenging to achieve common goals. However, regionalism can bridge the gap between the nations by providing a platform for dialogue and cooperation.

Benefits of Regionalism for Developing Nations.Regionalism has numerous benefits for developing nations in the IOR. It provides an opportunity for the nations to pool their resources and expertise, thereby increasing their bargaining power in the international arena. It can also help to address common challenges, such as poverty, terrorism, and climate change, which affect all the nations in the region. Additionally, regionalism can foster economic growth and development by promoting trade, investment, and tourism.

Overcoming Challenges through Regional Cooperation. Regional cooperation can help to overcome the challenges faced by developing nations in the IOR. One of the significant challenges is the lack of resources and technology required for air power augmentation. Through regional cooperation, countries can pool their resources and expertise to address this challenge. For example, countries can jointly invest in research and development of new technologies and share their expertise in the field of aviation.

Another challenge is the lack of infrastructure, such as airports and air traffic management systems, which is essential for the safe and efficient operation of air power. Regional cooperation can help to address this challenge by promoting investment in infrastructure development. Countries can work together to identify the areas that require infrastructure development and jointly invest in the construction of new airports, air traffic control towers, and other related facilities.

In addition to infrastructure development, regional cooperation can also help to promote training and capacity building. Developing nations can learn from the experiences of other countries in the region and adopt best practices in the field of air power. Regional training programs can be organized to enhance the skills and knowledge of the personnel involved in air power operations.

Overall, regionalism can play a crucial role in overcoming the challenges faced by developing nations in the IOR. It provides a platform for dialogue, cooperation, and resource-sharing, which are essential for promoting air power augmentation and addressing common challenges.

CHAPTER SUMMARY

The IOR has seen an increasing focus on shared air interests among its member states. The importance of regional cooperation for the development of air power and overcoming challenges is becoming increasingly recognized. Geopolitical cooperation, including bilateral and multilateral agreements, has been crucial in advancing shared air interests in the IOR. However, there are also several complexities and challenges that need to be addressed, including economic recession and the role of great powers and transnational actors. Developing nations, in particular, need to focus on air power augmentation to enhance their strategic capabilities. Regionalism has proven to be a useful tool in promoting shared air interests, especially for developing nations.

CHAPTER THREE

METHODOLOGY

CHAPTER OVERVIEW

The study of research methodology is commonly described as the examination of various methods, encompassing philosophical inquiries about researchers' abilities to gather information in a specific field and the trustworthiness of their knowledge claims. Moreover, the chapter explores subjects such as conceptualization along with crucial analyses like data collection methods and tools for data analysis, which are discussed later in the chapter.

RESEARCH DESIGN USING RESEARCH ONION

This research aims to conduct an analysis on the impact of regional air power cooperation on enhancing security and development in the IOR. To achieve the aforesaid aim of the research, this research follows a qualitative access. A qualitative approach is considered an appropriate method for this research due to its means of attaining depths of understanding of an observable fact by gathering and analysing the perception of different individuals and other sources of information such as reports, researches, interviews, and journal articles (Atenio, 2009).

Analysis plan of this research is based on the collection, measurement, and analysis of data, technique to answer the research questions, plus research design consists of research philosophy, approach, strategy, choice, time horizon, and technique/procedures (Saunders et al., 2019)

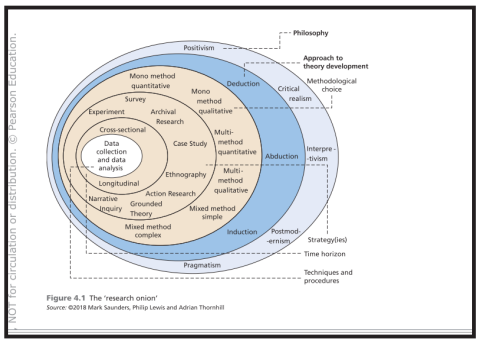

Figure 1: Research Onion
Source:Mark Saunders, Philip Lewis and Adrian Thornhill (2019)

METHODOLOGICAL APPROACH

This section aims to explain the different stages of research for better construction and organized methodology. The following sections illustrate the contours of the research design.

Philosophy. The philosophy of this research is identified as interpretivism since this research is qualitative in nature, and the researcher has his or her own perception and understanding of reality.

Approach. An analysis on the impact of regional air power cooperation on enhancing security and development in the IOR is relevant to creating of new theory exploiting observations. Hence, the approach of this research is inductive.

Strategy. Common way which assists the researcher to select major data compilation means and techniques or sets of methods in order to respond the research question and meet the research objectives is known as research strategy (Melnikovas, 2018). As this research is focused on the impact of regional air power cooperation on enhancing security and development in the IOR, it is expected to gather the required data based on systematic literature review. Further, using qualitative data to explain why a certain observable fact is required and the study is paying attention to a variety of similar cases in different settings and uses the data to derive causal explanations. Hence, by analysing these factors, it can be concluded that the most appropriate strategy for this research is grounded theory.

Choices of Methods. As this research comprises only one method which is qualitative, it can be categorized as mono-method research.

Time Horizons.The chosen time frame for this research is cross-sectional.

Data Collection and Analysis. It is expected to choose, collect and analyse primary data and would be discussed separately.

CONCEPTUAL FRAME WORK

Fundamental channel of this study is the conceptual framework which illustrates what the researcher expects to find through the study according to the methodology. Hence, the following conceptual framework made enabled to find and test answers for the research questions of the study.

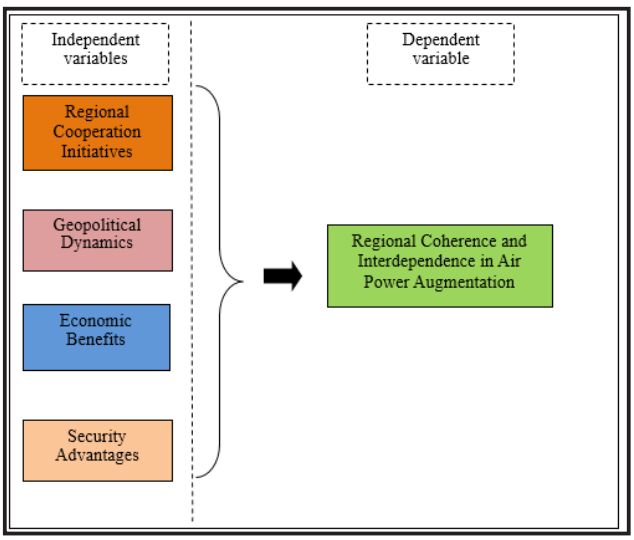

Figure 3: Conceptual Framework Including Variables
Source: Author (2023)

INDEPENDENT VARIABLES

Regional Cooperation Initiatives. This variable examines the extent and effectiveness of regional cooperation initiatives in the air domain among developing nations in the IOR. It includes measures such as joint military exercises, information sharing mechanisms, and confidence-building measures aimed at enhancing regional air power capabilities.

Geopolitical Dynamics. This variable assesses the influence of geopolitical factors on regional air power cooperation. It considers the involvement of great powers, regional contenders, and transnational actors in shaping the dynamics of cooperation efforts and power struggles among participating nations.

Economic Benefits. This variable explores the economic gains and advantages of regional air power collaboration for developing nations in the IOR. It includes factors such as increased trade opportunities, improved connectivity, and enhanced market access through regional air transportation networks.

Security Advantages.This variable evaluates the security benefits of regional air power augmentation. It assesses how cooperation initiatives contribute to enhanced operational efficiency, joint training, and response capabilities in addressing common security challenges and transnational threats in the IOR.

These independent variables will be crucial in analysing the relationships and impacts they have on the dependent variable, which is the 'Regional Coherence and Interdependence' in the context of air power augmentation among developing nations in the IOR. Researchers can use these variables to gather data, conduct statistical analyses, and draw meaningful conclusions related to the objectives of the study.

DEPENDENT VARIABLE

Regional Coherence and Interdependence in Air Power Augmentation: This variable represents the level of regional cooperation, coordination, and interdependence among developing nations in the IOR concerning their efforts to augment air power capabilities. It is a measure of how effectively these nations collaborate in the air domain, share resources, and work together to address common security challenges and achieve mutually beneficial objectives. The degree of regional coherence and interdependence will be assessed based on indicators such as the frequency and scope of joint exercises, information sharing mechanisms, standardization of procedures, and the implementation of joint policies or agreements in the air domain. The dependent variable captures the overall level of success and effectiveness of regional air power cooperation initiatives among participating nations in the IOR.

METHODS OF DATA COLLECTION

The primary data was gathered in the course of related documents, Pilot Projects, Journal Articles, Papers of Symposiums, Conferences, Books, Doctrines, Websites, Government Publications.

CHAPTER FOUR

DATA ANALYSIS

CHAPTER OVERVIEW

The data collected for this research was analysed using qualitative techniques. A qualitative process encompasses various statistics such as scholarly articles, quotes from published papers and similar researches were utilized in studies as qualitative data (Srivastava et al., 2009).

Hence, by using a wide range of qualitative data research problem can be identified clearly and the same concept is applied for this research. Further, to analyse data, Grounded theory was adopted, due to its straightforwardness and less convoluted nature pertaining to data collection and evaluation limitations. Hence, the aim of this chapter is to analyse the qualitative data, to evaluate the impact of regional air power cooperation on enhancing security and development in the IOR.

UNDERSTANDING THE REASONS FOR DEVELOPING NATIONS' AIR POWER COOPERATION

Regional cooperation initiatives in the IOR play a pivotal role in promoting air power augmentation among developing nations. These initiatives serve as critical platforms for fostering collaboration and addressing shared challenges. An overview of these cooperation frameworks, forums, and agreements reveals the depth and extent of regional cooperation efforts in the air domain. By examining their structure, objectives, and participating nations, a comprehensive understanding of the landscape of regional cooperation emerges, providing valuable context for exploring the underlying reasons and driving forces behind such collaborative endeavours.

The motivations and drivers that propel developing nations in the IOR to engage in air power cooperation are multifaceted. Strategic imperatives, security considerations, and economic incentives all contribute to the rationale behind their cooperative efforts. Shared security challenges, the pursuit of mutual benefits, and the desire for enhanced regional stability form significant factors that influence their decisions. Unravelling these drivers offers critical insights into the underlying dynamics that facilitate and sustain regional cooperation in the air domain.

Within the broader context of regional cooperation, developing nations exhibit a convergence of interests and common goals. Whether it is addressing maritime security threats, disaster response, or capacity-building, these nations share a commitment to pursuing objectives that align with the broader regional interests. Understanding these common goals lays

the groundwork for fostering effective cooperation and bolstering regional coherence. The collective determination of participating nations to advance shared interests in the IOR underscores the significance of air power cooperation initiatives as catalysts for enhancing security and development in the region.

ASSESSING CHALLENGES AND COMPLEXITIES IN REGIONAL AIR POWER COOPERATION

Geopolitical Dynamics and Its Influence on Cooperation. This section critically examines the impact of geopolitical dynamics on regional air power cooperation in the IOR. Geopolitical factors such as the presence of great powers, regional contenders, and transnational actors can significantly shape the cooperative landscape. The influence of geopolitical interests, alliances, and rivalries on cooperation efforts among developing nations is analysed to reveal potential opportunities and challenges. By understanding the intricate interplay of geopolitical forces, policymakers can devise strategies to navigate these complexities and foster constructive cooperation in the air domain.

Institutional Barriers and Coordination Challenges. Institutional barriers and coordination challenges pose significant hurdles to effective regional air power cooperation. Diverse administrative structures, varying legal frameworks, and differences in operating procedures can impede seamless collaboration among participating nations. Thereby nations can assess the institutional complexities that hinder efficient coordination, knowledge sharing, and decision-making processes. By pinpointing the specific barriers faced, potential solutions and mechanisms for strengthening institutional cooperation are identified, thus streamlining efforts to enhance regional air power capabilities.

Security Concerns and Risk Mitigation. Air power cooperation entails addressing complex security concerns that necessitate effective risk mitigation strategies. Developing nations in the IOR often confront shared security challenges, including terrorism, piracy, and trafficking, which demand coordinated responses. Additionally, potential threats arising from unintended consequences of cooperation are considered. A thorough understanding of security dynamics is vital for establishing resilient cooperation frameworks that promote regional stability and address emergent security threats effectively.

Economic and Resource Constraints. Economic and resource constraints can significantly impact the feasibility and sustainability of regional air power cooperation initiatives. Developing nations often grapple with limited financial resources and technological capabilities, which may hinder their participation in collaborative endeavours. Moreover, strategies for enhancing resource sharing and capacity-building are evaluated to enable equitable participation and promote inclusive cooperation.

This analysis of challenges and complexities in regional air power cooperation sheds light on the multi-faceted obstacles that must be navigated to advance collective security and development in the IOR.

By examining the influence of geopolitical dynamics, addressing institutional barriers, mitigating security concerns, and overcoming economic constraints, policymakers can chart a path towards fostering a more effective and resilient regional air power cooperation framework.

EVALUATING THE BENEFITS OF REGIONAL AIR POWER COLLABORATION

Regional air power collaboration among developing nations in the IOR offers a myriad of benefits that contribute to enhanced security and development. This section delves into a comprehensive evaluation of the advantages derived from such cooperative efforts, shedding light on their multifaceted impact.

Enhanced Operational Efficiency and Effectiveness. One of the primary benefits of regional air power collaboration is the enhancement of operational efficiency and effectiveness. By pooling resources, sharing intelligence, and coordinating efforts, participating nations can optimize air force capabilities and respond more effectively to emerging threats and challenges. Joint military exercises and training programs foster greater tactical proficiency and situational awareness, enabling seamless coordination in times of crises. The synergy achieved through collaboration significantly bolsters the operational capabilities of participating air forces, elevating their readiness and response capabilities.

Strengthened Air Defence Mechanisms. Collaborative air power initiatives strengthen air defence mechanisms in the IOR. Developing nations can collectively establish robust air defence networks that effectively monitor and safeguard the region's airspace. The exchange of expertise and best practices in airspace management and surveillance enhances early warning systems, minimizing response times to potential threats. As a result, regional air power collaboration contributes to a more secure and stable environment, dissuading potential aggressors and bolstering mutual deterrence.

Economic Gains and Trade Opportunities. Beyond security benefits, regional air power collaboration has significant economic implications. Developing nations in the IOR can harness air power capabilities to bolster trade opportunities and economic growth. Strengthened air connectivity facilitates faster and more efficient transportation of goods and services, promoting regional trade and investment. Additionally, improved aviation infrastructure attracts foreign investment, leading to economic diversification and job creation. By leveraging air power cooperation to foster economic development, participating nations can achieve sustainable growth and prosperity.

Improved Interoperability and Training. Regional air power collaboration fosters improved interoperability among participating nations. Standardizing procedures, communications, and equipment compatibility streamlines joint operations, enabling seamless coordination during combined military exercises and real-world operations. The regular exchange of experiences and training initiatives facilitates the development of a cohesive operational culture, strengthening mutual trust and cooperation among Air Forces. Enhanced interoperability paves the way for more sophisticated joint operations, reinforcing the collective effectiveness of regional air power.

The comprehensive evaluation of the benefits of regional air power collaboration underscores its significance in advancing security, economic prosperity, and regional stability in the IOR. By capitalizing on enhanced operational efficiency, strengthened air defence mechanisms, economic gains, and improved interoperability, developing nations can maximize the impact of their collaborative efforts.

CASE STUDIES OF SUCCESSFUL COOPERATION INITIATIVES

This section presents a comprehensive examination of real and impactful case studies that exemplify the positive impact of regional air power cooperation among developing nations in the IOR. Through the analysis of tangible outcomes and valuable lessons learned from these collaborative endeavours, the transformative potential of effective cooperation is underscored.

Analysis of Joint Air Exercises and Training Programs. The 'Ex-SINDEX' joint military exercise conducted by India and Singapore exemplifies successful regional air power cooperation. In this exercise, the participating air forces engaged in coordinated combat scenarios and air-to-air engagements. The joint training not only enhanced the tactical proficiency and interoperability of both air forces but also fostered mutual trust and understanding between the two nations. Additionally, the 'Red Flag' exercise, involving the United States, UAE, and South Korea, demonstrated the integration of Air Forces from different regions in combined operations. This exercise showcased the benefits of sharing expertise, tactics, and technology, resulting in enhanced operational effectiveness and preparedness for potential real-world contingencies.

Review of Confidence-Building Measures and Interoperability Efforts. The 'Indian Ocean Naval Symposium (IONS)' is a significant example of successful confidence-building measures and interoperability efforts. IONS brings together naval forces from littoral states of the IOR to promote maritime cooperation and security. The symposium facilitates regular dialogues, information sharing, and joint patrols, enhancing mutual trust and transparency among participating nations.

Another notable initiative is the 'Air Corridor' established between Afghanistan and India, which allows the seamless movement of humanitarian aid and goods. This project not only demonstrates cooperation in addressing common challenges but also highlights the potential for economic gains through improved connectivity.

Examining Economic Benefits and Development Projects. The 'BIMSTEC Grid Interconnection' project involving Bangladesh, Bhutan, India, Nepal, and Sri Lanka is an example of successful regional air power cooperation that fosters economic benefits. This project aims to create a regional electricity grid to facilitate the exchange of power among member countries. The cooperation in this endeavour not only promotes energy security but also fosters economic growth through the efficient utilization of energy resources. Another example is the 'African Drone and Data Academy' established in Malawi by UNICEF in collaboration with governments and private entities. This initiative leverages drone technology for social and economic development, showcasing how regional air power cooperation can drive innovation and improve livelihoods.

The comprehensive analysis of these real and impactful case studies provides nuanced insights into the positive outcomes and transformative potential of regional air power cooperation.

CHAPTER FIVE

FINDINGS AND RECOMMENDATIONS

CHAPTER OVERVIEW

The Discussion chapter delves into a comprehensive analysis of the research findings, focusing on the impact of regional air power cooperation on enhancing security and development in the IOR. Through the examination of successful case studies and real-life initiatives, the chapter explores the reasons behind developing nations' engagement in regional cooperation for air power augmentation. It highlights the motivations and drivers that lead to collaboration and uncovers the challenges and complexities hindering effective regional cooperation. Moreover, the chapter evaluates the benefits of regional air power collaboration, including enhanced operational efficiency, strengthened air defence mechanisms, and economic gains through improved trade and connectivity. The analysis of these findings provides valuable insights into the transformative potential of regional cooperation and contributes to a deeper understanding of promoting collective interests in the IOR. The chapter concludes with actionable recommendations for policymakers to enhance regional cooperation, overcome challenges, and foster a more secure and prosperous future for the region.

DISCUSSION

The study critically examines the impact of regional air power cooperation on enhancing security and development in the IOR, drawing insights from real-world examples and successful case studies. The research has shed light on the motives driving developing nations in the IOR to engage in regional cooperation for air power augmentation, showcasing how common security concerns and the need for mutual defence lead to joint efforts among neighbouring nations.

A notable real-world example of such cooperation is the 'SLINEX' joint military exercise conducted by India and Sri Lanka. This bilateral exercise aims to enhance interoperability and communication between the air and naval forces of both nations, emphasizing joint anti-piracy operations and enhancing maritime domain awareness in the shared waters of the IOR. 'SLINEX' exemplifies how regional air power cooperation strengthens collective capabilities to address transnational security threats effectively.

The discussion delves deeper into the influence of geopolitical dynamics on the extent and effectiveness of regional air power cooperation. By examining the 'Ex-Eastern Bridge' joint military exercise involving the UAE, Saudi Arabia, and Oman, the study illustrates how cooperation can transcend geopolitical complexities. This trilateral exercise aims to enhance combined air operations and promote regional stability through joint training and collaboration. The 'Ex-Eastern Bridge' exercise stands as an example of how regional air power cooperation can mitigate geopolitical tensions and foster trust among participating nations, ultimately strengthening collective security in the IOR.

However, the research also recognizes that regional air power cooperation faces obstacles that must be addressed to foster successful collaboration. The study highlights institutional barriers, coordination challenges, and limitations in information sharing as significant hurdles to be overcome. Policymakers and stakeholders must prioritize addressing these challenges to promote trust and transparency among participating nations. The 'Blue Flag' joint exercise held in Israel serves as a valuable real-world example, where various air forces from around the world participate in a multinational exercise. This exercise focuses on enhancing interoperability, tactical skills, and information sharing among participating nations, emphasizing the importance of coordination and mutual understanding in regional air power cooperation.

Furthermore, the study assesses the economic benefits and development projects resulting from regional air power cooperation, revealing its broader socio-economic impact on the IOR.

For instance, the 'Gulf Shield' joint military exercise involving Saudi Arabia and 23 other countries showcases the economic gains of regional cooperation. The exercise focuses on addressing security challenges in the Gulf region, fostering military cooperation, and promoting regional peace and stability. The 'Gulf Shield' exercise demonstrates how air power collaboration can enhance economic opportunities and encourage foreign investments, leading to mutual development among participating nations.

The analysis of joint air exercises and training programs reveals their role in enhancing operational efficiency and interoperability among participating air forces. The 'Garuda Shakti' exercise between India and Indonesia serves as an exemplary case, focusing on joint combat missions, special operations, and counter-terrorism scenarios. Through such exercises, participating nations develop standardized operating procedures, learn from each other's experiences, and enhance the synergy between their air forces, ultimately bolstering the overall security and stability of the IOR.

Security advantages emerge as a significant outcome of regional air power cooperation. Strengthened air defence mechanisms, as demonstrated by the 'Indian Ocean Naval Symposium (IONS),' enhance the collective security of participating nations. IONS brings together naval forces from littoral states of the IOR to promote maritime cooperation and security through regular dialogues, information sharing, and joint patrols, fostering mutual trust and transparency.

Moreover, the study examines economic benefits and development projects resulting from regional air power cooperation, showcasing its broader impact on the socio-economic landscape of the IOR. The 'African Drone and Data Academy' in Malawi, established in collaboration with UNICEF, exemplifies how technology-driven initiatives can promote social and economic development. Leveraging drone technology, this academy has improved healthcare delivery, crop monitoring, and disaster response capabilities, demonstrating the potential of air power cooperation to drive innovation and improve livelihoods.

The comprehensive analysis of real-world examples and successful case studies provides nuanced insights into the positive outcomes and transformative potential of regional air power cooperation. Developing nations can harness this transformative potential to address security threats, promote economic development, and strengthen mutual trust among participating nations, further advancing regional coherence and interdependence.

The findings from this study are expected to assist policymakers in promoting effective regional air power cooperation. Policymakers should prioritize regional cooperation initiatives aligned with common security

concerns and strategic interests of participating nations. Regular dialogues and information sharing mechanisms are essential for promoting trust and transparency among participating nations. Furthermore, efforts to enhance interoperability through joint training programs and standardizing operational procedures are critical for seamless coordination and joint operations.

To ensure sustainable regional air power collaboration, policymakers should address economic constraints and promote resource-sharing initiatives among participating nations. Inclusive participation of smaller and less developed nations in regional cooperation initiatives is vital for achieving collective security and development goals. Strengthening the role of regional organizations in facilitating and coordinating air power cooperation initiatives will also play a crucial role in promoting collaboration. These organizations can act as mediators and foster a culture of knowledge-sharing and lessons learned, continuously improving regional air power collaboration.

FINDINGS

The following section presents the key findings of this research, which delve into the impact of regional air power cooperation on enhancing security and development in the IOR. Through a comprehensive analysis, study explore the reasons behind developing nations' engagement in air power cooperation, the challenges hindering effective collaboration, and the benefits derived from regional cooperation initiatives. These findings shed light on the significance of cooperation in the air domain and provide valuable insights for policymakers seeking to promote effective collaboration and advance the collective interests of participating nations in the IOR.

a. Developing nations in the IOR engage in regional air power cooperation driven by common security concerns, such as piracy, terrorism, and illicit trafficking.

b. Geopolitical dynamics significantly influence the extent and effectiveness of regional air power cooperation, with complexities often arising from the involvement of multiple regional and global actors.

c. Institutional barriers and coordination challenges present hurdles to effective regional cooperation in the air domain, highlighting the need for improved communication and trust-building measures.

d. Successful joint military exercises demonstrate enhanced operational capabilities and improved interoperability among participating air forces, reinforcing the significance of collaboration.

e. Economic benefits resulting from regional air power collaboration contribute to socio-economic development in participating nations, fostering regional stability and prosperity.

f. Strengthened air defence mechanisms through collaborative efforts enhance collective security and deter potential threats, fostering a sense of security among participating nations.

g. Training programs and joint exercises facilitate the exchange of expertise and tactical knowledge, contributing to increased combat readiness among participating air forces.

h. Regional air power cooperation supports disaster relief and humanitarian assistance efforts, showcasing the significance of air assets in responding to regional crises.

i. Strategic imperatives, including mutual defence and resource-sharing, drive developing nations' engagement in regional air power cooperation to safeguard their interests.

j. Regional air power cooperation fosters mutual trust and understanding, mitigating tensions and promoting stability in the region.

k. Collaborative initiatives bolster maritime domain awareness and security, safeguarding vital sea lanes and territorial waters.

l. Challenges related to resource constraints and technology gaps underscore the need for resource-sharing arrangements to maximize the benefits of regional air power cooperation.

m. Multinational participation in joint military exercises reinforces the comprehensive approach to regional security and strengthens collective capabilities.

n. Regional air power cooperation enhances military readiness, disaster response capabilities, and promotes peaceful conflict resolution in the IOR.

o. Continuous improvement through knowledge-sharing platforms contributes to the sustained effectiveness of regional air power cooperation.

RECOMMENDATIONS

In light of the research findings, the following section outlines practical and actionable recommendations for policymakers to enhance regional air power cooperation in the IOR. These recommendations are designed to address the identified challenges and complexities, promote trust and inclusivity among participating nations, and leverage the economic benefits resulting from collaboration. By implementing these recommendations, policymakers can strengthen the foundations of regional cooperation, foster a culture of mutual understanding, and ensure a more secure and prosperous future for the IOR nations and their people.

a. Policymakers should prioritize building trust and open communication channels among participating nations to overcome institutional barriers hindering effective regional air power cooperation.

b. Establishing regular dialogues and information-sharing mechanisms will foster understanding and cooperation among developing nations in the IOR.

c. Efforts to enhance interoperability and tactical skills through joint training programs should be expanded to involve more nations in the region.

d. Policymakers should encourage knowledge-sharing and lessons learned platforms to foster continuous improvement and collaboration.

e. Maximizing economic benefits resulting from regional air power cooperation will contribute to socio-economic development in participating nations.

f. Tailoring joint exercises to address regional challenges, such as disaster relief and humanitarian assistance, will reinforce the role of air power in crisis response.

g. Developing nations should explore strategic partnerships and initiatives to strengthen collective capabilities and promote stability in the IOR.
h. Multinational participation in exercises will enhance mutual trust and cooperation among regional and international partners.

i. Expanding regional air power cooperation to address emerging challenges like cybersecurity and environmental protection will reinforce comprehensive security measures.

j. Policymakers should prioritize resource-sharing arrangements to address resource constraints and technology gaps, maximizing the benefits of cooperation.

k. Addressing geopolitical sensitivities and historical issues will foster an environment of trust and mutual understanding, promoting regional air power cooperation.

l. Leveraging regional air power cooperation to address non-traditional security threats will enhance the region's resilience against various challenges.

m. Strengthening joint intelligence-sharing mechanisms will effectively counter transnational security threats in the IOR.

n. Developing nations should utilize regional air power cooperation as part of a comprehensive security strategy, incorporating air assets into disaster response and humanitarian efforts.

o. Promoting comprehensive joint exercises that integrate air, naval, and ground capabilities will reinforce collective security in the IOR.

CHAPTER SIX

CONCLUSION

In conclusion, this research has explored the impact of regional air power cooperation on enhancing security and development in the IOR. The study successfully achieved its objectives by analysing the reasons for developing nations' engagement in air power cooperation, evaluating challenges hindering effective collaboration, assessing the benefits of regional cooperation initiatives, and proposing practical recommendations for policymakers.

The findings underscore the significance of regional air power cooperation driven by common security concerns, geopolitical dynamics, and strategic imperatives. Such cooperation fosters mutual trust and understanding, mitigating tensions and promoting stability in the region. It strengthens air defence mechanisms, enhances disaster response capabilities, and facilitates the exchange of tactical knowledge among participating air forces.Nevertheless, institutional barriers, coordination complexities, and resource constraints present obstacles to seamless cooperation. The study recommends prioritizing trust-building measures, open communication channels, and knowledge-sharing platforms among participating nations. Efforts to enhance interoperability and tactical skills through joint training programs should be expanded, and resource-sharing arrangements can maximize the benefits of cooperation.

Strategic partnerships and efforts to address non-traditional security threats are crucial for collective security in the IOR. Policymakers must remain

committed to promoting sustainable cooperation to safeguard shared interests and ensure a stable and secure IOR. By fostering a culture of cooperation and inclusivity, regional air power collaboration can lay the foundation for a brighter and more secure future for the IOR nations and their peoples.

Regional air power cooperation holds immense potential in enhancing security and development in the IOR. By addressing challenges, promoting trust, and leveraging benefits, participating nations can collectively build a resilient and prosperous region. The dynamic nature of geopolitical landscapes necessitates continuous improvement and adaptation to emerging challenges. Through cohesive efforts and a commitment to mutual goals, regional air power cooperation can contribute significantly to regional stability, prosperity, and peace.

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AIR COMMODORE DRW JAYAWARDENA

USP,MSc (Def Stu) in Mgt, MDS, MSSD, BA (Def Stu), ndc (Ban), psc

Air Commodore Rajinth Jayawardena was born on 28th September 1971. He completed his education in Richmond College Galle and Central College Anuradhapura and enlisted to the General Sir John Kotelawala Defence Academy in November 1992 as a cadet officer. After successful completion of the academics and military training he was graduated with degree of BA (Defence Studies) and was commissioned as a Pilot Officer in the Administrative Branch of Sri Lanka Air Force in December 1994.

Subsequently, he has followed Junior Command Staff College course at Sri Lanka and Coimbatore India in 2004 and successfully completed psc (Passed Staff College) at Defence Services Command and Staff College Sri Lanka. He possesses a Master of Defence Studies conferred by University of Kelaniya and Master of Science (Defence Studies) in Management at General Sir John Kotelawala Defence University, Sri Lanka. In 2022, he followed ndc at prestigious National Defence College Dhaka Bangladesh and also recipient of Master of Social Science in Security and Development from Bangladesh University of professionals.

During his 31 years military career, he has held various key appointments in Command, training and Staff and some of important among them are the appointment of Staff Officer to Director Administration at Air Headquarters Colombo, Officer Command Personnel/ Station Service at Sri Lanka Air Force Base Ratmalana, Academy China Bay, Anuradhapura and Vavuniya. Also performed duties as Directing Staff Admin and Senior Instructor at Junior Command and Staff College. He also performed instructor duties at Defence Services Staff College Sri Lanka as Directing Staff. Also, he performed duties at Air Force Headquarters as Staff Officer Admin, Acting Air Secretary to the Commander of the Air Force, Commanding Officer at Air Force Station Weerawila and Commanding Officer Volunteer Air Force Headquarters and presently serving in the capacity of Director Personnel Administration and Commanding Officer Women's Wing.

His writings include: Necessity of Air Diplomacy to Have Sound Air Strategy in The Absence of Balanced Air Force: Study on Sri Lankan Perspective (2022) dissertation written during NDC in Bangladesh. Another dissertation conducted on An Exploratory Analysis of Turnover culture of direct enlisted professionally qualified officers in Sri Lanka Air Force for Master of Science (Defence Studies) in Management at General Sir John Kotelawala Defence University.

Further, he is a keen sportsman and SLAF Tennis Colours man and represented Air Force Squash/Tennis/Golf in Defence Services.

AERIAL DIPLOMACY FOR A SAFER AND SECURE FUTURE THROUGH MUTUAL COLLABORATION IN INDIAN OCEAN REGION

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ABSTRACT

As Admiral Mahan predicted, Indian Ocean Region (IOR) is becoming a key region deciding the world order in the twenty-first century and the growing importance of dominance in IOR for securing an advantageous position in global power politics. IOR inhabits a unique strategic position joining East-West in maritime transference and is considered as one of the key global trading thoroughfares. Sri Lanka being in the middle of the IOR, have the potential to become ideal candidate for mediating between major stakeholders interested in regional affairs. Hence, an exploratory qualitative study was conducted with an abductive approach examining how aerial diplomacy could be utilized to develop a safer and secure future for IOR through the mutual collaboration of the stakeholders in the region as the general objective. Specific objectives are to determine significance of the IOR under present geopolitical circumstances, to ascertain challenges to security and safety of the IOR, to determine best approach for Sri Lanka in managing affairs in IOR and to exploit the potential of aerial diplomacy to meet national interests in IOR. Interview data collected through scholars and practitioners were thematically analysed to derive a pragmatic insight for testing a theoretical framework developed through literature. In line with the Island nations' non-aligned foreign policy, employment of aerial diplomacy through soft power extensions such as mutual collaborations, capacity building, and multinational partnerships were identified as the best measures for ensuring a safer environment in IOR amidst greater power rivalry in regional affairs due to overlapping of spheres of influence in key stakeholders in the world order. Finally, it was recommended to open up a dialogue with interested parties to the IOR matters for establishing a forum to collaborate for working towards regional security, Sri Lanka to become the mediator of the said forum as the most suitable candidate, to develop a multinational maritime air strategy, and to develop a framework for optimal utilisation of geo-strategic location of Sri Lanka, capabilities and capacities of stakeholders in realising a safer IOR in future. Diplomacy could yield better results than the application of coercion or aggression.

Keywords – air diplomacy, mutual collaboration, multinational maritime air strategy. Indian Ocean Region

I.INTRODUCTION

Indian Ocean Region (IOR) covers more than 20 percent of the earth's water surface where in totally it is about 68.556 million square kilometres. This vast ocean area includes Andaman Sea, Bay of Bengal, Arabian Sea, Flores Sea, Gulf of Aden, Great Australian Bight, Gulf of Oman, Java Sea, Persian Gulf, Mozambique Channel, Red Sea, Savu Sea, Timor Sea, Strait of Malacca and other streams of water bodies(Wignaraja, Collins and Kannangara, 2019). It also consists with some small littorals such as the Madagascar, The Seychelles, Maldives, Mauritius, Reunion Island, and most importantly Sri Lanka. Apart from the states in IOR, significant interest for the region has shown by certain extra-regional actors such as United States of America (USA), China and Japan

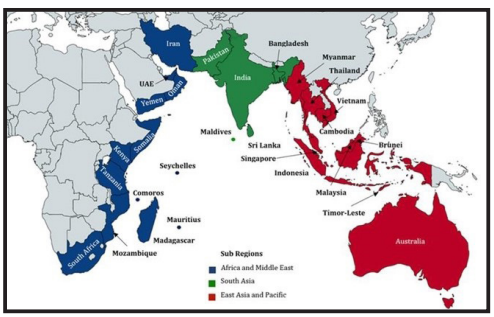


Figure: States in IOR
Source: www.lki.lk

Within recent decade, Indian Ocean Region obtain its rightful place in the globe as very correctly predicted by Admiral Alfred Mahan in the 19th century. With the rising of the China and India in to Global superpowers and the rapid growth of Asian countries in the region such as Bangladesh and Vietnam have a huge impact of the same (Yamin el al., 2020). However, still being a developing country, which was suppressed by the recent economic turmoil, Sri Lanka has its own significance and importance in the IOR due to its tragically important position. Further, owning to huge sea and airspace which is almost impossible to aid the required facilities such as Search and Rescue (SAR) monitoring and patrolling with the available limited resources the island nation possesses whilst adhering to the non-alliance policy is a great challenge to the nation. Moreover, preventing our airspace to become a battle ground for the super power in contentious geo political situation would be a great challenge(I. Premarathna, 2021). Further, the existing non-traditional threats such as climate change, resources scarcity, infectious diseases, natural disasters, irregular migration, food shortages, people smuggling and drug trafficking(Chatterjee, 2014) where collaboration of all actors irrespective of their political and national objectives would be very important to ensure the global peace. As such, mutual collaboration with the regional and extra regional states and organization is the only way that our country could sustain in the present geo political situation(Limaye, 2017).

Whilst focusing on to such situation, utilization of air power is very important due to its inherent characteristics such as minimum reaction time with least delay. However, catering the requirements and achieving the tasks vested to the Sri Lanka Air Force (SLAF) with the existing air assets seems to be quite impossible. This is where the air diplomacy comes in to action which will assists to enhance the maritime domain awareness of Sri Lanka. Joint military exercises would be a great entry point for Sri Lanka to strengthen its ties with the other regional and extra regional states since these other states would also benefitted immensely by the knowledge that our military personals possess due to the experience of three decades of war prevailed in this country(Wijetunga, 2022).

Research Questions

The research questions that arose to the researcher while carrying out the literature survey have been stated below:

1. What is the significance of IOR under new world order.?
2. What are the challenges for safety and security of the IOR.?
3. What kind of approach should Sri Lanka adopt to manage affairs at IOR.?
4. How best the aerial diplomacy could be utilized to meet national interests in IOR.?

Research Objectives

Under the general objective of how aerial diplomacy could be utilized to develop a safer and secure future for IOR through the mutual collaboration of the stakeholders in the region following specific objectives were derives to find answers for the research questions:

1. To determine significance of the IOR under present geopolitical circumstances.
2. To ascertain challenges to security and safety of the IOR.
3. To determine best approach for Sri Lanka in managing affairs in IOR.
4. To exploit the potential of aerial diplomacy to meet national interests in IOR.

METHODOLOGY

This research adopted qualitative research method with narrative research approach. This involves the secondary research data collection method where the researchers examined the existing research articles rich with relevant details pertinent to the research.

Contemporary challenges to safety and security in IOR

Climate change

According to Beal et al, 2019 Indian Ocean temperature increases in rapid rate than ever before. This affects to the oceanic eco system and would be chaotic to the 30% of the world's coral reefs which harbour in the Indian Ocean(Wignaraja, Collins and Kannangara, 2019). In addition to that the increment of the warm pool would affect to the sub seasonal weather patterns(Ajayamohan and Sabeerali, 2017).

Therefore, in future air operations in the Indian Ocean Region would be more challenging. Hence, all the state and non-state actors would have to work together to prevent the air operations getting hindered from the climatic changes. Information sharing among the countries and collaborating with the sister services in a very effective manner would be required in the future to fight against this challenge. Further, aviators have to improve their skills to carry out their missions in more rigid environment such as operating over rough seas in future due to the expecting climate changes.

Environmental pollution and Marine Disasters

Garbage dumping: In each year, approximately 430 million tons plastics are producing and most of them are just throw away after a one use. It is believed that more than 11 million metric tons out of these are adding to the ocean excluding 200 million tons which predict that exists. Further, most of these plastic are cracked in to tiny particles and sediment in the aquatic environment including oceanic species (Vasquez, 2023).

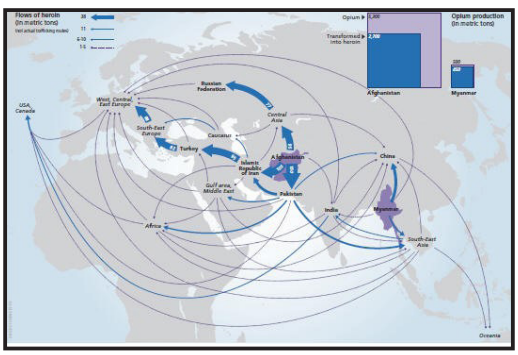
Even though ocean can be demarcated, we cannot stop garbage dump from one country flows to another country. Therefore, the mutual collaboration between countries is very much essential in order to mitigate this menace. Further, manmade disasters such as oil spill which we have experienced very recently cannot be overcome single handily due to the scarcity of resources (Daily Mirror, 2023). Organised Transnational Crimes

Illegal, Unregulated and Unreported Fishing (IUU) fishing: IUU fishing is something not new to Indian Ocean. Recent cases of IUU fishing arrests by India and Sri Lanka in the Palk Strait, by India and Pakistan in the Rann of Kutch, and by India and Bangladesh in the Bay of Bengal are some of the examples of this never ending problem. Further, it has been evident that the organised criminal and illegal activities are also accompanied with IUU fishing(Bhatt, 2020).

Due to the vast area vested by the states, it has become a challenging task for the law enforcement authorities to prevent this problem where the air power would be ideal to use to mitigate the problem due to the quick response and the large area that can be monitored from the above.

Drug trafficking, human trafficking and Contraband Smuggling: It has been reported that about 50% of world container traffic and approximately 80% of the global seaborne oil pass through the sea lines of the Indian Ocean (United Nations Conference on Trade and Development, 2021)

Figure: Global heroin flows from Asian points of origin



Source: www.unodc.org

As per United Nations Office of Drugs and Crimes (UNODC), after making its way from Afghanistan to Pakistan and Iran, heroin shipments leave the Makran coast, which expand from coastlines of Iran and Pakistan, to a range of entry points in East Africa. In between these lies island nations like Sri Lanka and Maldives where some of the drugs are docked (World Drug Report, 2015).

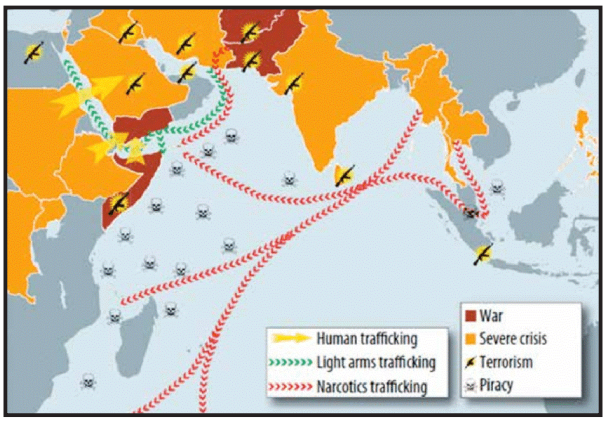


Figure: Major Security Concerns in the Indian Ocean
Source: (Michel et. al, 2014)

Further, trafficking by sea is the easiest way of transporting drugs, human and contraband smugglings. The main helpers of illegal smuggling are fishermen, who are often linked with illegal activities due to lack of income and limited employment opportunities during adverse weather. Further, many ex-combatants from the LTTE has involved in to this(Kaumada, 2021).

Moreover, the involvement of underworld gangs for the drug trafficking, human smuggling and contraband activities have been increased significantly in the recent past at the IOR(Premarathna, 2021).

Further, in recent arrests of some of the Sri Lankan underworld kingpins from Tamil Nadu refugee camps shows how the underworld network has expanded to the international level. From the interrogations, it was found that they have fled the country via sea (The Hindu, 2022)

Opportunities available for ensuring safe and secure future in IOR Information and intelligence sharing: Due to the importance of the IOR, all the major powers and super powers are highly concern on the region and their interests are not in common(Hayat and Shahzad, 2020). However, their conflict of interest and least concern to act in unison would affect adversely for the concept of safe and secure future IOR since none can fight against non-traditional threats. Especially, Coastal states continue to face major security challenges from a variety of issues, including illicit fishing, terrorism, trans-national crime (TNC), drug smuggling, cyber-sabotage, and arms trafficking, regardless of size and power. As a result, efforts to “fuse” more information from all sources will necessitate improved coordination and communication across various concerns, changes to bureaucratic structures, and technological advancements on the part of both people and systems.

Everything revolves around providing information for decision-making, establishing priorities and protocols, and assisting particular activities under competitive circumstances which will ultimately support for the risk mitigation plans, prevent strategic surprises, and guarantee that threat to national security analysis, situational awareness, and response(Baldino, 2018).

FRAMEWORK FOR MUTUAL COLLABORATION TO REALISE SHARED INTERESTS THROUGH AERIAL DIPLOMACY

A centralised organisation headquartered in an ideal place joining all the state level actors would be a pragmatic solution for realising shared interests in IOR. There are certain factors need consideration for establishing this organisation.

Geographical location: Geographical location is important for discharging the agreed upon decisions. The assets of this organisation should be at disposal in the places of increased reporting/occurring of crimes. Since most of the criminal entities opted for seaborne routes for better opportunity, access to SLOCs and associated sea routes is of paramount importance. South India, Sri Lanka and Male are located close to the geographical centre of IOR and adjacent to SLOCs and sea routes utilised by criminal elements. In this aspect one out of these would be a better option. In furtherance, geographical centre is crucial for logistics and communication as well.

Availability of adequate infrastructure: There could be instances that working collaboratively in individual capacities would not be sufficient for the perceived threat. Hence, concentration of forces would be required. These forces would include, but not limited to air assets, naval assets, crew, equipment…etc. Further, the period of the concentration would be unpredicted and depends solemnly on the strength and sustainability of hostile elements. Formulation of combined maritime forces to address unprecedented piracy in Gulf of Aden and Red sea predominantly y Somali pirates in 2008 is a classic example to the discussed possibility. To accommodate and facilitate a large group of air and naval assets, crew and equipment requires spare capacity in terms of logistics, port and air port facilities. As far as the first three candidates are concerned, only India and Sri Lanka can house such a combined force without hindering their routine functions, provided that the members aid financially.

Geo-political considerations: Geopolitical concerns have a greater bearing towards sustenance and flourishing of efforts in this nature. Fostering of Association of South East Asian Nations (ASEAN) and stagnation of South Asian Association for Regional Cooperation (SAARC) are good cases worth referring for formulation of a mutually benefited organisation.

Long lasting geo-political rivalries and ideological discrepancies of the location of the headquarter/host could undermine all the efforts for a good cause. Hence, a non-aligned country for different alliances in serious manner should be opted out. Sri Lanka is among such candidates, which has been maintaining greater bi-lateral and multi-lateral relationships with almost all member states of IOR. The foreign policy of "Enemy to none, friend to all" has resulted many gains to the Island nation over a period of time. In this sense, Sri Lanka qualifies as the best candidate for locating the headquarter of this collaboration.

Aerial Network for monitoring and responding security threats:

Almost all states, who have maritime interest in IOR conducts their own aerial surveillance and recce. Nevertheless, none is able to cover entire area due to its vastness. Gaps in individual monitoring efforts could pave way for hostie elements to undertake their operations without being monitored or hindered. Thus, effective monitoring and reporting of security threats demand a networked approach involving multiple stakeholders. Collaborative mechanisms such as information sharing agreements and joint exercises bolster collective security efforts. Here, aerial networks offer a unique advantage by swiftly disseminating real-time intelligence to relevant authorities and partners. The Malabar naval exercise, involving India, the United States, Japan, and Australia, exemplifies such collaborative endeavors to enhance maritime security in the IOR.

It's worth noting that the deployment of aerial networks raises diplomatic considerations. Air diplomacy, as an extension of national foreign policies, plays a role in shaping security dynamics. Surveillance flights over sensitive areas, while essential for threat detection, can inadvertently escalate tensions. Consequently, transparency, open communication, and adherence to international norms are essential to prevent unintended escalations.

The information monitored and identified as a security threat affecting common interests could be shared with the relevant member states. Then the next member could continue surveillance or recce, when the hostiles cross one territory to other. This needs pre-arranged procedures, rehearsals and enhanced mutual understanding. This network is to be expanded with the involvement of maritime elements as they are an integral and inseparable part of this effort. If one member is incapacitated in continuing or taking over the monitoring, it could seek assistance from a more capable member to take over.

Proposed model for Functional Framework for an aerial network:

The following model for functioning framework would enable streamlined functioning of this organisation. Streamlined function is inalienable with the sustainability and growth of an organisation. Once state actors are linked to the common framework, they can employ a suitable methodology to join their local stakeholders to the main framework. There could be possibilities where, certain member states or subsidies of member states work closed and frequent than the rest, considering the uneven distribution of the threat and their sources/safe heavens. For an example, the IUU fishing by South Indian and North Sri Lankan fishermen could be addressed solely by the two member states without assistance from other members as it is used to be. In furtherance, Navies, Air Forces and Coast guards of both members work very closely to meet shared interests.

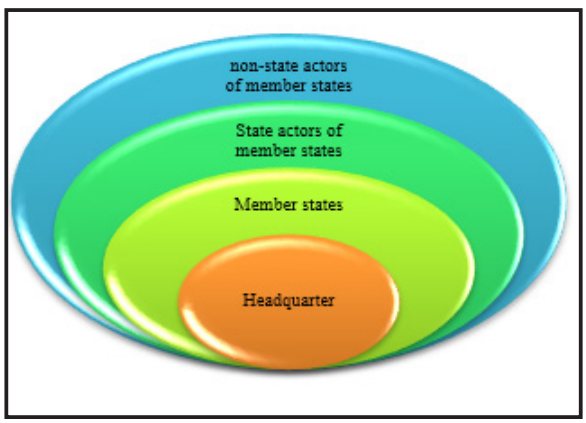


Figure: Model for functional framework for a mutually collaborated organisation for IOR
Source: (Authors, 2023)

RECOMMENDATIONS

1. Formulate a mutual alliance in countering security threats in IOR: I t is hight time to formulate a mutual alliance in IOR with the participation of all stakeholders to counter the security threats emanating within and affecting IOR. Most of these threats are common to many members in IOR. Considering the span of the IOR and Trans-national nature of many security issues, security demand overwhelms one states capacity and cannot have an effective solution in isolation either. Hence, an alliance for ensuring a safer and secure IOR initiated through aerial elements is of useful.

As deliberated during considerations for establishing a Headquarter, Sri Lanka seems the best candidate considering the geo-strategic location, availability of infrastructure and geo-political concerns.

2. Conduct a comprehensive threat analysis in IOR with the participation of all stakeholders: Different state actors in the region have unique as well as common

security issues from IOR. Most of the TNC, such as drug, weapon, human and contraband trafficking, terrorism, maritime pollution...etc are common to multiple stakeholders. Thus, the alliance, should conduct a comprehensive threat analysis for the region as a whole and for sub regions, such as gulf of Aden, Bay of Bengal, Red sea, Strait of Mallacca...etc in particular. The threat analysis would provide the correct mass and mix of effort needs to be put forward in different sub regions of IOR.

3. Develop set of strategies to counter different threats: Same strategy would not be workable in every nook and corner in the IOR due to the diversity in the region. Hence, extracts from threat analysis should be utilised for developing unique strategies for different issues and if required, different sub regions for the same issue.

4. Develop a joint doctrine for effective functioning of the alliance: I O R inhibits a highly heterogeneous member states, in terms of language, religion, ethnicity, believes, traditions, culture...etc, despite certain common values and interests. Hence, effective output by combining the strengths needs a common way of execution. Developing common doctrine would be a reasonable solution for attaining this objective. This type of mutual alliances has developed their common doctrines and related correspondence to make their efforts more effective and efficient. A common doctrine would aid in minimising communication gaps, procedural mismatches, possible issues related to command and control. It is evident that human factor plays a crucial role in interoperability. It is the most difficult component to merge with compared to other elements. A common doctrine could lay a profound basement for developing interoperability.

5. Conduct joint training and exercises to enhance interoperability and understanding of various stakeholders: Joint and combined training is a pre-requisite for operational success. Followed by a joint doctrine, scenario based combined training is to be conducted to test the interoperability, effectiveness and efficiency of different elements in the alliances. Higher gaps in technology, competency, capacity and ability could undermine the combined output. Thus, capacity building through mutual training would be required for effective and efficient discharge of mission critical functions. These training could be designed as bi-lateral or multi-lateral as the situation demands.

CONCLUSION

In an increasingly interconnected and interdependent world, aerial diplomacy has emerged as a pivotal tool for fostering cooperation, ensuring security, and shaping international relations. The IOR stands as a prime example of the significance of collaborative efforts in achieving a safer and more secure future. This conclusion examines the multifaceted dimensions of aerial diplomacy and underscores the potential of mutual collaboration in the IOR, drawing on factual analysis and academic perspectives. In conclusion, the Indian Ocean Region presents an arena where aerial diplomacy's transformative potential is illuminated through a tapestry of academic analysis, factual data, and informed opinions. Collaborative efforts in the realms of air power, strategy, and diplomacy hold the key to forging a safer and secure future for the region. The convergence of these elements, supplemented by credible citations and empirical evidence, accentuates the optimism surrounding mutual collaboration. As the global community navigates complex security challenges, the role of aerial diplomacy remains pivotal in shaping a prosperous and harmonious future for the IOR.

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AIR COMMODORE SPVK SENADHEERA

RWP, RSP, USP, MCPS, MDS, MHRM, BA(Def Stu),MITD (SL), AMCIPM, psc

Air Commodore Vajira Senadheera was born on 17th October 1973. He completed his education form Bandaranayke College Gampaha and joined the Sri Lanka Air Force (SLAF) as an Officer Cadet through No. 11 Intake of Kotelawela Defence University on 17th October 1993. He was commissioned as a Pilot Officer in the Regiment Branch in the year 1996.

The Officer was graduated from Sir John Kotelawala Defence University Ratmalana and subsequently he followed different professional courses including the Masters in Defence Studies from the University of Kelaniya, Masters of Human Resource Management and Masters in Conflict and Peace Studies from the University of Colombo. He has successfully completed No. 05 Senior Staff Course at the Defence Service Command and Staff College (DSCSC) Sapugaskanda in year 2011. He is a proud recipient of both the 'Golden Owl' for the distinguished performances and the 'Golden Pen' for the Best Commandant's Research Paper at the DSCSC Course No. 05. Further, he has obtained the National Diploma in Training and Development from Sri Lanka Institute of Training and Development in year 2013 and holds the Membership and work in the Executive Council since 2019.

During his tenure at the SLAF he has held various key appointments including Flight Commander, Squadron Commander and Commanding Officer of Regiment Wings, Officer In-charge/Chief Instructor Cadet Training and Officer Commanding Training at Combat Training School Diyatalawa, SLAF Contingent Commander UN Peacekeeping Mission Haiti and Directing Staff of DSCSC Sapugaskanda and the Staff Officer Foreign Missions at UN Mission Cell AFHQ. Presently he is serving as the Commanding Officer at Sri Lanka Air Force Combat Training School, Diyatalawa.

Various of his writings include; an extended essay titled 'Security Sector Reforms in Transitional Justice Sphere in Sri Lanka: A Post-War Analysis' (2018) for Masters in Conflict and Peace Studies, a research conducted on 'Impact of Personality Type of Regular Airmen on Annul physical Fitness Performance Test and Career Development: A Journal Article titled "Youth Propensity to Serve in Armed Force: an analysis of the Sri Lanka Air Force Recruitment Drive of Volunteer Airmen" (2021) Published in Defence and Security Journal. A Case Study' (2017) for the Masters of Human Resource Management Degree, a journal article titled 'Back to Civilian Life: Dynamics of Economic Reintegration Process of Ex-Liberation Tigers of Tamil Ealam (LTTE) Combatants in Post-War Sri Lanka' (2016) published in Defence and

Security Journal, an abstract presented on 'Economic Empowerment of ex-LTTE Members: A way Forward to Sustainable Development for National Reconciliation' (2016) for the Annual Research Symposium of University of Colombo, a paper presented on 'The Role of Sri Lanka Air Force Elite Forces in Maritime Security: Air Maritime Perspective' at the Annual Air Symposium 2015 and Commandant's research paper on 'Achieving Sustainable Peace Through Rehabilitation: A Study on the Rehabilitation Process of Ex- LTTE in Sri Lanka' (2011) which won the 'Golden Pen' award at DSCSC Course No.05.

AIR POWER AND HUMAN SECURITY: LEVERAGING THE POTENTIAL OF AIR POWER IN THE AGE OF HUMAN SECURITY

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ABSTRACT

Air Power has been a decisive factor in most conflicts fought in recent history. It's importance has been growing as the associated technology has grown, so as to become a responsive, versatile tool that has tactical and strategic applications, and that is a decisive force in matters of security. The Concept of Security, however, has been undergoing a transformation in recent years with its traditional territorial focus being changed to a more people centric, human focus. Concerns about the failure of the traditional security paradigms to address the security of individual citizens even as it ensured the security of nations, prompted a paradigm shift resulting in the term security being replaced by the more inclusive term Human Security. Human Security is an all-encompassing term which while including the traditional territorial security, concerns itself with a range of securities that are deemed essential for individuals to survive and thrive in modern society. This changing of paradigm prompts the question as to whether air power will retain its relevance and dominance in the face of the changing security landscape as well as the modern perspective on security. This paper points out that the versatility and the many unique characteristics of air power makes it an invaluable asset even in the evolving scenario and indeed, makes it especially relevant in the future where human security will take on greater focus.

Keywords— Traditional Security, Human Security, Air Power

I.INTRODUCTION

In the early 1990s, in the backdrop of the end of the Cold War, a new concept of security began emerging, prompted by the perception that as the world became more interconnected, the traditional definitions of security were inadequate to address the complex and diverse range of threats faced by communities and individuals. The concept of security has evolved from a narrow focus on physical defence to a broader understanding that encompasses various dimensions, including economic, environmental, human, and digital security. The changing nature of threats and the interconnectedness of the world have prompted shifts in security strategies and policies over time.

A. Traditional Security

Some scholars and policy makers went to the extent of suggesting that even though amounts as large globally as the combined income of forty nine percent of the world's people had been spent on the provision of traditional security, and even though there had been some measure of success in ensuring the relative security of nations at times, even successful examples of territorial security do not necessarily ensure the security of citizens within a state (Gary and Murray, 588). It's important to note that while traditional security remains a significant consideration for many countries, the concept of security has expanded to include non-traditional threats such as terrorism, cyber-attacks, environmental challenges, and more. This broader understanding of security acknowledges that factors beyond military might can also impact a nation's stability and well-being. As a result, modern security strategies often include a combination of traditional and non-traditional security approaches to address the complexities of the contemporary security landscape.

B. Human Security

The human security concept emerged as part of a holistic human development paradigm to redefine the security-development nexus by placing individuals and communities (Busumtwi-Sam). The human security concept emerged as part of a holistic human development paradigm to redefine the security-development nexus by placing individuals and communities (Busumtwi-Sam). The concept first appeared in a 1994 report by the United Nations Development Programme (UNDP) entitled "Human Development Report 1994: New Dimensions of Human Security" which argued that traditional definitions of security failed to address the growing insecurity of individuals and communities in the face of a range of non-traditional threats, such as poverty, hunger, disease, environmental degradation, and human rights abuses.

The report defined human security as "a condition of existence characterized by freedom from pervasive threats to people's rights, their safety, or even their lives." It identified seven key dimensions of human security, including economic security, food security, health security, environmental security, personal security, community security, and political security.

C. Air Power

William Billy Mitchell defined Air Power as the ability to "do something in the air." While this rather simplistic definition sufficed at the time when Air Power was in its infancy, as Churchill would point out much later, Airpower remains a most difficult form of military force to measure, or even express in precise terms. Air power is the integrated employment of all air and space forces to control and exploit the air and space environments to achieve national security objectives (Jones). Air power refers to the use of military aircraft and other airborne weapons systems to achieve strategic, operational, or tactical objectives in warfare. It includes a wide range of capabilities, such as air-to-air combat, close air support, strategic bombing, reconnaissance, and electronic warfare. Air power can be used in conjunction with other military assets, such as ground forces and naval vessels, or it can be employed independently to achieve specific objectives.

The use of air power has become increasingly important in modern warfare, as advances in technology have made aircraft more capable and versatile. Air power offers several advantages over other forms of military force, including the ability to rapidly deploy forces over long distances, the ability to strike targets with precision and at great speed, and the ability to conduct surveillance and gather intelligence from the air. Air power has been employed in a wide range of military operations, from World War II bombing campaigns to more recent conflicts in Iraq, Afghanistan, and Syria. It has also been used in humanitarian and disaster relief efforts, such as airlifting supplies and personnel to areas affected by natural disasters.

Overall, air power is a critical component of modern military operations, offering unique capabilities and strategic advantages to military forces. Its versatility and precision make it an important tool for achieving a range of military objectives, from defensive operations to offensive campaigns and humanitarian missions.

II. LITERATURE REVIEW

A. Traditional Security Vs Human Security

While traditional security focuses on protecting the state from external military threats, such as invasion or attacks from other countries, human security focuses on protecting individuals and communities from a broad range of threats that affect their well-being, including economic, social, and environmental threats. Where traditional security focuses on protecting the state's territorial integrity and national interests, human security focuses on the protection of individuals and communities from a wide range of threats to their basic rights, dignity, and well-being.

Since then, the concept of human security has gained increasing acceptance and has been adopted as a guiding principle by many governments, international organizations, and civil society groups. The concept has been used to guide policy development and programming in areas such as conflict prevention, peace-building, humanitarian assistance, and development.

The approaches to ensuring security too changed, with the focus on military power and deterrence as a means of protecting the state from external threats shifted to take a broader approach that includes a range of non-military measures, such as development, education, health care, and protection of human rights. The responsibility for security too changed with this shifting of paradigms, and a range of actors were included as stakeholders including governments, international organizations, civil society groups, and individuals in addition to the state and its military forces, who were the main actors responsible for ensuring traditional security. Thus, instead of merely preserving the status quo, as was the goal in traditional security, human security seeks to promote human well-being, protect human rights, and create a more peaceful and stable world.

While the concept of human security and the traction that is has gained in the international relations and geopolitics of today is indicative of a paradigm shift in the security related thinking, it has be bone in mind that individual security cannot be assured in the absence of and exclusively from the traditional territorial security and that the concept of human security does not in any way dilute the importance of the traditional security considerations.

B. Evolution of War and Emerging Threats

Italian Field Marshal Giulio Douhet famously said, that "Victory smiles upon those who anticipate the change in the character of war, not upon those who wait to adapt themselves after the changes occur."

Although warfare has been a constant in human history from the birth of civilisation, its character has undergone a continuous process of evolution driven by changing of a multitude of factors over time. The development of new technologies has always had a significant impact on the character of war. Advances in weapons, transportation, communication, and information technology have all contributed to changes in the way wars are fought. Emerging innovations within cutting-edge science and technology (S&T) areas carry the potential to revolutionize governmental structures, economies, and life (Kosal).

Changes in social and cultural norms have also had an impact on the character of war. Where one part of history was marked with citizens fighting to preserve kingdoms and regents, another saw the populations fighting to reject the idea of kingdoms and sovereigns. Economic factors, such as access to resources and the ability to finance wars, have also influenced the character of war. Wars have been fought over resources such as oil, and economic sanctions have been used as a tool of warfare. Political factors, such as changes in the balance of power between states and the emergence of new political ideologies, have also contributed to changes in the character of war. Environmental factors, such as climate change and natural disasters, have also had an impact on the character of war. Changes in the environment can lead to resource scarcity and displacement, which can in turn lead to conflict.

C. The Evolution of Warfare

The resulting changes in the nature and character of warfare may be better understood by looking at them occurring during discrete stages that were passed by humankind, gradually arriving at the state it is in today. The military technology of the ancient world did not, as in modern times, develop independent of need. There were, after all, no research and development establishments to invent new weapons. (Gabriel and Metz, 10). However, much research is done in the modern era to stay ahead of military technologies as a deterrent and defensive mechanism to war with the rise of super powers. In Pre-modern warfare, before the modern era, warfare was largely characterized by hand-to-hand combat, with limited use of technology. Battles were often fought between small groups of warriors, and conflicts were generally limited in scope and duration. This changed with the advent of the Industrial Revolution, which resulted in warfare becoming increasingly mechanized and mass-produced. This led to the development of new weapons, such as machine guns and artillery, and the emergence of new tactics, such as trench warfare. The scale of conflict also increased, with the World Wars of the 20th century resulting in millions of casualties. The development of nuclear weapons in the mid-20th century fundamentally changed the character of war, introducing the potential for catastrophic destruction on an unprecedented scale.

The threat of nuclear war also led to the development of deterrence strategies and arms control agreements.

In the post-Cold War era, conflicts have increasingly been characterized by asymmetry, with one side having a significant technological and military advantage over the other. This has led to the emergence of new tactics, such as guerrilla warfare and terrorism, and the use of non-state actors to conduct attacks. More recently, warfare has begun to move into the digital realm, with cyber-attacks becoming an increasingly common tool of conflict. This has introduced new challenges for defence and security, as well as new opportunities for offensive operations. Today, one can see warfare having certain unique characteristics that set it apart from the preceding stages that it passed through in its evolution. These in turn will determine what measures need to be adopted and what strategies need to be formulated to counter these.

One of the most significant shifts has been the rise of non-state actors, such as terrorist groups, insurgents, and criminal networks, who use irregular warfare tactics to achieve their objectives. These groups often operate outside the traditional military paradigm, making them difficult to target and counter. As such modern tactics have to be utilized to overcome modern threats which non-conventional in nature. Along these tactics airpower can be instrumental in bringing along a political advantage to the battlefield to bring to an end the insurgencies of irregular warfare with the aid of the ground troops. In irregular war, first and foremost, airpower is an instrument of politics (Farquhar).

The emergence of hybrid warfare, which combines conventional and irregular tactics in a coordinated and integrated manner may be seen as yet another aspect of modern warfare. This can include the use of cyber-attacks, propaganda, and political subversion to support military operations and achieve strategic objectives. Hybrid warfare remains a contested concept and there is no universally agreed definition of it (Bilal). Modern conflicts are characterized by asymmetric threats, where one side has a significant advantage in terms of resources, technology, or firepower. This can make it challenging for conventional military forces to achieve their objectives without causing significant collateral damage or risking their own forces. Urbanization is another characteristic that pertain not directly to warfare but that has a significant impact on it and that is significantly impacted by it. The world's population is increasingly concentrated in urban areas, and this has significant implications for modern conflicts. Urban environments can be difficult to control and defend, and they can also increase the risk of collateral damage and civilian casualties.

Finally, advances in technology, such as drones, autonomous weapons, and artificial intelligence, are creating new security threats and changing the nature of modern conflicts. a new third age of drone warfare beckons as technology becomes ever more sophisticated and linked to artificial intelligence (Marcus). These technologies can provide new capabilities and increase efficiency, but they also raise concerns about accountability and the potential for unintended consequences.

III. METHODOLOGY

Content analysis research methodology used to systematically analyse and interpret the content of various forms of collected literature. It involves identifying patterns, themes, and relationships within the content to draw meaningful insights or conclusions.

A. Defining Research Questions

The research paper drive on mainly two research questions.

- What are the modern concept of Air Power in involving the dimension of Human Security?

- What are the employment options of air power in Human Security?

B. Content Analysis

The literature selected is mainly follows the purposive sampling techniques as there is no such strata to be selected. The scope the content is mainly limited to the viable and reliable concepts to be implemented and the thoughts were concern on the specific region of the air power being employed in the dimension of the human security. The unit of analysis constitute as whole document reviewed in the particular segment. Coding scheme is defined to be mutually exclusive and exhaustive to ensure consistency and reliability in coding. The categories defined as the two parental themes of Air Power and Human Security while the child codes have assigned accordingly. Qualitative content analysis delves into the underlying meanings, contexts, and nuances within the content. The specific approach to take will depend on the research questions and the nature of the content being analysed.

IV. CONTENT ANALYSIS OF REVIEWED LITERATURE

A. Air Power Role in Traditional Warfare

Air power has traditionally played a significant role in traditional security, particularly in the context of military defence and national security. Since the invention of the airplane, air power has been seen as a critical component of military strategy, providing rapid mobility, surveillance, and the ability to strike at targets from long distances. Air power played a dominant role in many major military conflicts, including World War II, the Gulf War, and the wars in Afghanistan and Iraq. In evolutionary terms, air power progressed rapidly from its infancy of being a peripheral component during the First World War to its pervasive contribution in World War II (Kak). In these conflicts, air power was used for a range of purposes, such as strategic bombing, close air support, surveillance, and intelligence gathering.

In traditional security, air power is often seen as a critical means of deterrence against potential adversaries. The possession of a strong air force can deter potential aggressors from attacking, as they would face a strong and well-equipped air force capable of defending against their attacks. Furthermore, air power provides a rapid response capability in case of a military threat, as aircraft can be quickly deployed to respond to potential threats and provide reconnaissance and surveillance capabilities.

B. Air Power as a Tool of Statecraft

Air Power has also been considered an important instrument of national power as well, providing unique advantages that are invaluable in the practice of statecraft. A strong air power capability can serve as a deterrent to potential adversaries, signalling to them that a state has the means to project force and defend itself. This can help prevent conflicts from escalating. Air power can also be used to coerce other states into complying with a state's demands. For example, the threat of air strikes can be used to pressure a state to stop engaging in certain activities or to change its policies.

Air power can be used to provide humanitarian assistance in times of crisis, such as delivering aid and supplies to disaster-stricken areas or providing support during refugee crises. Air power provides states with tactical advantages in military operations. For example, air superiority can enable ground forces to operate more effectively, while air strikes can be used to degrade an enemy's military capabilities.

Air power can also be used as a tool of diplomacy. For example, airlifting diplomats to and from conflict zones can signal a state's commitment to resolving conflicts peacefully.

C. Evolution of Air Power to Meet Emerging Threat Scenario

Air power has evolved significantly over the years to meet emerging security threats. The main driver of this change has been the rapid advances in the technology. In the relatively short span of time since the Wright brothers succeeded in achieving sustained, powered flight in 1903, aircraft technology has developed in leaps and bounds, stimulated mostly by its potential as a weapon of war. Advances in technology have enabled the development of new types of aircraft, weapons, and sensors that are more capable and efficient. Drones and unmanned aerial vehicles (UAVs) that have become an increasingly important tool for surveillance, reconnaissance, and targeted strikes may be seen as just one example. Air power has also adapted to new threats, such as terrorism and asymmetric warfare. This has led to the development of new tactics and strategies, such as the use of precision-guided weapons to minimize collateral damage and the use of air strikes to disrupt terrorist networks. It has also found application in combination with other tools of war. Air power has become more integrated with other capabilities, such as ground forces and special operations forces, enabling more effective joint operations and the ability to conduct complex missions in a variety of environments.

Air power has also shown its potential as a platform for information warfare, such as electronic warfare and cyber operations. This has become increasingly important in an era of technological dependence and connectivity. Air power has also been used increasingly for humanitarian assistance, such as airlifting supplies and personnel to disaster-stricken areas or transporting refugees to safety.

Air power has evolved to meet the changing security threats of the modern era. By leveraging advances in technology, adapting to new threats, integrating with other capabilities, focusing on information warfare, and emphasizing humanitarian assistance, air power has become an increasingly versatile and effective tool for addressing a wide range of security challenges.

D. Implications of Air Power on Human Security

The unique characteristics of air power can be and has in many instances been an invaluable resource in providing, facilitating and even enhancing human security. Air power can be used to provide critical humanitarian assistance in times of crisis. For example, military aircraft can deliver food, water, and medical supplies to populations affected by natural disasters or conflict.

In addition, air power can be used to transport refugees or internally displaced persons to safety. At the same time, it is also an inescapable fact that air power can potentially be used in such a manner as to cause, or its use can have the effect of causing, negative consequences for human security. It can pose a threat to human security when it is used inappropriately or without proper safeguards to protect civilians and respect human rights. To ensure that air power is used in a way that enhances human security, it is important to prioritize the protection of civilians, respect for human rights, and environmental sustainability.

E. Air Power as a Threat to Human Security

One of the most significant threats posed by air power to human security is the risk of civilian casualties. In an increasingly urbanised world, Air strikes can result in unintended harm to civilians, which can undermine human security and contribute to the displacement of populations, loss of life, and other negative impacts on communities.

The use of air power to engage in military conflict can lead to the proliferation of arms, which can contribute to ongoing instability and insecurity in conflict-affected regions. Acquiring, developing or enhancing of Air Power capabilities by one nation can prompt neighbouring or potentially affected nations from also pursuing similar development leading to escalation of tensions and increasing the scale of conflict. The use of air power can also contribute to the violation of human rights, particularly when it is used to target political dissidents or other individuals who are perceived as a threat to the state.

Air power can also pose a threat to human security by causing environmental damage. The use of certain weapons, such as cluster bombs, can result in long-lasting environmental damage that can harm human health and livelihoods.

F. Application of Air Power to Ensure Human Security

History provides us many examples of occasions where air power has been used to achieve human security. Following the Gulf War, in 1991, the United States and its allies established Operation Provide Comfort to protect Kurdish refugees in northern Iraq. Air power was a key element of the operation, providing logistical support, surveillance, and humanitarian aid. Air power was also used to enforce a no-fly zone over northern Iraq, preventing the Iraqi government from attacking Kurdish civilians. After a devastating earthquake struck Haiti in 2010, air power played a critical role in delivering humanitarian aid and supporting relief efforts. The US military and other organizations used aircraft to transport supplies, evacuate injured people, and provide medical support.

The operation demonstrated how air power can be used to support humanitarian efforts in the wake of a natural disaster.

Air support in the fight against Ebola in West Africa (2014-2015): During the Ebola outbreak in West Africa, air power was used to transport medical personnel, equipment, and supplies to affected areas. Military aircraft were also used to support the distribution of food and water, and to transport patients to treatment centers. The operation demonstrated how air power can be used to support public health efforts and contain the spread of infectious diseases.

Air power has been used in a number of peacekeeping operations to protect civilians and support peacekeeping efforts. For example, the UN mission in Mali (MINUSMA) has used air power to support patrols, provide logistical support, and transport troops and equipment. The operation has helped to stabilize the region and protect civilians from violence. UN air power is a celestial and material representation of humanity's concern for humanity (Dorn). These and many other examples demonstrate the versatility of air power in promoting human security, from providing humanitarian aid and disaster relief to supporting peacekeeping efforts and public health initiatives.

G. Application of Air Power To Enhance Human Security

Air power can play a significant role in enhancing human security in a variety of ways. It can be used to deliver emergency aid, food, medical supplies, and other necessities to people affected by natural disasters or conflicts. It can also be used to evacuate people from disaster areas or war zones. Air power can be invaluable in surveillance and intelligence gathering to detect potential security threats, including terrorism and criminal activities. Drones, for example, can be used to monitor borders and other critical infrastructure, providing real-time information to security agencies. Air power can be used for search and rescue operations, particularly in remote areas where ground-based rescue efforts may not be feasible. Helicopters, for example, can be used to airlift stranded or injured people to safety.

Air power can target and eliminate terrorist cells and networks, disrupting their operations and preventing them from carrying out attacks. This can include using precision-guided missiles and bombs to destroy terrorist hideouts and infrastructure. Air power can be used to support peacekeeping and stabilization efforts in conflict zones. For example, it can be used to transport troops and equipment, establish and maintain no-fly zones, and provide air cover for ground forces.

H. Judicious Application can make Air Power an Asset

Air Power can have both positive as well as negative effects on human security. Ultimately the actual impact of it will be determined by how it is used. The fact that it has the potential to harm human security is far outweighed by the great potential it has to ensure and enhance human security, especially considering the fact that there are, and always have been, extensive laws and regulations regulating the employment of air power in situations of conflict. Therefore, overall, air power can be a valuable tool in enhancing human security, provided that it us used judiciously and in accordance with international law and human rights standards.

I. Future of Air Power in the Context of Human Security

As was pointed out in the forgoing, Air Power, by virtue of its versatility, offers many potential benefits to a nation in ensuring and enhancing human security. The traditional security perspectives, with its territorial focus will continue to be relevant as an important ingredient of human security as well, while ensuring that it is addressed keeping in mind the concerns of other aspects of human security. Therefore, Air Power will continue to be relevant and in fact, may even increase in relevance with time, provided that the Air Power assets and capabilities evolve in keeping with the requirement of each nation. This evolution would need to be two fold.

The first, obvious aspect of this would be to develop and enhance capabilities to meet the evolving threats and requirements. The rapid growth of UAV and drone technology, the advent of Combat UAVs incorporating Artificial Intelligence into a domain that has always been centred on the human operator, is just one example of this evolution. The optimum utility of air power in the present and the future security landscape will depend on the relevant nation possessing the right technology to meet its need.

The second, not so obvious aspect of this would be for each nation to decide on and acquire teh right mix of air power assets to address its unique security needs. This would entail a nation equipping itself with the right mix or air power so as to ensure the comprehensive addressing of all of the relevant aspects. The ideal mix of air power for an air force in the face of modern human security considerations would depend on several factors, including the nature of the security threats, the strategic objectives of the air force, and the resources available to the air force.

Overall, an air force optimized for modern human security considerations would need to be agile, flexible, and adaptable, with a mix of capabilities that can address a wide range of security threats and support a variety of missions.

V. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

The concept of Human Security has found a firm foothold in the present geopolitical context. It's relevance and validity stems from the failure of the traditional concept of security with its exclusively territorial focus to address the growing concerns about the security of the individual citizen, especially in times and regions of conflict. And yet, the concept of human security does not in any way nullify the importance of territorial and national security. It has instead added and enhanced the ambit of the concept of security to include all aspects that pertain to the security of the individual.

The role of air power has always been decisive since its first use in battle. This paper has argued that the question of the continued relevance of Air Power in the face of the emerging change in the security paradigm is moot, because the paradigm itself does not nullify the importance and relevance of traditional security, and thus does make air power any less decisive in that context. The paper further argued that Air Power in its versatility also has much to offer in terms of ensuring and enhancing human security, provided that it is applied judiciously and with due discretion.

B. Recommendations

In general, an air force that is optimized for modern human security considerations would likely have the following capabilities and it is recommended to optimal utilization with due considerations to the dimensions of Human Security:

1) Precision Strike: The ability to conduct precise strikes against targets, including those in urban areas, with minimal collateral damage or civilian casualties. This could be achieved through the use of precision-guided munitions, advanced targeting systems, and unmanned aerial vehicles (UAVs).

2) Aerial Reconnaissance and surveillance: The ability to gather real-time intelligence on potential threats, including the activities of non-state actors, through the use of advanced sensors and reconnaissance platforms.

3) Rapid Deployment and Mobility: The ability to rapidly deploy forces and supplies to any location in the world, including remote or austere environments, through the use of airlift and air refuelling capabilities.

4) Electronic Warfare: The ability to disrupt or neutralize enemy electronic systems, including communications, radar, and navigation systems, through the use of electronic warfare systems.

5) Integrated Operations: The ability to coordinate and integrate air power with other domains, such as cyber and space, to enhance situational awareness, increase operational effectiveness, and improve decision-making.

6) Humanitarian Assistance and Disaster Relief: The ability to provide support for humanitarian and disaster relief efforts, including the rapid delivery of food, water, medical supplies, and other essential items to affected populations.

7) Training and Capacity Building: The ability to train and build the capacity of partner forces, including those in developing countries, to enhance their own human security capabilities.

ACKNOWLEDGMENT

The completion of this research paper could not have been possible without the participation, assistance, and contribution of all officers in the committee. We would like to express our deep appreciation and indebtedness to our brother officers and senior officers for their endless support, in terms of sharing valuable knowledge and insight regarding the subject matter. Finally, we would like to thank all our relatives, family, and friends who supported us by giving support and care to complete the task during the stipulated time period

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AIR COMMODORE GIHAN SENEVIRATNE

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A product of St. Josephs College Colombo 10, and a graduate of the United States Air Force Academy Class of 1996, Air Commodore Gihan Seneviratne joined the Sri Lanka Air Force on 28 May 1992, and was commissioned on 28 May 1996 as a Pilot Officer in the Aeronautical and General Engineering Branch.

During his time in the SLAF, he has served in various capacities, with some appointments of note being Command Media Officer and Staff Officer to the Commander of the Air Force, SLAF's first Director Media, Commanding Officer of the Junior Command and Staff College, and Deputy Director General Engineering and Director Motor Transport. At present he holds the appointment of Director General General Engineering.

Air Commodore Seneviratne completed Junior Command and Staff College Course No 14, emerging first in the order of merit and securing the Golden Pen for the best Commandant's research. As a member of Course No 2, Defence Services Command and Staff College, Sapugaskande, he graduated first in the order of merit in the Air Wing, won the Golden Pen for the Best Individual Research Paper and was placed on the Commandant's Honours List. He is a graduate of the National Defence College, Mirpur, Bangladesh. He also received his Masters in Defence Studies from the University of Kelaniya and Master of Social Science in Security and Development from the Bangladesh University of Professionals.

For his distinguished service, he has been conferred with the Uththama Seva Padakkama.

He serves as the Chairman, Sri Lanka Air Force Karate.

Air Commodore Seneviratne is married to Sharmali, and they are blessed with daughters Tracy and Cassandra.

ANALYZING AIR CONNECTIVITY, AIR DIPLOMACY, AND NATIONAL SECURITY IN SRI LANKA-INDIA RELATIONS

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ABSTRACT

Indo-Sri Lanka relationships date back to time immemorial for both nations, rooted in mutual recognition and respect. Driven by cultural, religious, and geographical similarities, the diplomacy between these nations surpasses comparisons with other countries. Regardless of the political figures in power, both countries have maintained constant ties in various dimensions, be it humanitarian, commercial, economic, military, cultural, or political. With changing priorities in the current context, countries opt for sustainable links, benefiting both the present and future generations. In a globalized world with both traditional and non-traditional threats abundant, regional cooperation is a shield against intervention and a proactive investment for mutual benefits leading to a secure nation with a sustainable foreign policy roadmap. In this context, air connectivity plays a pivotal role in enhanced cooperation and this is evident by the foremost decision made by both the countries. In light of the deepening interconnections between nations and the growing importance of air connectivity and diplomacy, there is a critical need to comprehensively analyze the relationship between improved air connectivity, air diplomacy, and national security in the context of Sri Lanka-India relations, which will serve as the research problem. The study aims to address several objectives. Namely, how does improved air connectivity, coupled with air diplomacy, between Sri Lanka and India influence diplomatic ties, economic collaborations, and regional stability and what is their significance? What are the long-term implications for their cooperation and national security? How does it affect their decision-making processes and collaborative efforts in the Defence and security sectors? Lastly, the study aims to understand the challenges faced by Sri Lanka and India in enhancing air diplomacy and connectivity for mutual benefit and will explore potential solutions to foster stronger coherence and interdependence in the region.

Keywords- Air connectivity, Air Diplomacy, India and Sri Lanka, National Security

I.INTRODUCTION

In a globalized world, countries are motivated to act based on survival, cooperation, as well as competition. At the outset, countries have the main concern to ensure non-interference and sovereignty, which are cardinal principles encapsulated in the United Nations Charter. With the progression in the world order, be it in the economy, politics, or culture, a country cannot remain isolated. Such isolation can make a country vulnerable, leading to a chaotic situation. Even though there are arguments, such as self-sustenance, and practicality in the modern world this is questionable. This is well evidenced by the shift from socialism to capitalism. Countries opt to engage in trade and commerce with other countries for their survival as well as interdependence. Various international agreements in the form of bilateral or multilateral exist. Irrespective of it, regional cooperation has become both challenging and a blessing. Now, "diplomacy" becomes the tool of connectivity. The necessity of regional cooperation will therefore be showcased using Sri Lanka and India as a case study.

II. LITERATURE REVIEW

A. Regionalism and Security

In the analysis presented by Bailes and Cottey, the terms 'region' and 'security' are extensively employed yet remain ambiguous and subject to debate. In the realm of global politics, the concept of 'region' is primarily associated with continents such as Africa, the Americas, Asia, Oceania, and Europe. Additionally, subcontinents like South Asia and areas surrounding seas such as the Baltic and the Caspian seas are occasionally categorised as regions. The distinction between regions and sub-regions further complicates the terminology; sub-regions are perceived as geographically distinct sub-areas of continents. However, these terms are often used interchangeably, leading to a blurred differentiation between them. Notably, geographical boundaries alone do not define regions in the context of world politics. Regions are essentially political and imaginative constructs, akin to nations, shaped by the local countries' self-perception, connections, and how external entities perceive and interact with them. Historical, and cultural factors, as well as a variety of subjective perceptions and preferences, drive the recognition or intentional creation of regional and sub-regional systems, interstate groupings, and organisations. This process is influenced as much by subjective factors as by any objective logic, as exemplified by the historical use of terms like 'Near East' and 'Far East' during a period dominated by Eurocentric imperialist perspectives. In accordance with the insights provided by Bailes and Cottey, the researcher aligns with the notion that the terms 'region' and 'security' are enveloped in ambiguity and intricacy. This inherent complexity significantly

influences international relations, compelling nations to seek clarity through bilateral agreements.

The researcher further contends that this inclination towards bilateral arrangements can be attributed to the disputes arising from attempts to precisely define regional boundaries. These complexities in demarcating regions often lead to controversies and discrepancies, prompting countries to opt for bilateral engagements. Such strategic decisions serve as pragmatic solutions, allowing nations to establish agreements based on mutual understanding and clear parameters. By resorting to bilateral frameworks, countries can effectively face the challenges posed by the vague and contested nature of regional terminology, fostering more precise and manageable diplomatic relations. In an era marked by geopolitical complications and cross-border threats, the role of bilateral frameworks in enhancing national security cannot be ignored. These agreements not only facilitate stable diplomatic relations but also serve as foundational pillars in safeguarding a country's sovereignty and integrity.

B. Air Diplomacy and Connectivity

As per (Cooke, 2021), developed nations are swiftly advancing into the future, embracing cutting-edge innovations and modern technology, bolstered by substantial power and influence that permeates both private and public sectors. These advancements manifest in improved infrastructure, enhanced air capabilities, and integration of technology into diplomacy, fostering global connectivity. In contrast, developing countries, such as Sri Lanka, heavily rely on diplomatic efforts to assert their presence on the world stage. However, they often face challenges due to inadequate infrastructure and financial constraints. To overcome these hurdles, such nations must seek collaborative opportunities that can generate positive outcomes. The implementation of a comprehensive Air Diplomacy policy holds the key to unlocking a multitude of opportunities. This approach promises significant benefits for the Sri Lanka Air Force (SLAF), positioning it as a vital implementing agency. Exploring this uncharted territory not only enhances diplomatic engagement but also fortifies the state's arsenal of foreign policy tools, paving the way for a more robust international presence. The researcher fully agrees with the author, thus highlighting the potential of air diplomacy and connectivity. This underscores the urgent and proactive need for innovative approaches like air diplomacy to bridge the gap between developing and developed nations. Such collaborations, as articulated by the author, stand as powerful catalysts for diplomatic progress and international collaboration. Through these concerted efforts, nations like Sri Lanka can pave their path in the global arena, fostering partnerships and elevating their diplomatic standing on the world stage. In light of the said perspective, India and Sri Lanka's bridging serves as an ideal example.

C. Historical Overview of Indo-Sri Lanka Relationships

When perusing the bilateral air connectivity between India and Sri Lanka, as presented by (Kathuria et al, 2018), it is obvious that this collaboration has significantly evolved since the inception of their first air services agreement (ASA) in 1948. The commitment of both nations to progressively liberalize air services has therefore played a pivotal role in shaping their diplomatic relationship. The researcher, in line with the perspectives of learned authors, deeply understands the imperativeness of such agreements, recognizing them as cardinal frameworks that not only enhance economic interactions but also serve as potent tools of diplomacy facilitating regional coherence and stability. This understanding showcases the interplay between economic cooperation and diplomatic strategies by air as a tool, emphasizing the multifaceted significance of bilateral agreements. Through a series of amendments in the 1990s, crucial revisions in 2003, and a major liberalization effort in 2011, the impact on air services has been profound. These reforms led to a notable increase of 16 flights per week and an addition of 2,442 seats per week between the two countries. This substantial growth not only underscores the importance of bilateral agreements but also highlights the potential benefits of such collaborations in showcasing the gravity of diplomacy. The positive outcomes resulting from the air services liberalization between India and Sri Lanka serve as a compelling case study, indicating that other South Asian nations can adopt a similar incremental approach to liberalization. This approach, when accompanied by supportive reforms, not only fosters healthy competition but also eases logistical challenges, encourages trade, and ultimately strengthens diplomatic ties between nations, further affirming the researcher's understanding of the relationship between agreements and diplomacy in the context of relations between those countries.

III. METHODOLOGY

This research employs a qualitative approach, by relying on secondary sources to explore the complex interplay between improved air connectivity, air diplomacy, and national security in the context of Sri Lanka-India relations. To accomplish such, qualitative methodology is chosen to delve deeply into the multifaceted aspects of diplomatic ties, economic collaborations, and regional stability. Primary data collection will not be utilized due to the classified nature of diplomatic relations and national security concerns that might fall into consideration. Instead, an analysis of academic articles, government publications, policy papers, and reputable international relations journals will form the basis of this study. Additionally, historical documents, official statements, and reports from international organisations will be scrutinised to reach findings.

IV. ANALYSIS AND DISCUSSION

A. Impact of Improved Air Connectivity and Air Diplomacy on Diplomatic Ties

Before looking into what Air connectivity is and how it leads to diplomacy facilitating interdependence and collaboration, it is crucial to look into what air connectivity is exclusively. According to (Malaysian Aviation Commission, 2018), Air connectivity is an indicator of the performance of airline networks and airports. It provides a link between civil aviation tourism and trade. Globally, an estimated 54% of tourists travel by air both the direct and indirect connectivity are based on point-to-point passengers while the hub connectivity is based on the transiting passengers. Explaining, Direct connectivity refers to the direct connections offered by the origin airports (airport X) to the destination airports (airport Y) without stops and Indirect connectivity refers to the indirect connections offered by the origin airports (airport X) to the destination airports (airport Y) via one or more intermediate airports (including hub airports). Finally, Hub connectivity refers to connections offered through hub airports between origin and destination airports. Regardless of the form and type, it is evidenced that such connectivity is cardinal to the prosperity and fostering of the economy and commerce of any country. As mentioned clearly in the introduction no country lives in isolation and mutual interdependence has become an option less situations. This position is well evidenced by the air connectivity of Sri Lanka and India.

As stated (Joshi, 2023), "Air connectivity between Sri Lanka and India started decades ago when the first air service agreement between the two countries was signed in 1968. This allowed Indian airlines to operate flights from any point in India to any point in Sri Lanka". India has always relied on various strategic policies including the "Neighborhood First Policy" as well as the "Act East Policy". In addition, the recent discussion between Prime Minister of India Narendra Modi and Sri Lankan president Ranil Wickremesinghe mentioned about "resumption of flights between Jaffna and Chennai, the two sides will expand flights to Colombo and explore connectivity between Chennai and Trincomalee, Batticaloa and other destinations in Sri Lanka" as reported by Hindustan Times. The said air expansion in addition to land connectivity and energy connectivity, which were agreed upon, highlights how Sri Lanka and India are inextricably interlinked and continue to be in the Indian Ocean region. Moving on to the aspect of the military, when it comes to air diplomacy, how an Air Force conducts air diplomacy is a practice deeply rooted in history, and this is evident in various forms such as public, humanitarian, military, commercial, traditional, preventive, coercive, and deterrence diplomacy. Thus, by all these methods, the Air Force's contribution serves as a facilitator of

regional cooperation. Utilizing air power possesses multifaceted advantages. As stipulated by, (Air Power and Diplomacy - haf.gr), the benefits are that it offers a viable method to achieve the desired outcome without involving any ground troops, thereby avoiding military casualties and causing any adverse public opinions, both domestically and internationally, associated with the presence and combat engagement of ground forces in foreign countries. Furthermore, its adaptability allows for a gradual escalation in crisis management, encompassing deterrence, force projection, or limited intervention, depending on the situation. This approach also minimizes the expenses associated with deploying ground forces, saving significant costs related to military resources and equipment. In addition, averting the deployment of ground forces prevents the complications that arise from such engagements. A perfect example of this is evident in the cases of Afghanistan and Iraq. Additionally, it can serve as a credible component of coercive diplomacy. To a certain extent, it demonstrates a scalable capability, as seen in instances like Kosovo, where allied air power was applied with graduated pressure to achieve strategic goals.

One of the key milestones which showcased diplomacy is, as stated by (Sibal, 2023) recently, India handed over the Indian Navy Dornier aircraft to Sri Lanka Air Force, the aircraft, a Dornier manufactured in India, signifies a significant achievement in the partnership between the two countries. This event marks the second Dornier aircraft provided to the Sri Lanka Air Force (SLAF) through a grant from the Indian Government. It takes the place of the original Indian Navy Dornier, which served for a year and was returned to India for scheduled maintenance after being ceremonially handed over to President Ranil Wickremesinghe exactly one year ago, on August 15, 2022. The introduction of the advanced Indian Navy Dornier Maritime Reconnaissance aircraft represents a substantial enhancement in Sri Lanka's surveillance capabilities. This new addition to the SLAF's current fleet is expected to significantly bolster the nation's security efforts, acting as a force multiplier. The aforementioned air connectivity and air diplomacy pave the way for regional coherence and interdependence. This can be explained through several headings.

1) Cultural

The enhanced travel from India to Sri Lanka increases people-to-people connections, which would lead to cultural, social and religious exchange, as exposure will be abundant. People in India will visit their families and friends in Sri Lanka and vice versa will strengthen family roots and deep-seated connections.

2) Crisis Management and Humanitarian Assistance

India acts as a first responder in crises such as natural disasters and humanitarian emergencies. In addition to the vibrant Maritime connectivity between the nations, air assistance is also rendered at times of crisis. This is evident in the case of the X-Press Pearl incident.

3) Economic Collaborations

Before mentioning the enhancement agreements to air connectivity, it is vital to look into the enormous support rendered by India to Sri Lanka during the economic crisis. As reported by (Pathi & and Mallawarachi, 2023), India offered vital financial and humanitarian aid exceeding $4 billion to its struggling neighbour. This support, including provisions like food, medicine, and fuel, aimed to bring much-needed stability to the nation grappling with a substantial total debt of over $83 billion, out of which $41.5 billion was owed to foreign entities. Furthermore, India played a crucial role as the first creditor to express support for Sri Lanka's debt restructuring initiatives. This endorsement facilitated backing from the IMF, leading to the approval of a $3 billion bailout package in March. When it comes to air connectivity, it is crucial to display the interests of Sri Lanka's Aviation Ministry, as reported by (Joshi, 2023) the Ministry has "invited Alliance Air to fly to more destinations in the country and increase the frequency of its existing services. The island nation's aviation minister Nimal Siripala de Silva has asked the airline to consider flying to Colombo's secondary airport Ratmalana, as a continuation of the same service to Jaffna." Therefore, it is understandable that with such further expansion, it will provide more room for business ventures, and talks between business leaders and investors. Consequentially, such increased trade would lead to economic and other benefits for both countries, including job creation, revenue generation, and a diversified market for products.

4) Defence and Security Sectors

Improved air connectivity facilitates strategic partnerships in areas such as Defence, security, and counterterrorism in matters such as supervision and surveillance. In addition to last year's donation of a Dornier 228 Maritime Patrol Aircraft to the Sri Lankan Air Force, this year another Indian Navy Dornier aircraft was officially handed over to the Sri Lanka Air Force (SLAF), which was mentioned afore. Such donations, (Presidential Secretariat,2023) "encompass a spectrum of activities such as monitoring and safeguarding Sri Lanka's airspace and exclusive economic zone through maritime and coastal surveillance operations, executing search and rescue missions, and monitoring and controlling maritime pollution.", which are part and parcel of security of the country. In addition, both Indian and Sri Lankan forces engage in joint exercises and training which human capital investment is.

In addition, engagement among high-level officials and military personnel amounts to strategic discussions and collaborative efforts, leading to enhanced security cooperation. These partnerships will also result in research and development shaped by decisions.

B. Challenges Faced by Sri Lanka and India

The rationale behind such investment is to ensure coherence, sustainability and security of the country as well as the nation. Both the countries just like other countries have the constant burden of protecting borders. However, this task has become arduous with the change in the threat landscape including the soft power threats, which are intangible in nature. Another challenge, which needs mutual assistance and joint efforts, is to counter terrorist and extremist activities, which are cross-border crimes as the name suggests involving various jurisdictions and multiple perpetrators. Another challenge is the need for regulatory alignment, where it is pivotal to harmonize aviation regulations, including safety, customs, immigration, and air traffic management, for smooth operations. Another crucial matter is infrastructure development and maintenance. Another mutual challenge is the Environmental Impact. The reason is that with the increase in air connectivity, carbon emissions become higher as well. Thus, since these challenges are mutual it is crucial to address them jointly and strengthen individual initiatives as well.

C. Regional Cooperation and National Security

Air connectivity and air diplomacy lead to better networking which facilitates cooperation and security including militaristic as well as other domains such as economy and rights of people. Elaborating, enhanced technology, and equipment are proactive measures against an enemy and contingencies. For example, in case of an air strike or maritime disaster having the required power or additional support is essential to defend own rights and ensure human life respectively. With enhanced air connectivity, tourism occurs and job creation also takes place. Employment opportunities pave the right to livelihood, which is a right of people, which is human security. In addition, direct investments and other economic enhancements supplement economic security. In addition, political decisions by the leaders strengthen international relations and shape the country's foreign decision-making roadmap.

Yet, it is crucial to accept the matter since the world is globalized and countries opt for regional and extra-regional linkages. There are controversies, conspiracy theories, feelings of intimidation, insecurity as well and disinformation taking place when countries engage with one another. A primary benefactor or an investor can view the relationship with similar power as a challenge as well

as a threat. Due to these power competitions and geopolitical dynamics, there is an undeniable need to balance the power Struggle. Sri Lanka as a country with a non-aligned foreign policy has the task of the hurdle of balancing interests.

V. CONCLUSION

The air connectivity and diplomatic collaboration between Sri Lanka and India depicts a significant advancement in fostering bilateral relations, economic partnerships, and regional stability leading to security. Enhanced air connectivity, by expanded flight services, not only facilitates smoother travel but also serves as a symbol of strengthened ties of culture, religion and economy. This enhanced connectivity encourages cultural exchange and economic growth, strengthening trade, commerce, tourism, and investment. Further, it acts as a stabilizing force regionally, fostering dialogue and cooperation in areas such as security, counter-terrorism, and disaster management which are matters of mutual interests. From a national security perspective, continuous air connectivity enables swift movement of key personnel, intelligence sharing, and coordinated responses to potential threats, allowing to respond promptly. This collaborative effort strengthens the security apparatus, making it more responsive to emerging challenges. Although challenges exist, joint efforts, flexibility, and mutual commitment are key to overcoming these hurdles, paving the way for lasting peace, security, and prosperity for both nations and region as a whole.

VI. RECOMMENDATIONS

In light of the developments in air connectivity and diplomatic ties between Sri Lanka and India, nations must invest in sustaining and expanding these joint efforts futher. Strengthening air connectivity by increasing the number of destinations and flight frequencies should be complemented with robust mechanism which aimed at enhancing cultural exchange, trade facilitation, and investment promotion, by fostering deeper economic integration. It is also vital, prioritizing joint regional stability initiatives, such as collaborative approaches to security, counter-terrorism, and disaster management, is crucial in bolstering resilience against emerging threats. Addressing challenges related to infrastructure and regulations requires sustained efforts and cooperation. In addition to these efforts, both nations need to counter disinformation campaigns, promoting accurate and reliable information to ensure public understanding and trust. Moreover, given the complexities of power struggles in the region, both countries must maintain a balanced approach. Sri Lanka, in particular, should uphold a non-aligned policy, safeguarding its sovereignty and independence while actively engaging in diplomatic relations.

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United Nations Charter

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