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FOREWORD

It is my honour to introduce the latest edition, Volume 8/2023, of the Defence and Security Journal of the Defence Services Command and Staff College (DSCSC), Sri Lanka. This publication stands as a testament to the dedication and intellectual prowess of our student officers, offering a platform to showcase their insights and contribute meaningfully to the discourse on contemporary security landscapes.

Since its inception, this journal has been a vital conduit for students to share their perspectives, delve into critical analyses and address the ever-evolving challenges in defence and security. It remains a cornerstone in fostering a deeper comprehension of global, regional and local security dynamics and their intersections with Sri Lanka's national security.

This eighth volume encapsulates a wealth of knowledge, navigating the complexities of both conventional and unconventional security threats. Moreover, it aptly addresses the integration of advancing technologies as pivotal assets in fortifying our defence mechanisms against diverse threats. The articles within offer invaluable insights, equipping defence and policy leaders with robust recommendations to shape actionable strategies.

I extend my heartfelt appreciation to the remarkable editorial board, led by Dr. George Cooke, whose unwavering dedication has brought forth this thought-provoking publication. Their tireless efforts have ensured the continuity of this enriching platform, contributing significantly to our collective understanding of defence and security matters.

I commend the authors for their commitment to academic excellence and their invaluable contributions to this edition, paving the way for continued intellectual discourse and advancements in our nation's security endeavours.

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GEOSPATIAL ENGINEERING IN SRI LANKA: CHALLENGES AND OPPORTUNITIES OF IMPLEMENTING A GEOSPATIAL ENGINEER REGIMENT IN SRI LANKA ARMY

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ABSTRACT

The research explores the potential benefits of establishing a Geospatial Engineer Regiment (GER) in SLA to address contemporary military needs. Further, this study identifies organizational challenges, assesses opportunities, and proposes solutions for implementing a GER. Drawing from global examples and the SLA's context. The research emphasizes the necessity of a dedicated GER within the military structure. The findings reveal the absence of a fully functional GER in SLA despite its recognition, highlighting financial constraints and organizational hurdles. Leveraging a mix of qualitative and quantitative methods, the study delves into the historical and contemporary significance of geospatial engineering in military operations. It details challenges, including limited awareness and economic barriers, and spotlights opportunities like disaster relief and modernization through geospatial technology. The research recommends initiating a GER prototype model to mitigate challenges, addressing financial constraints and fostering geospatial awareness. It underscores the urgency of integrating geospatial capabilities into SLA's structure for enhanced military engineering capabilities, operational readiness, and modernization.

Keywords: Geospatial Engineering, Geospatial Engineer Regiment, Sri Lanka Army, Military Engineering, Terrain Analysis, Geographic Information Systems (GIS), Organizational Challenges, Opportunities, Prototype Model, Military Modernization.

1. INTRODUCTION

The research on Geospatial Engineering in Sri Lanka: Challenges and Opportunities of Implementing a Geospatial Engineer Regiment in Sri Lanka Army" delves into the critical role of terrain analysis, battlefield dynamics, and the evolution of geospatial engineering. The study emphasizes the indispensable nature of geospatial information in modern military operations, replacing traditional methods with advanced technologies like Geographic Information Systems (GIS). The background of the study highlights the absence of an integrated geospatial database in the Sri Lanka Army (SLA) and explores the potential advantages of establishing a Geospatial Engineer Regiment (GER). The need for a dedicated organization becomes evident in addressing challenges and capitalizing on opportunities, particularly in the context of evolving military requirements and the dynamic operational environment.

The research objectives center on identifying organizational challenges, examining opportunities, and proposing solutions for establishing a GER in the SLA. The study aims to provide valuable insights for policymakers and decision-makers, urging them to consider the fundamental need for a GER within the SLA structure. The problem statement addresses the outdated technical implementations in SLA's military engineering domain and advocates for the identification of opportunities in geospatial engineering. The core argument asserts that establishing a GER in SLA would significantly enhance military engineering capabilities in the contemporary military landscape.

Key research questions focus on organizational challenges, potential opportunities, and solutions for establishing a GER. The significance of the study lies in its novelty within the SLA context, offering a comprehensive examination of the need for a GER and proposing a model structure for analysis and validation of organizational suitability criteria. The study's scope encompasses the examination of the suitability of having a GER in SLA, specifically focusing on geospatial engineering supporting military engineering roles and tasks. Limitations include the exclusion of certain elements such as size and deployability, financial constraints, and legal aspects. The study primarily relies on accessible literature due to restricted military documents. The structure of the study unfolds in six chapters, covering background information, literature review, research methodology, data presentation and analysis, findings and discussion, and conclusion with recommendations.

2. LITERATURE REVIEW

In Chapter Two, the literature review unfolds a historical perspective on military terrain analysis, drawing upon the timeless wisdom of Sun Tzu (Tzu, 2010). Emphasizing the significance of understanding the face of the country, the chapter highlights the role of engineer officers as the terrain experts guiding military commanders. The evolution of terrain analysis, from manual processes in the nineteenth century to the demand for accurate topographic maps in the twentieth century, sets the stage for the paradigm shift to geospatial engineering. The transition from traditional terrain analysis to geospatial engineering is explored, with geospatial engineering defined as the art and science of analyzing and visualizing geospatial information for military operations. The efficiency and productivity gains of geospatial engineering in contrast to manual methods are underscored, showcasing its capabilities in collecting, manipulating, analyzing, presenting, and distributing spatial data (Bruzese, 1989; Berry, 1993; Burrough and McDonnell, 1998; Poore and Chrisman, 2006).

The global landscape of geospatial engineering in contemporary armies is surveyed, detailing the organizational structures of U.S. Army, UK Army, Indian Army, Portuguese Army, PLA China, and Pakistan Army. The establishment of Geospatial Engineer Regiments (GERs) in these armies is indicative of the widespread recognition of geospatial engineering as a force multiplier. The chapter then shifts its focus to the Sri Lanka Army's (SLA) current stance on geospatial engineering, pointing out the absence of a dedicated Geospatial Engineer Regiment. Despite recognizing the importance, SLA has faced challenges in establishing a fully functional GER, as highlighted by the researcher's experience and organizational lacunas (Man, 1988). The literature review explores the way forward for the SLA, referencing strategic documents and plans that suggest the need for a Geospatial Information Section (Sri Lanka Army, 2020). The SLA's emphasis on modernization and its strategic shift to include geospatial engineering as a new pillar in its strategy underscore the potential need for a GER.

The chapter concludes with the identification of key perspectives that geospatial engineering can support within the SLA, including modernization, operational readiness, and the fulfillment of unmet targets. The conceptual framework encapsulates the key elements discussed in the literature, forming a basis for the subsequent exploration of challenges and opportunities in raising a GER for the SLA. The research gap is identified in the need for a comprehensive understanding of the challenges and opportunities specific to establishing a GER in the SLA. The chapter sets the stage for the subsequent chapters, laying the groundwork for the researcher to delve deeper into the unique context of the SLA and propose recommendations based on the identified gaps.

3. METHODOLOGY

This chapter elucidates the integration of methodology into the research, outlining the sample population, sampling technique, sample size, data collection methods, data analyzing method, conceptual framework, operationalization, and ethical considerations. The researcher develops a core argument aligned with the study's objectives, operationalizing the conceptual framework developed in Chapter Two.

3.1 Research Design

The research design, serving as the glue binding all research components, is structured based on research philosophy, approach, choice, strategy, time horizon, and technique/procedures. The study adopts a pragmatist philosophy, emphasizing practical solutions derived from real-world challenges. A deductive approach guides the research, beginning with theory and employing a mixed-method research

design. A descriptive research design is employed, using both qualitative and quantitative data to assess challenges and opportunities. A narrative inquiry strategy is adopted, and the study operates within a cross-sectional time horizon.

3.2 Conceptualization

The conceptual framework, derived from the theoretical framework in Chapter Two, informs the study's primary objectives. Variables identified in the conceptual framework guide the study, forming the basis for analysis.

Conceptual Framework

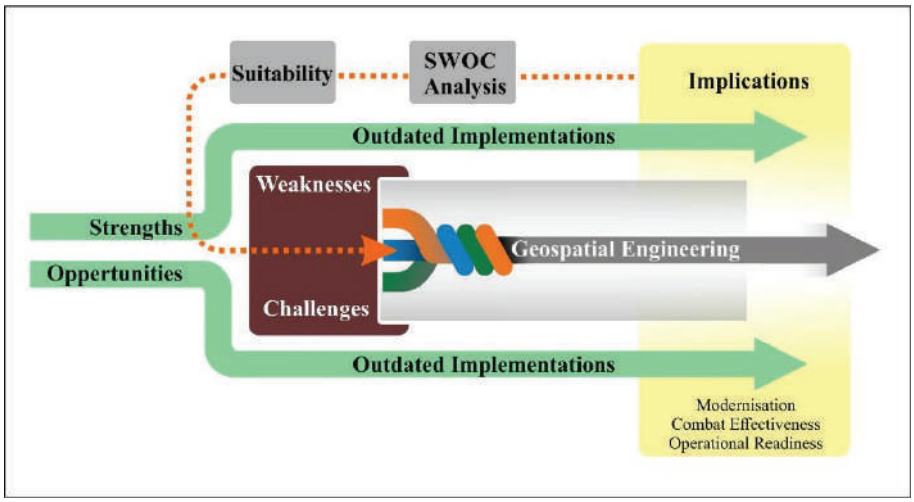

Figure 3.1: Conceptual Framework
Source: Created by the researcher (2022)

3.3 Core Argument

The core argument posits that establishing a Geospatial Engineer Regiment (GER) in SLA will significantly enhance military engineering capabilities in the contemporary military climate.

3.4 Operationalization

Variables in the conceptual framework are operationalized through Likert scale questions for psychometric testing. Indicators and measurements are derived to quantitatively measure beliefs, attitudes, and opinions related to the research.

3.5 Population

The population for the study comprises officers serving in SLA, aligning with the GIS domains of other contemporary armies.

3.6 Sampling and Selection of Subject Matter Experts

Purposive sampling is used for officers serving in SLA, with a sample size of 63. Subject Matter Experts (SMEs) from military and academia are selected based on their relevance to the study. SMEs include retired and serving SLA officers, such as Major General HCP Goonatilake (Retd), Major General HJS Gunawardene (Retd), Major General Senarath Bandara (Retd), Major General SA Kulathunga, Lieutenant Colonel MDJ Wickrmarchchi, and academics like Prof. Manjula Ranagalage and Dr. Shalini Singh.

3.7 Instruments

Data collection involve documentary research, interviews with SMEs, and questionnaires. Data from military documents and interviews with SMEs provide insights into challenges, while questionnaires add quantitative perspectives.

3.8 Data Collection Procedure

A systematic process of searching, categorizing, and indexing is used for documentary research. Interviews with SMEs are conducted virtually, and questionnaires are distributed online.

3.9 Analysis Tools

Quantitative and qualitative data analysis methods are employed, with Microsoft Excel and IBM SPSS 23 for summarizing and analyzing data.

3.10 Research Framework

A Research Process Framework, based on the Input-Process-Output-Outcome Model, represents the orderly progression of the study.

3.11 Research Ethics

Ethical considerations include ensuring no harm to participants, respecting dignity, obtaining full consent, protecting privacy, maintaining confidentiality, and avoiding offensive language. Participants have the right to withdraw, and the study adheres to research integrity and human rights principles.

4. DATA PRESENTATION AND ANALYSIS

Chapter Four of the research presents a comprehensive analysis of data gathered through interviews with Subject Matter Experts (SMEs) and questionnaires distributed among officers in the Sri Lanka Army (SLA). The research explores three key questions: organizational challenges, potential opportunities, and solutions for establishing a Geospatial Engineer Regiment (GER) in the SLA.

4.1 Qualitative Analysis

The chapter begins with a qualitative analysis, delving into the insights provided by SMEs and questionnaire responses. For the first research question on organizational challenges, financial constraints, lack of geospatial awareness, and organizational inertia emerged as significant hurdles. The second question on potential opportunities highlighted economic benefits, precise decision-making, disaster relief, and modernization as key advantages. The third question on solutions emphasized starting as a prototype, conducting awareness programs, and utilizing open-source software to overcome financial constraints.

4.2 Quantitative Data Analysis

The research then presents quantitative data analysis, providing a demographic overview of the participants' years of service, regiments, educational levels, and engagement with GIS-related activities. Notably, a majority of participants expressed a positive view on the necessity of a GER, its potential to enhance military engineering capabilities, and its role in SLA modernization.

4.3 Regression Analysis

Further analysis includes regression coefficients, indicating a positive correlation between participants' views on the necessity of a GER and its potential contributions to military engineering capabilities, SLA modernization, and operational readiness.

4.4 Conclusion and SWOC Analysis

The chapter concludes with a SWOC analysis, assessing the Strengths, Weaknesses, Opportunities, and Challenges of establishing a GER in the SLA. Notable strengths include a trained cadre and positive responses from key decision-makers, while challenges involve financial constraints and organizational inertia. Opportunities include foreign involvement and feasible solutions for manual terrain analysis.

4.5 Recommendations

Based on the findings, the study recommends addressing financial challenges, enhancing geospatial awareness, and sequentially developing the GER. The SWOC analysis emphasizes the need to capitalize on strengths and opportunities while effectively addressing weaknesses and challenges. Chapter Four provides a comprehensive exploration of challenges, opportunities, and potential solutions for establishing a GER in the SLA, combining qualitative insights and quantitative data to inform the research's key objectives.

5. FINDINGS AND DISCUSSION

Chapter Five presents the key findings and discussions derived from the comprehensive analysis of data collected in the research. The chapter addresses the research problems and objectives, summarizing the insights gained from both qualitative and quantitative approaches.

5.1 Summary of Findings

The study sought answers to three research questions regarding the challenges, opportunities, and solutions related to establishing a Geospatial Engineer Regiment (GER) in the Sri Lanka Army (SLA). The findings are summarized as follows:

- Organizational Challenges: Lack of awareness, technology, and real-time information, intensified by economic sanctions. Inclusion of all-arms officers in the intended organization to reduce operational commitments. Sequencing GER in the national budget identified as a challenge.

- Potential Opportunities: Opportunities include foreign employment, UN involvement, disaster relief, and nation-building tasks. GER as a force multiplier and key variable for army modernization. Integration of geospatial assistance in disaster situations and cooperation with contemporary armies.

- Solutions to Challenges and Exploitation of Opportunities: Project management and a development team with adaptive strategies are keys to overcoming challenges. Financial constraints addressed by starting GER as a prototype model.

Recommendations include awareness programs, on-the-job training, and starting as a small element. The research aligns with the literature, confirming that establishing a GER in SLA significantly enhances military engineering capability in the modern military landscape. The GER is recognized as a force multiplier, bridging combat and general engineering within its domain.

5.2 Discussion

The discussion interprets the research findings, emphasizing the critical need for a GER in the SLA. The shift from outdated map marking to a sophisticated, accurate, and time-saving geospatial component is highlighted as imperative in the contemporary military context. Key points are as follows:

- The adoption of a prototype model is recommended for GER development due to advantages such as reduced initial costs and flexibility.

- Internal inertia is identified as a challenge, suggesting intra-army awareness programs and strategic decision-maker involvement for sustainable implementation.

- Retired senior military officers highlight the historical focus on internal conflicts, delaying GER establishment.

- A majority (76.2%) of the sample population believes the present SLA structure is capable of accommodating geospatial engineering, indicating technological readiness.

The findings affirm the research's core argument, underscoring the urgent need for a GER in SLA. The discussion emphasizes the significance of transitioning to advanced geospatial technologies for enhanced military capabilities in the contemporary landscape.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The thesis centered on the challenges and opportunities of establishing a Geospatial Engineer Regiment (GER) in the Sri Lanka Army (SLA), emphasizing implications for army modernization, combat effectiveness, and operational readiness. Utilizing both primary and secondary data through qualitative and quantitative methods, the

research highlighted organizational challenges rooted in internal inertia. The study recommends a prototype model implementation to overcome challenges and exploit opportunities. Notably, the historical prioritization of geospatial efforts during the Sri Lankan counter-insurgency led to a lack of awareness within the army, necessitating the establishment of a GER in the post-war era.

The rise in demand for GER in the SLA is evident, aligning with identified requirements. Despite economic challenges, the researcher underscores the critical moment for a professional army to defend against potential security threats. While current SLA structures exhibit some geospatial integration, the study argues for a dedicated GER to comprehensively address requirements through a prototype model, fostering operational readiness, modernization, and combat effectiveness.

6.2 Recommendations

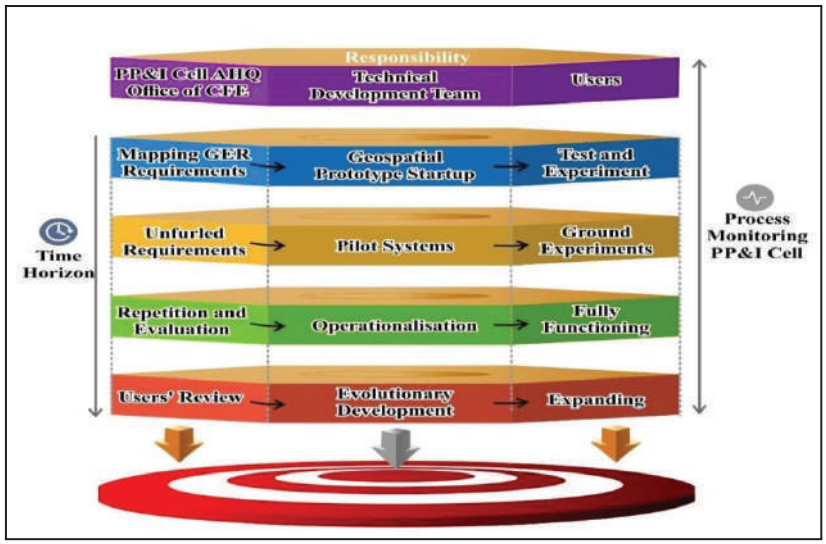

Figure 6.1: Evolution of GER using Prototyping Approach
Source: Developed by the Researcher, 2022

- Prioritize the establishment of a GER using a prototype model with minimal financial burden.

- Proposes a tailored Geospatial Engineering Services (GES) model for the SLA, emphasizing an evolutionary approach.

6.3 Overcoming Challenges

- Address the lack of real-time data and technology by seeking assistance from friendly foreign nations with existing regiments.

- Tackle extra financial challenges by initially establishing a basic squadron size with essential equipment using the army budget.

- Eliminate lack of awareness through curriculum inclusion, awareness programs, and on-the-job training.

6.4 Exploiting Opportunities

- Showcase opportunities such as disaster relief speed, mission-specific data sets, and force multiplication to decision-makers.

- Recommend initiating with a squadron-sized prototype model to capitalize on identified opportunities.

6.5 Further Studies

Suggests future studies focusing on the financial, organizational, and legal constraints of developing a GER. Proposes exploration of required force structures for GER in successive stages.

6.6 Summary

The conclusion underscores the urgency of GER establishment for SLA's modernization and preparedness. Recommendations advocate a prototype model, addressing challenges and exploiting opportunities. Further studies are proposed to delve into financial, organizational, and legal aspects for comprehensive insights.

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EFFECTIVENESS OF 'DIGITAL TRANSFORMATION' OF PERSONNEL MANAGEMENT SYSTEM IN SRI LANKA NAVY

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ABSTRACT

This study examines the underutilization of the Human Resource Information System (HRIS) within the Sri Lanka Navy and proposes enhancements for its effectiveness. Despite its potential, HRIS remains largely as a reference tool rather than being fully integrated into personnel management. The research investigates factors hindering its use and recommends practical measures to bridge the gap between technology and efficient personnel management. Key findings highlight challenges in user satisfaction, IT infrastructure, management support, staff capability, cost-effectiveness, system acceptance, and competence. Issues such as accessibility limitations, data reliability concerns, network constraints, and usability affect HRIS utilization. Recommendations include improving intranet accessibility, enhancing network speed, boosting IT literacy, and refining user interfaces to maximize HRIS efficiency. This study underscores the untapped potential of HRIS within the Sri Lanka Navy and provides actionable recommendations to harness its benefits fully.

Keywords: HRIS Utilization, Sri Lanka Navy, Personnel Management, Technology Integration, User Satisfaction, IT Infrastructure, Management Support, Staff Capability, Cost Effectiveness, System Acceptance, System Competence.

1. INTRODUCTION

The digital age has led to a shift in workplace dynamics, necessitating the acquisition of new skills and specialized roles. The Human Resource Department (HR) plays a crucial role in bridging the gap between skill demands and organizational requirements. The Sri Lanka Navy, a large institution with 55,000 personnel, has implemented the Human Resource Management System (HRMS) and the Human Resource Information System (HRIS) to streamline personnel management. However, HRIS has been underutilized, serving as a mere reference tool among naval personnel. This academic journal explores the underutilization of HRIS within the Sri Lanka Navy, identifying primary barriers and proposing practical measures to enhance its effectiveness. The research contributes to the discourse surrounding efficient human resource management, especially within the unique context of a naval institution. Understanding the nuances of HRIS underutilization within the Sri Lanka Navy underscores its relevance and

significance in contemporary human resource practices and offers valuable insights into bridging the gap between technology and effective personnel management.

2. LITERATURE REVIEW

The transformation of Human Resource (HR) operations from manual, paper-based methods to digital solutions has significantly impacted the field (Stone and Dulebohn, 2013). The adoption of mainframe computers in the 1960s and 1970s marked the early automation of HR and payroll administration, while standalone software packages emerged in the 1980s, laying the foundation for the concept of HRIS (Human Resource Information System) (Stone and Dulebohn, 2013). The contemporary business landscape, driven by rapid socio-economic changes, has accelerated the shift to digital technologies in HR management (Suvalova et al., 2021). Digital technologies enhance HR operations, reduce manual labor, facilitate swift decision-making, enable in-depth data analysis, and support remote workforce management (Bannikov and Abzeldinova K T, 2021).

However, the adoption of digital technologies has brought about new challenges, particularly with the advent of big data and cloud computing (Lei and Jing, 2016). Digital transformation is shaped by key external factors, including the proliferation of complementary technologies like broadband internet, smartphones, cloud computing, and global networking, making information technology omnipresent in HR management (Chakraborty and Mansor, 2013). The digital transformation of HR has empowered professionals to efficiently gather, store, and retrieve information, reshaping the function of HR within organizations (Tomanna et al., 2018). Despite these advantages, organizations often encounter challenges related to cost, change management complexity, cultural shifts, and the integration of HRM strategies with organizational goals (Selmer et al., 2004; Marler et al., 2016; Branca et al., 2020).

Navigating the complexities of digital transformation requires organizations to recognize the significance of implementing new digital solutions (Demartini et al., 2018). Identifying and addressing potential risks related to information security, data access, and confidentiality is crucial to ensuring the success of the digital transformation journey (Florijan et al., 2021). Understanding the factors influencing digital transformation involves elements such as user satisfaction, cost-effectiveness, system acceptance, system competence, management support, and staff capability, all of which collectively influence the effective use of Human Resource Information Systems (HRIS) (Atika JN, 2011; Verma et al., 2022).

Despite extensive research on factors affecting the effective use of HRIS, the specific context of the Sri Lanka Navy has not been explored. This research gap serves as the foundation for the present study, which seeks to address the factors influencing HRIS utilization within this unique organizational context.

3. METHODOLOGY

This study investigates the effectiveness of the 'digital transformation' of personnel management systems (HRIS) in the Sri Lankan Navy. It analyzes naval officers' perceptions of HRIS's effectiveness in managing their subordinates, identifies factors that hinder its optimal utilization, and proposes recommendations to enhance its effectiveness. The research methodology includes qualitative methodology, research design, research philosophy, research approach, site and selection of samples, data collection procedures, data analysis procedures, and data consistency.

3.1 Research Approach

The qualitative approach is employed to identify barriers to HRIS use among naval personnel, identify ways to overcome these challenges, and propose practical measures to make HRIS more effective. The study also focuses on the personal and professional experiences of naval officers who access HRIS.

3.2 Research Design

The research design includes research tactics, study choices, time frames, and instruments and methodologies used to arrive at results. The research framework includes research approach, unit of analysis, time horizon, data collection method, sampling plan, and data analysis method. The research design helps answer the questions of what, why, where, when, etc., and provides a detailed plan to investigate the impact of the factors mentioned above.

3.3 Research Philosophy

Research philosophy refers to the source, nature, and expansion of knowledge, and in business research, there are four main philosophies: pragmatic, positivism, realism, and interpretivist. This study is based on positivism, which emphasizes the factual knowledge gained through observations. The research approach consists of general assumptions and specific data collection, analysis, and interpretation techniques. Qualitative data gathering approaches are exploratory and focus on

understanding fundamental reasons and motivations. Popular qualitative data collection methods include interviews, focus group discussions, observation, and action research.

3.4 Data Collection and Sampling Method

This study uses a qualitative descriptive approach with purposeful sampling to understand the experiences and perspectives of naval officers in Sri Lanka Navy and IT officers involved in admiration and maintenance of HRIS. The research uses in-depth, open, and semi-structured interviews, with a cross-sectional nature due to the specific time frame. Participants were chosen through purposeful sampling, ensuring they were suitable for answering research questions and understanding the phenomenon under investigation. Data collection was primarily based on primary data from in-depth, open, and semi-structured interviews with selected naval officers. Ethical clearance was obtained from the Commander of the Navy, and participants were invited to participate in the study.

Subsequently, data was then organized according to research objectives and questions, using spread sheets for clarity. Preliminary codes were extracted from the raw data, and the research questions were used as guidelines to relate codes to the research questions. Data validation was performed to ensure the findings were trustworthy, meeting criteria such as internal validity, applicability, consistency, and neutrality. Triangulation was employed to reduce researcher bias and ensure a rich, thorough, and well-developed result.

4. DATA PRESENTATION AND ANALYSIS

This qualitative descriptive study aimed to identify the main barriers to the use of HRIS among naval personnel, identify how to overcome these challenges, and propose recommendations on practical measures to make HRIS more effective. The research used interviews to capture the experiences of officers in the Sri Lanka Navy regarding HRIS. The findings were analyzed under seven factors: User Satisfaction, IT infrastructure, Management support, Staff and their capability, Cost Effectiveness, System Acceptance/Adaptability, and System Competence.

The study found that user satisfaction plays a key role in the effectiveness of HRIS. Most participants identified that most data required for administrative works is available in HRIS. However, participants had differing opinions on authenticity and reliability, with some stating that data comes through a transparent process, while others noted instances of malfunctions and data manipulations.

Accessibility to HRIS was also a concern, with some participants stating that it is not available in some places due to lack of intranet connection and personal computers. Some participants were not satisfied with HRIS's performance, while others praised the system's performance but noted the need for integration with other systems.

In summary, this study reveals that there is healthy management support for the use of HRIS in the Navy, with higher management encouraging maximum output from HRIS day-to-day activities. However, only 25% of staff have computer literacy to access HRIS effectively, with clerical staff, IT and communicator sailors being the most affected. Most departments have staff capable of accessing HRIS due to their nature. HRIS is cost-effective, reducing paper works and manpower, and creating a more efficient working environment. However, system acceptance and adaptability in the Navy are not adequate, with unequal distribution of IT resources being a major issue. System competence plays a major role in the effectiveness of HRIS, but poor IT literacy of naval personnel may challenge them. Six themes identified in the research include lack of accessibility, poor network speed, lack of IT literacy, scarcity of computers, lack of network security, and poor user-friendliness.

5. FINDINGS AND DISCUSSION

During the research it was found that the effective use of HRIS depends on 7 factors namely:

- User Satisfaction.
- IT infrastructure.
- Management support.
- Staff and their capability.
- Cost Effectiveness.
- System Acceptance/Adaptability.
- System Competence.

User Satisfaction of the HRIS depend on number of components such as adequacy of data available, authenticity and reliability, accessibility and user-friendliness and poor network speed. Majority of the participants who were interviewed during the data collection reviled that they are not satisfied as users on the function of HRIS in SLN. The main reason they were pointed out was the lack of accessibility of the HRIS in some places in SLN. Similarly, they pointed out that there is lack of data

available at the HRIS. Some participants stated that they cannot rely on the data available in HRIS because they are not authenticated and not reliable because of the obsolete data and manipulations of usernames and passwords. Some of the participants complaints that user-friendliness of the HRIS interface is less when retiring and filtering data from HRIS. This also found as one of the major reasons hinder the use of HRIS among many naval persons. On the other hand, lack of network speed and frequent disturbances in SLN intranet also play a major role which reduce the user satisfaction of HRIS according to the views of the many participants.

According to the literature and the experiences of the participants IT Infrastructure play an important role for the effective use of the HRIS. However, majority of the participants of the research agreed that the existing IT Infrastructure availability of SLN in not adequate for the effective use of HRIS. Especially participants mentioned the inequality of the resource distribution in SLN. Due to that reason some of the bases, ships and craft of the SLN lack with intranet connection and required number of personal computers required.

The majority of the participants expressed their agreement that there is healthy managerial support for the utilisation of HRIS. The vast majority of them indicated that top management constantly supports generating the most output possible from HRIS day-to-day tasks. In addition, they have said that there are a variety of methods built by senior management in order to improve the various operations of the HRIS. This is found as one of the positive factors which was found during the research in support of the effective use of HRIS in SLN.

Staff and their capabilities also play an important role on the effective use of HRIS. Competent staff on HRIS aspect would always bring fruitful outcomes for the smooth functioning of day today HR practices. Participant who represented IT and technical related branches of the SLN reviled that staffs are competent in handling HRIS. However, most of the participants from clerical branches stated that except clerical, IT and communicator sailors of their staff other sailors are not competent in using HRIS due to their lack of IT literacy. Therefore, it can be clearly identified that there is a gap in IT literacy in the SLN which hinder the effective use of HRIS.
During the research almost all participants agreed that the HRIS reduce the cost for day today administrative works and HR functions. Especially in terms of reducing paper works and saving time and manpower.

13 out of 15 participants have stated that the system acceptance and adaptability of HRIS in the Navy are not adequate. Many of them stated that the unequal

distribution of IT resources is the main reason for the inadequate acceptance and adaptability of HRIS in the SLN. On the other hand, majority of the participants opined that system competency also play an important role in effective use of HRIS and unfortunately there are many symptoms of incompetence observed in HRSI in as discussed in earlier paragraphs.

6. CONCLUSION AND RECOMMENDATION

The Human Resource Management System (HRMS) was initially introduced to Sri Lanka Navy as a web-based data source in the year 2005 with the objectives of scrutinizing information related to personnel management and make them readily accessible for operational, training and administrative purposes. Further HRIS is capable of generating required information in HR related matters such as advancements, course selections, performance appraisals, character assessment, career management and retirements. However, despite the many advantages that can be obtained by exploiting HRIS, presently it is underutilized by merely being used as a referencing tool among naval persons.

This study explored the factors that effect to effective utilization of HRIS in related to Sri Lanka Navy. Accordingly, 07 factor including User Satisfaction, IT infrastructure, Management support, Staff and their capability, Cost Effectiveness, System Acceptance/Adaptability, System Competence, were examined during the interviews with purposefully selected sample of officers in Sri Lanka Navy.

Six themes were emerged from the data collected from the interviews. Findings exposed that are a healthy management support exist in SLN for effective use of HRIS. The lack of accessibility of intranet connection keeps users refraining from using HIRS. On the other hand, Poor network speed, Lack of IT Literacy, Scarcity of computers, Lack of Network Security and Poor user-friendliness also influence the seven factors which were affecting the effective use of HRIS.

Finding exposed that lack of accessibility caused due to the utilization of intranet as the network platform for the HRIS. Because there are some remote bases and ships and craft that either do not have HRIS or face frequent disturbance while accessing. These have made many users show less interest to use HRIS in their day-to-day admin works.

On the other hand, poor network speed of the SLN network and poor IT literacy of the naval persons also hindered the use of HRIS among the naval persons.

Comparatively sailors in technical branches with comparatively higher IT literacy than the non-technical branch sailors show greater interest in subscribing the HRIS.

One of the most consistence themes found during the research was the lack of user-friendliness of the HRIS system. Many naval persons found it problematic to access the HRIS due its lack of user-friendliness. Especially when searching and filtering the data.

6.1 Recommendations

Following recommendations were derived during the research to address the research objectives:

- Whare as majority of the responders indicated that there is lack of network accessibility in some bases and ships in Sri Lanka Navy it is highly important that to improve the accessibility of intranet connection.

- On the other hand, several participants opined that the network speed in Sri Lanka Navy. Similarly, literature review reviled that the network speed plays a key role in effective use of HRIS. Therefore, it is recommended to enhance the network speed of SLN intranet make the maximum use of HRIS.

- Additionally improve of IT Literacy among naval persons, enhancement of the availability of computers, improvement of Network Security and enhancement user-friendliness HRIS interface also very much important to the enhance the effectiveness of HRIS in Sri Lanka Navy.

- Apart from that inculcate HRIS familiarization package to every basic training in Sri Lanka Navy also been suggested as a practical measure to improve the effective utilization of HRIS among naval persons.

6.2 Suggestions for future research

This research study used a small sample of naval officers in Sri Lanka Navy. To better understanding of the barriers for effective use of HRIS in SLN interviews from a greater number of participants can provide more detailed descriptions. Also, for a better date collection using of mixed methods is preferable because, it is better to discuss barriers for effective use of HRIS in SLN with qualitatively as well as quantitatively because the results from both will lead to a better output.

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FOSTERING FLYING PROFESSIONALISM OF SRI LANKA AIR FORCE: CHALLENGES AND WAY FORWARD

Wing Commander HWN Wanasinghe psc

ABSTRACT

This research focuses on professionalism within the Sri Lanka Air Force (SLAF) and its impact on national security air operations. It investigates the gap between expected and current flying proficiency among SLAF pilots, particularly due to reduced flying opportunities from operational decline and financial priorities. Emphasizing the core aspects of flying professionalism like discipline, self-awareness, knowledge, and skills the study sheds light on their crucial role in safe missions. Using a pragmatic approach and mixed methods involving SLAF pilots, the research uncovers challenges faced by pilots, such as reduced flying chances and generational differences. It pinpoints a decline in flying opportunities, primarily due to financial constraints and reduced operational demands during the COVID-19 crisis. Recommendations aim at optimizing resources, enhancing training, and leveraging simulators to tackle SLAF's challenges in maintaining flying proficiency. Future research might explore further nuances, like the impact of generational differences on flying perceptions among SLAF pilots.

Keywords: Flying Proficiency, Aviation Challenges, Pilot Professionalism, Operational Flying Environment, Aviation Training Constraints

1. INTRODUCTION

Professionalism is one of the underlying factors in achieving the mission of Sri Lanka Air Force (SLAF) in undertaking air operations in support of national security (SLAF, 2022). Lack of professionalism could lead to catastrophic ends in aviation since flying is considered a risky business. SLAF displayed its' professional performance during humanitarian operations concluded in 2009 (Mendis, 2014). SLAF pilots are expected to maintain their professionalism at highest possible level due to the dynamic nature of flying environment amid unforeseen situations. Flying is as a perishable psychomotor skill, which is a combination of fine motor and rough motor skills (Theses et al., 2008). Under truncated flying opportunities due to declined operational demand and financial priorities of the state, this study aims to investigate whether there is any gap between expected and existing flying proficiency levels of SLAF pilots.

Research questions were focused on factors affecting flying professionalism, present (2022) level of flying proficiency, challenges and opportunities in flying professionalism, which was resulted four research objectives, namely to determine

factors contributing to professionalism in SLAF flying, to examine the present status of flying professionalism among SLAF pilots, to identify challenges underlying present flying professionalism among SLAF pilots and to identify opportunities to improve flying professionalism in SLAF pilots.

Unprofessional flying practices or inadequate flying proficiency could lead to catastrophic ends as evident throughout in aviation history (Owen, 2002). Therefore, SLAF would be particularly benefitted by the outcome of the research ascertaining the general proficiency level of its pilots and would consider the researched based recommendations made to retain and foster the proficiency of SLAF pilots. Identification of contemporary challenges upon present proficiency level of SLAF pilots and opportunities for overcoming the same would assist SLAF in making pragmatic alternations to its future course. Security sensitivity of the concerned data and heterogeneity of pilot community were limitations of this study.

2. LITERATURE REVIEW

Professionalism in flying is the sine-qua-non for a safe, effective and efficient mission and absence of it would ensue even a catastrophic end state (Drew, 2008). Flight discipline is considered as the cornerstone of flying professionalism (Kern, 2010). Kren, (1998) argues that, flying professionalism has four levels (Safety, Effectiveness, Efficiency and Precision) which is denoted as the performance ladder. Maintenance of the flying currency is a legal obligation imposed by all flying organizations to ensure that flying proficiency is retained at a reasonable level, for a safe flight. Further, it is considered, that maintaining physical and mental skill levels required for a safe flight through self-judgment for flying undertakings is a personal as well as organizational responsibility (Kern, 2010).

International Civil Aviation Organization (ICAO) has introduced core competencies to be developed to ensure the proficiency of flying, which are outcomes intended from Effects Based Training rather than repetitive task reinforcement training ICAO. As argued by Kren (2010) self-awareness is an important factor in flying proficiency. Nothing matures a military pilot quicker than actual military operations. Simulation of actual operational environment is unattainable since, there is no substitute for life threat in actual operational situation. Operational demand can test the limits of an individual, thus proving individuals' suitability in critical employment. On contrary higher training demand can stress pilots to have a more productive training session (FAA, 2020). During training, pilots from different levels have to meet different degrees of accuracy, decision-making (DM) and cockpit behaviour depending on their flying ratings.

Knowledge, the combination of tacit and explicit is one of the key determinants of professionalism in risky and dangerous undertakings such as aviation, medicine and combat (Turgut, 2019). The highly specialised disciplines such as aviation demand both knowledge and psychomotor skills alike to reach level of adequate professionalism. Integrity is the binding word for a professional airman. Measurement of one's airmanship is a complex task. Airmanship is based on higher cognitive functions of a pilot. Ironically these are the first functions to alienate the pilot if he/she is subjected startled, exhausted or emotionally incapacitated (Kern, 2010), thus considered the most dominant element in producing extraordinary pieces of flying performance.

Human factor is considered to be the highest contributor, which is amounting to 70%-80% of total fatal air accidents (Matthews et al., 1999). Adopting procedures accurately ensures that the quality expected by the organization is met (Manghani, 2011). Perfection in procedures is achievable, dynamic situations make it difficult though. Developed professional cockpit habits and improved Spare Metal Capacity are underlying factors for sound Situational Awareness. However, contingencies such as weather, aircraft malfunctions and Air Traffic Control (ATC) instructions could not be anticipated. Decision making is a joint function of flying in combination with the pilots' knowledge and experience on the particular task, which is a product of pilots' cognitive system (Payne et al., 1988).

3. METHODOLOGY

3.1 Research Design

With reference to the research onion by Saunders et.al, (2019) the study has adopted pragmatism as the philosophy considering its epistemology, ontology and axiology. A deductive approach was adopted to hypothetically test the theory and correlations, which would aid in providing a useful, methodical approach for generating knowledge to solve basic problems in the study. The study has encompassed case study strategy. The identified case is the present flying professionalism of SLAF. Mixed method has become the research choice. The time horizon of the research was cross-sectional. Data collection and analysis are the research technique and procedure adopted by the research.

3.2 Conceptualization

According to the theoretical framework based on the literature, the conceptual framework has been derived to find out and test research hypothesis. The derived

conceptual framework served as a guide for the study and depicted the expectation of the research schematically.

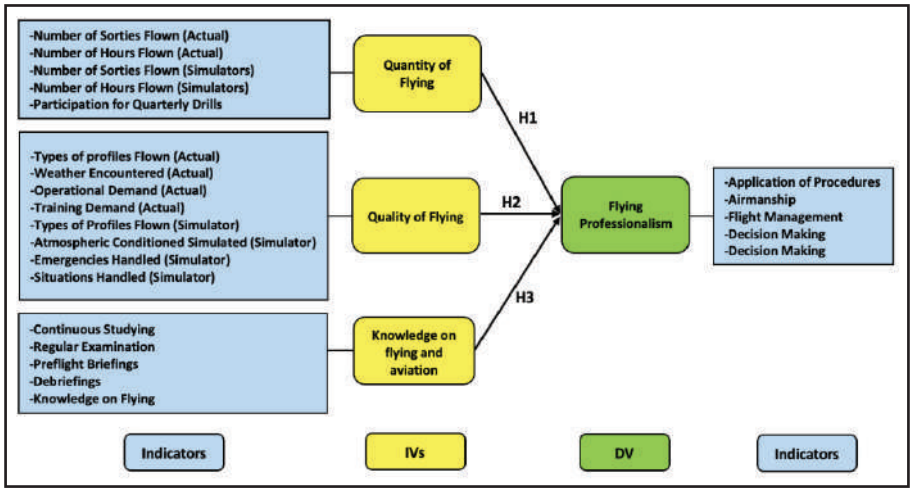

Figure 3.1: Operationalized Conceptual Framework
Source: Author (2022)

3.3 Hypotheses

The researcher has developed three hypotheses. H1-There is a significant correlation between quantity of flying and flying professionalism. H2-There is a significant correlation between quality of flying and flying professionalism. H3-There is a significant correlation between knowledge on flying and aviation with flying professionalism.

3.4 Population

The researcher has identified the population as the pilots employed in SLAF. Theoretical population of the study is 223, where, the results will be generalized. However, there are 180 operational pilots employed in SLAF at present. Out of them only 128 are presently engaged in flying duties, which is identified as study population (N). Rest of the 52 pilots are undertaking non-flying assignments as of now, hence excluded from study population.

3.5 Sampling Technique and Sample

The population was divided to three stratums according to the stream of flying, which have some unique differences in terms of nature of the job. Thus, stratums of

the study population are fighter pilots (n_1), transport pilots (n_2), and helicopter pilots (n_3). Since the study population is 128 (N), the sample size (n) can be ascertained as 97 according to K & Morgan table. The researcher has used following equation to derive the sizes of strata. n_1= 5, n_2 =33 and n_3=60. Purposive sampling was used ensuring the maximum variation to address all-possible aspects for gathering qualitative data through interviewing six key appointment holders.

3.6 Data Collection

Primary data of the research has been congregated from respondents through a personally administered online questionnaire developed using Google Forms, which incorporated structured questions for gathering statistical data. In addition, interviews were conducted with selected key appointment holders related to flying in SLAF via online platform due to the COVID-19 protocols existed during the time of data collection.

3.7 Analysis Tools

The data collected from the respondents were summarized in Microsoft Excel. The statistical analysis was performed using SPSS 23 and thematic analysis was done for analysing qualitative data though open coding method was used as the coding technique.

3.8 Ethical Considerations

The researcher has ensured that the primacy of ethical considerations is strictly obliged throughout the study. Ethical clearance from SLAF was obtained via formal correspondence. Further, identity of the respondents has been preserved and will not be revealed without proper consent of the respective individual.

4. DATA PRESENTATION AND ANALYSIS

4.1 Quantitative Data Analysis

The statistical data gathered through questionnaire was screened through multiple steps before analysis to ensure the data is ready for statistical analysis. Demographic data revealed that majority of respondents are less than five years of flying experience, majority are form helicopter stream, majority are wingmen/co-pilots. Data entry accuracy was tested visually, through scatter plot and histograms. Completeness was checked and missing data was filled using Missing Data

Treatment in SPSS 23. Parametric testing such as normality, linearity and sample adequacy revealed that data distribution is normal according to the empirical rule, distribution is platykurtic though and sample is adequate as resulted by Kaiser-Meyer-Olkin and Bartlett's Test. Reliability statistics resulted Cronbach's Alpha value 0.705. Pearson correlation was performed to identify correlation among variables. Multicollinearity test revealed that there is no risk of multicollinearity between constructed variables thus progressed to multiple regression analysis. Model summary and ANOVA table resulted that regression model is moderately good fit for the collected data. Kruskal-Wallis test was performed to determine, whether there are any significant differences between these groups for variables considering the heterogeneity of the population. Bonferroni test was conducted to explore the statistically different combinations of groups.

4.2 Qualitative Data Analysis

Qualitative data analysis was conducted to supplement statistical analysis in realizing research objectives. Thematic analysis was performed using open coding technique, which was useful in deriving four themes namely determinants of flying proficiency, generation gap of pilots in SLAF, contemporary issues in present SLAF flying and proposals for way forward to sustain flying proficiency

5. FINDINGS AND DISCUSSION

5.1 Key Findings

Computed variables through descriptive statistics signified that mean value for Quantity of Flying (QTF), Quality of Flying (QLF), Knowledge on Flying and Aviation (KNFA) and Flying Professionalism (FP) are M = 6.46, M = 17.77, M = 8.55 and M = 81.3 respectively. Hence, it signifies that majority have agreed upon the constructs, except disagreement upon QTF. Results of reliability test signified a Cronbach Alpha value of à = 0.705, thus suggested generalizing up to 70.05%. Sample size was adequate and qualified for generalizing in factor analysis, which was suggested by KMO value of 0.688. Skewness of all variables were within -1 to +1, which is accepted level Kurtosis values of all variables were away from 3 resulting flatter data distribution Nevertheless, as per empirical rule data distribution was normal.

Multicollinearity test revealed that there is no risk of Multicollinearity and data was good fit for multiple regression analysis, as per Tolerance and VIF values In addition, residual statistics values (min = -1.597 and max =1.329) implied the

absence of outliers in the data set. P-plot and Scatter-plot indicated the near distribution and linearity of data ANOVA table highlighted that regression model is moderately good fit for the collected data, $p>0.05$ though considering Multicollinearity test.

ß values of QTF, QLF and KNFA are 0.427, -0.389 and -1.066 respectively with constant = 9.280 thus resulted regression equation as follows:

$$Y = 9.280 + 0.427 X1 - 0.389 X2 - 1.066 X3 + U$$

Kruskal-Wallis and Bonferroni tests revealed that there is a heterogeneous distribution of mean values between groups of Crew rating and Length of Flying Carrier. Both of these demographic data are pertinent to different generations of pilots.

5.2 Interview Results

Semi-structured interviews with six key appointment holders related to flying were conducted using open-ended questions to yield optimum contribution of the interviewees. Key findings of the interviews are comprehended below. Quantity of flying, quality of flying and knowledge of flying and aviation are key determinants of flying. Nevertheless, airmanship, attitude and skill also are similar significant determinants. Closely supervised flying training is required for inculcating professional skills and behaviour in pilots. Continues unsupervised flying could lead to habitual unprofessional malpractices. There is a significant difference in flying duties during the humanitarian operations and afterward, in terms of quantity and nature. COVID-19 and financial crisis of the country at present has compelled SLAF to truncate its flying operations significantly. Same reason and forex crisis have contributed to marked reduction of the serviceability of the fleet. Fuel crisis have further curtailed the number of flying operations.

There is a generational gap between pilots. Younger pilots have only seen new normal conditions were flying operations are minimal and requirement to advance in crew ratings are lowered to meet the realities. They have not witnessed the demand for actual combat-related operations and higher number of flying operations conducted routinely. Best option to retain the FP is to make the fleet serviceable and recommence flying as usual, which is not feasible at present. Nevertheless, there are some alternatives to support retention of FP to a reasonable amount. Sending qualified pilots on secondments, sending pilots for simulator training, encouraging pilots for ground school studies, war gaming, workshops, UNPKO deployments. Recruiting policy is to be revised for limiting the intake and

uplifting the standard to select best candidates, who can cope with the expectations with minimum opportunities. Nich Air Forces should recruit the best candidates with higher capacity to consume lesser resources and provide effective outcomes (Kainikara, 2019).

5.3 Hypotheses Testing

Table 5.1: Correlation between DV and IVs

Description		QTF	QLF	KNFA
(a)		(c)	(d)	(e)
FP	Pearson Correlation	0.131*	-0.642*	-0.213 *
	Sig. (2-tailed)	0.198	0.007	0.050

Source: Survey data (2022)

Table 5.2: Summary of Hypotheses Testing

Ser	Hypothesis	Relationship	Result
(a)	**(b)**	**(c)**	**(d)**
1.	**H_1**: There is a significant correlation between quantity of flying and flying professionalism.	Weak positive correlation	**H_1** is rejected and **H_0** of **H_1** is accepted.
2.	**H_2**: There is a significant correlation between quality of flying and flying professionalism.	Strong negative relationship	**H_2** is accepted.
(a)	**(b)**	**(c)**	**(d)**
3.	**H_3**: There is a significant correlation between knowledge of flying and aviation with flying professionalism.	Weak negative correlation	**H_3** is rejected and **H_0** of **H_3** is accepted.

Source: Author (2022)

5.4 Meeting the Research Objectives

To Determine Factors Contributing for the Professionalism in Military Flying

It was revealed that quantity of flying, quality of flying and knowledge on flying and aviation are basic determinants of FP. Nevertheless, airmanship also has a mutual relationship with FP, includes some other facets though. Attitude as a determinant of FP was highlighted during interviews (2022).

To Examine the Present Status of Flying Professionalism among the SLAF Pilots

At present majority of the flying operations are curtailed and only the operations deemed necessary are flown. Hence all pilots have bear minimum number of flying opportunities in general and less experienced and low-rated pilots in particular. Majority of the pilots do not recognize the determinants of FP as such, indicating their lack of awareness regarding the FP. As per the literature, present flying practices and questionnaire/interview outcomes it could be concluded that FP is low at present in SLAF pilots in general and younger/less experienced pilots in particular.

To Identify Challenges Underlying Present Status of Flying Professionalism in SLAF Pilots

Most prominent challenge for FP at present in SLAF pilots is the inadequate flying opportunities. High-demand flying operations are conducted in an extremely limited scale at present. Standardization check flights are also very limited due to the same reasons, which renders the authorities to supervise and asses the FP of pilots. Training opportunities in actual and simulated flying has truncated. Compulsory linked training, air exercises and training related to flying ground studies are also very limited. SLAF is grappling with financial crisis, forex crisis and fuel crisis of the country. Hence, a smaller number of aircraft are serviceable and very less amount of flying is conducted.

To Identify Opportunities to Improve Flying Professionalism in SLAF Pilots

Opportunities identified to improve the FP have been articulated referring the outcome of the research, which are listed under the recommendations of the consecutive chapter.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Air operations are costly affairs, which demand exponential budget, highly specialized crew and rigorous standards to meet international accepted safety criteria. SLAF being a niche Air Force is no exemption. Budget allocation for SLAF has been gradually reduced since, 2009 after humanitarian operations and plummeted amid contemporary financial situation. SLAF significantly depend on overseas spares and service support for its routine maintenance and training pertinent to flying, which was significantly affected due to insufficient forex and fuel crisis. This has created a situation, where SLAF is contending to keep its fleet airworthy, conduct training and commence operational flying. FP being highly sensitive to regular practice is in a serious situation, particularly the younger pilots are concerned. Researcher developed a framework for meeting objectives such as identify determinants for FP (the DV), determining present FP in SLAF, contemporary challenges and way forward. In the framework, researcher identified that QTF, QLF and KNFA are IVs.

6.2 Recommendations

The researcher would like to recommend following research-based recommendations for retaining and fostering FP of SLAF under truncated flying opportunities due to multiple reasons:

- Give primacy to solutions with lesser financial commitments as a short-term measurement to suit the budgetary allocation, whilst attempting to make the fleet airworthy as the sustainable solution.

- All training and operational flying are to be supervised thoroughly with extra effort than normal to ensure the maximum output from limited opportunities.

- Focus more on scenario-based training than orthodox training to optimize the limited flying training opportunities.

- Conducting pre-flight briefing and post-flight debriefings comprehensively to open up a dialog between pilots in view of developing and sharing KNFA.

- Encourage and facilitate pilots to do the civil pilot licenses, which inevitably compel pilots to learn ground school subjects pertinent to flying and aviation.

- Revise SLAF recruiting concept, policy and methods to recruit a limited number of best candidates for flying, who can manage with lesser opportunities.

- Seek opportunities for secondment duties overseas/local for qualified pilots and flying instructors.

- Conducting a greater number of knowledge-sharing sessions such as seminars, workshops, wargaming, and air exercises to keep discussions on flying matters live.

- Provide pilots with an increased number of simulators flying by optimizing the training budget of SLAF. The total training requirement is to be prioritized as per the primary roles of SLAF.

- SLAF could commit more to UNPKO, which provides many tangible and intangible outcomes in return.

6.3 Further Research Areas

Further research areas could be recommended as to test the same model by incorporating the numerical data of actual test results (written and flying) of Commanding Officers' biannual check for more accurate outcome regarding the present proficiency of SLAF pilots, to study the nexus between generational gap and perception on flying proficiency and to study premature retirement intentions and the present status of flying in SLAF.

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CHALLENGES FOR INCULCATING READING CULTURE IN SRI LANKA NAVY: WITH SPECIAL REFERENCE TO MIDDLE-GRADE OFFICERS

Lieutenant Commander (E) L Rathnayake

ABSTRACT

This research delves into the significance of reading as an art and a process that extracts meaning from words. It explores how reading acts as a foundation for various academic skills, enhancing vocabulary, grammar, and language proficiency. Using Francis Bacon's aphorism, "speaking makes a ready man, writing makes an exact man, and reading makes a full man," the study emphasizes reading's pivotal role in fostering logical and rational speaking and writing skills. It examines the reasons behind reading, whether for self-development, enjoyment, gaining respect, or personal and career growth. The study uncovers a pilot study's results, revealing a minimal engagement in reading among Sri Lanka Navy's middle-grade officers, prompting the need to foster a reading culture within the institution.

Keywords: Reading culture, Sri Lanka Navy, middle-grade officers, challenges, habits, institutional factors

1. INTRODUCTION

Reading is an art and it is a process that, makes meaning extracted from the word. Most people read to gather knowledge and few read for entertainment. Further, reading is the basement for other academic skills. It improves vocabulary, grammar and language skills. The English philosopher Francis Bacon (1561-1626) had interpreted that “speaking makes a ready man, writing makes an exact man and reading makes a full man” and no accurate words than this statement. However, reading plays a vital role among the other skills as it helps to improve the skill of writing and speaking logically and rationally.

There are different purposes and intentions for people tend to read among the others. The first is self-development. Some people read to gather knowledge and develop their career; however, these people may be habitual readers; sometimes, they may not. The second is a feeling of self-importance. The third category read for enjoyment and they are the people who consider as habitual readers because these people frequently read as reading enjoy them. Next category of people read for gaining respect. Further, the purpose of the reading is not only for education in institutions and career progression. It is an activity that person should practice throughout life. Moreover, whether reading is for passing an examination for career

development or for enjoyment, people should read for achieving greatness in their life (Olasehinde et al., 2015). Thus, the literature evidence that, objectives or expectation of reading may vary, but the ultimate result surely ensures a positive outcome.

Reading helps to improve language skills, communication skills and sharing knowledge through information and idea. In addition, reading is an essential tool, which useful throughout life for learning and career progression. Further, it sharps humans' minds and assists in thinking logically, rationally and impartially. Therefore, a necessity is identified as a research gap and confirmed by a pilot study. Thus, challenges of inculcating a reading culture are identified to be researched at the institutional level in Sri Lanka Navy. Hence, it is intended to further review literature based on local and international contexts on specific areas related to inculcating reading culture in similar context considering professional and personal experience.

A field study was carried out, by distributing an online questionnaire among 46 naval officers who are Lieutenant Commander and below rank in order to explore whether middle-grade officers of Sri Lanka Navy involve in reading during leisure time. Further, the field study revealed that, among the 46 officers, only seven officers involve in reading in their leisure time. Moreover, all the other 39 officers are involved in various activities which distract from reading. Thus, the requirement has been arisen to inculcate reading culture among naval personnel to turn them into habitual readers to improve their knowledge for stepping toward developing the Navy.

The main objective of this study was to identify challenges are confronted by middle-grade officers of Sri Lanka Navy when inculcating reading culture. The specific objectives of this study are:

- To investigate the personal level factors for middle-grade officers get distracted from habitual reading.

- To find out factors that hinders the reading culture at the institutional level.

- To propose suggestions to the SLN for inculcating reading culture among middle-grade officers.

Moreover, core argument of this study was "Due to the absence of reading culture in the SLN, middle-grade officers read seldom". Based on the core argument, following research questions were formulated:

- What are the challenges for inculcating reading culture among the middle-grade officers of the SLN?
- Why middle-grade officers are distracted from habitual reading?
- What are factors that hinder the reading culture at the personnel and institutional level?
- How to inculcate reading culture among middle-grade officers of the SLN?

2. LITERATURE REVIEW

Reading is the fundamental structure of learning while reading culture can be defined as a philosophy that improves the habit of continuous reading (Olasehinde et al., 2015, p194). This section discussed about theories related to this study such as Schema theory, Hedonic theory and Mathewson's Model. Furthermore, how these theories are applicable for this study.

Moreover, this section discussed various definitions which were given by scholars for reading culture. According to (Dominic, 2015,p1), reading culture is establishing of positive attitude among people for reading over a period of time. Further, reading culture can be defined as the practice of gathering knowledge and information through printed materials (Sandars 2007 as cited in Akinola, (2021,p4). However, Benson (2017) argues that reading culture can be illustrated as a reading of textual and non-textual reading materials relevant to their field or beyond their field which help to broaden one's horizon.

Apart from that, this section examined, why people distract from reading. According to Benson (2017), smartphones have replaced the place of books in the society of Nigeria. Further, Nigerian children have become addicted to watching movies and access to phonographic sites using their smartphones instead of reading. Furthermore, the researcher believes that smartphones have been affected students in Nigeria to distract them from reading. Moreover, Ikwuka et al. (2020) conducted a study based on undergraduate students of Nnamdi Azikiwe University in Nigeria and revealed that time spend for searching sites are very high. Further, it showed

that most undergraduate students spend more time on social media networks instead of reading.

In addition, this section explained the challenges are confronted by countries or organisations or groups of people while inculcating reading culture. According to Otache (2020), poor reading culture has been taken place in African countries due to the defective education system of the country, language barriers, lack of library facilities, low patronage of libraries and reading is not prioritised in schools. Furthermore, past researches relevant inculcating reading culture in the Sri Lankan context also discussed in this section.

The literature proves people have been distracted from reading in contemporary times due to addiction social media and the development of technology in 21st century. Further, the majority of people devote their leisure time to watching movies, playing video games, playing internet games and chatting with friends through social media (Palani, 2012). Therefore, distraction from reading has become a serious issue in contemporary time. Moreover, Dominic (2015, p2) states that, the absence of reading culture leads to distracting people from reading. However, inculcation of reading culture may be the solution for people attracted to habitual reading. Therefore, it is essential to establish a reading culture in a country, organisation or a group of people attract them to read.

3. METHODOLOGY

Quantitative and qualitative methods used for understanding the challenges faced by middle-grade officers (Lieutenant Commander and below rank officers) of the SLN when inculcating reading culture. However, this research more related to human behaviour and social science; therefore, mix method was adopted for understand the research problem. According to the details are available in the SLN, 1991 officers are holding the rank of Lieutenant Commander and below ranks as of 30 January 2022. Therefore, population size is 1991 and the sample size was 322 as per K & Morgan table. Initially, quantitative data was collected by distributing questionnaire using purposive sampling method among the middle-grade officers of different branches of SLN. Then semi-structured interviews were conducted for three middle-grade officers who read frequently and three officers who read seldom to gather quantitative data. The Snowball Method was used for selecting middle-grade officers who read frequently and seldom for interviews.

The conceptual framework of this study depicts the pictorial relationship between the independent variable and the dependent variable. In this conceptual framework,

the researcher considered creating a reading culture as the dependent variable. Further, the creation of reading culture can be developed by increasing personnel interest and motivation for reading, and improving professional motivation and support for reading. According to the literature, the increase in personal interest and motivation for reading depends upon several factors. However, those factors were prioritised and selected few factors, which can be considered as the influence on middle-grade officers of SLN. The graphical presentation illustrates the process; how those dependent variables influence the middle-grade officers of SLN to inculcate reading culture.

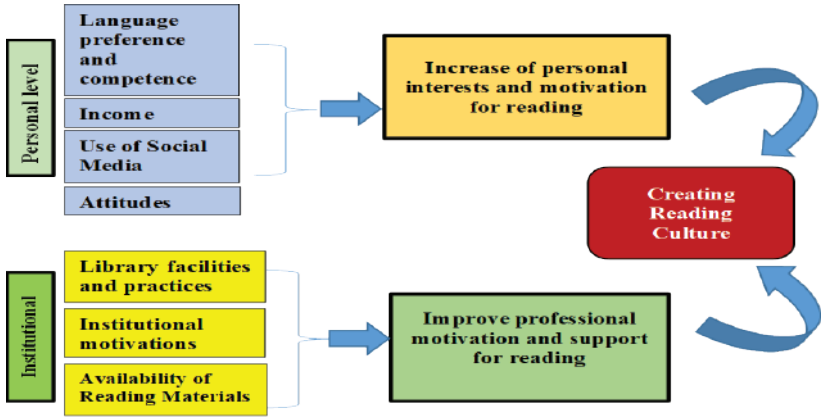

Figure 3:1: Conceptual Framework of the Study
Source: Developed by the Researchers

This study was used two types of questionnaires. The first one was the close-ended questionnaire for collecting primary data from the entire sample using the Likert Scale. Based on the data, middle-grade officers were categorised as frequent or habitual readers and officers who read seldom. The questionnaire consisted of 31 questions. The second questionnaire was the open-ended questionnaire used as the interview guide to conduct semi-structured interviews for middle-grade officers who read frequently and officers who read seldom.

Both quantitative data, as well as qualitative data, have been collected and following methods were used for analysing data.

Quantitative

The researcher utilised simple percentage and frequency counts method for analysing data received through the questionnaire.

Qualitative

The researcher used the content analysis method to analyse a set of text, such as an interview or transcripts related to verbal and behavioural data. Therefore, content analysis was used for analysing the qualitative data of this study.

4. DATA PRESENTATION AND ANALYSIS

The research finding indicated that, a total of 344 middle-grade officers of the following branches were given the questionnaire. Among those branches, 135 are Lieutenant Commanders, 174 are Lieutenants and 35 are Sub Lieutenant rank officers respectively. Further, among the respondents, 81% of middle-grade officers work in establishments and 19% work onboard ships.

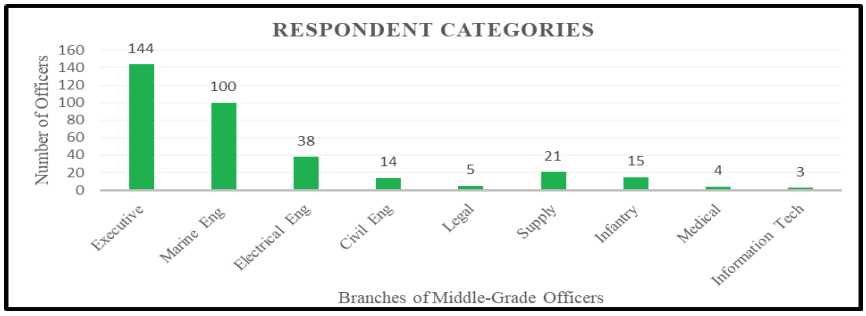

Figure 4.1: Respondent Categories as per Their Branch
Source: Developed by Researcher (2022)

Figure 4.2 shows the reading frequency of middle-grade officers. Among the responded middle-grade officers, the majority of (152 number) middle-grade officers read seldom and it shows that, middle-grade officers have been distracted from reading.

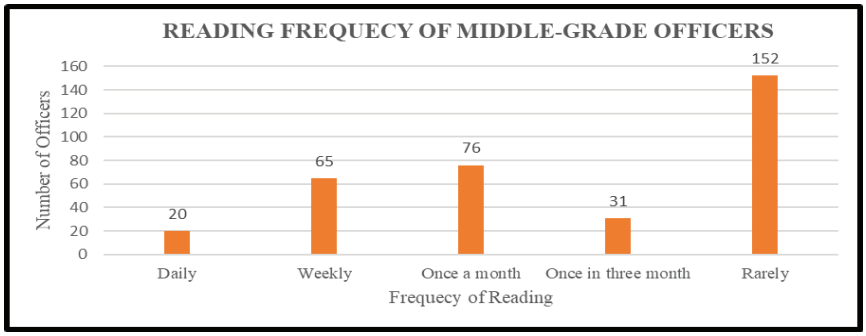

Figure 4.2: Reading Frequency of Middle-Grade Officers
Source: Developed by Researcher (2022)

Figure 4.3 represents the factors, which motivate middle-grade officers to read. Results revealed that, the majority (188 numbers) of middle-grade officers read due to their personal interests. 134 middle-grade officers read for examination purposes. Moreover, 143 middle-grade officers read to find a specific solution for problems. As per the result, it can be identified that, this category of officers read due to their profession as when these officers come across problems, they motivate for reading. Only 34 middle-grade officers read due to other reasons.

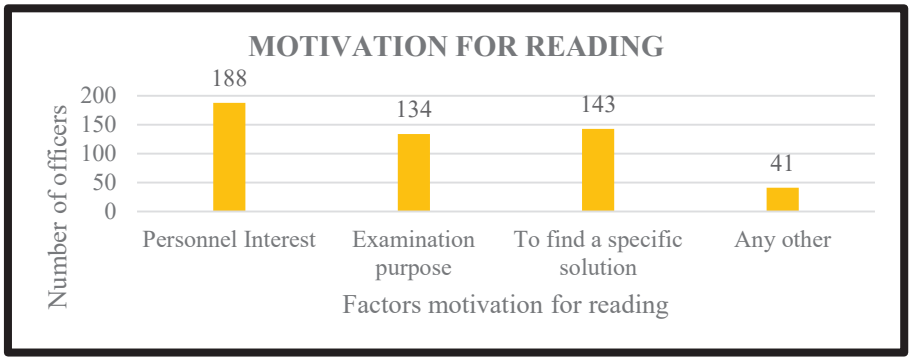

Figure 4.3: Factors which Motivate Middle-Grade Officers for Reading
Source: Developed by Researcher (2022)

4.1 Factors Affect Reading at Personal Level

This section is analysed factors, which affect for reading desire of middle-grade officers at the institution level.

Effect of Attitudes Toward Reading
According to the data gathered, the majority (81%) of middle-grade officers believed that attitude toward reading affects middle-grade officers to continue reading. Moreover, 8% middle-grade officers believe that, attitude does not affect continuing in reading.

Attitudes Toward Reading when Reading Materials Available
30% of middle-grade officers experienced that, do not compel for reading even though a wide variety of reading materials are available. 31% of middle-grade officers experienced that, middle-grade officers compel for reading when reading materials are available. It is revealed that, the availability of wide variety of books enhances the reading desire and it assists to create a positive attitude towards reading among the middle-grade officers.

Effect of Telephone Calls for Reading

As per the gathered data, 46% of middle-grade offices experienced that, telephone calls negatively affect the habit of reading. In contemporary times, with the development of globalization, talking on the phone have been increased and the same has negatively affected the reading habit of middle-grade officers also. Further, 31% of middle-grade officers experienced that telephone calls positively affect the habit of reading.

Effect of Watching Television

As per the gathered data, 47% of middle-grade officers experienced that, watching television negatively affect their reading habit of middle-grade officers. Further, 31% of middle-grade officers experienced that watching television positively affects their reading habits of the middle-grade officers.

Effect of Listening to Music

As per the gathered data, 31% of middle-grade officers experienced that, listening to music negatively affects their reading habit of middle-grade officers. Further, 27% of middle-grade officers experienced that listening to music positively affects their reading habits of the middle-grade officers.

Effect of Surfing the Internet

As per the gathered data, 40% of middle-grade officers experienced that, surfing the internet negatively affect their reading habit of middle-grade officers. Further, 42% of middle-grade officers experienced that surfing the internet positively affects their reading habits of the middle-grade officers.

Effect of Social Media

As per the gathered data, 42% of middle-grade officers experienced that, social media negatively affect their reading habit of middle-grade officers. Further, 43% of middle-grade officers experienced that social media positively affect their reading habit of the middle-grade officers.

Preference of Reading Sinhala Books

According to the data gathered, 15% of middle-grade officers do not prefer to read Sinhala books. However, 54% of middle-grade officers prefer to read Sinhala books.

Other Language Preferences

According to the data gathered, 42% of middle-grade officers experienced that, middle-grade officers do not face difficulties when reading books other than their

mother tongue. Moreover, 30% of middle-grade officers face difficulties when reading other language books. Furthermore, 70% of middle-grade officers read English language books. Moreover, 30% of middle-grade officers read Sinhala books.

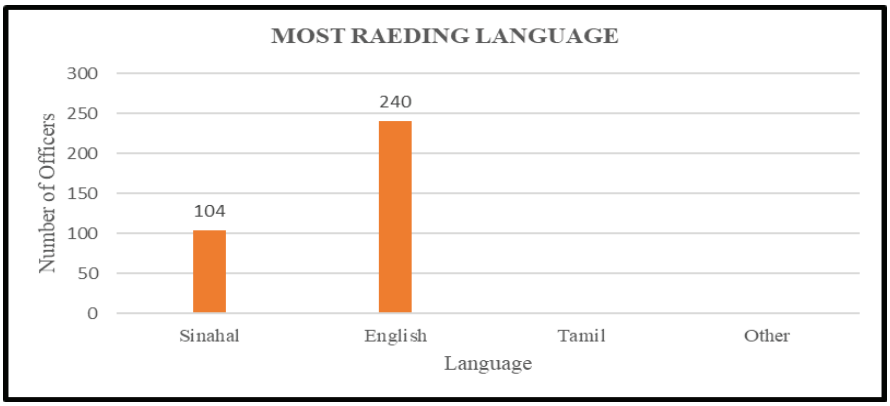

Figure 4.4: Preference of Language for Reading as a Habit
Source: Developed by Researcher (2022)

4.2 Factors Affect Reading at Institutional Level

This section analysed factors, which affect for reading desire of middle-grade officers at the institution level.

Middle-grade Officers' Reading Habits Restricted due to Financial Constraints
According to the data gathered, 48% (33+15%) of middle-grade officers have not experienced restricted reading habits due to financial constraints. Only, 23% (20+3%) of middle-grade officers have experienced that, their reading habits are restricted due to financial constraints.

Income Level Impact on Motivation for Reading
According to the data gathered, 20% (16+4%) of middle-grade officers experienced that their income level is not sufficient to increase their interest and motivation for reading. However, 46% (39+7%) of middle-grade officers experienced that, their income level is sufficient to increase personal interest and motivation for reading.

Available Library Facility in SLN
According to the data gathered, 17% of middle-grade officers experienced that, the available library facility in SLN is not sufficient for motivating middle-grade officers for reading. However, 46% of middle-grade officers experienced that, the

available library facility is sufficient for motivating middle-grade officers for reading.

Availability of a Wide Variety of Books
According to the data gathered, 5% of middle-grade officers experienced that the availability of a wide variety of books does not increase their reading desire. However, 73% of middle-grade officers experienced that, the availability of a wide variety of books increases their reading desire in middle-grade officers.

SLN has Given Preference for Reading
According to the gathered data, 19% of middle-grade officers believe that, SLN has not given preference for reading within the organization. However, 40% of middle-grade officers believe that, SLN has given preference for reading.

Introduction of Evaluation Criteria to Readers
According to the gathered data, 11% (8+3%) of middle-grade officers believe that, the introduction of evaluation criteria for readers of SLN, does not increase the reading desire among middle-grade officers. However, 69% (52+7%) of middle-grade officers believe that, the introduction of evaluation criteria for readers of SLN, increases the reading desire among middle-grade officers.

Response Toward Giving Rewards to Readers of SLN
According to the gathered data, 10% of middle-grade officers believe that, giving rewards to readers of SLN, does not increase the reading desire among middle-grade officers. However, 64% of middle-grade officers believe that, giving rewards to readers of SLN, increases the reading desire among middle-grade officers.

5. FINDING AND DISCUSSIONS

It is clear from the study that, the reading culture among the middle-grade officers of SLN is not encouraging. According to Rosli et al (2017, p792) reading habits are measured based on how much read, how often read, when will read and what do read. As per the results, 53% of middle-grade officers read seldom. Moreover, only 37% of middle-grade officers read for personal interest and others (55%) read for examination purposes and to find specific solutions to problems. According to (Benson, 2017), reading culture is the cultivation of a positive attitude and motivation of people for reading regularly for gaining pleasure. Therefore, it cannot be considered that, reading culture is existing among middle-grade officers of SLN at present.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Recommendations

Based on the findings, the following are recommended to inculcate reading culture among middle-grade officers:

Institutional Level

- Recommend allocating library hours for middle-grade officers weekly to give an ignition for reading and Commanding Officers' of respective bases have to monitor the activity.

- Recommend introducing open book exams for Naval Examinations.

- Recommend organising book competitions including families of middle-grade officers and giving rewards for officers as well as family members (Spouse and Children) to motivate them for reading.

- Enhance library facilities such as most famous books should be included in libraries by providing a facility to read e-books and connect all libraries within the SLN through a network. Further, recommend facilitating for middle-grade officers to access public libraries in Sri Lanka.

- Recommend to allocate compulsory reading books for middle-grade officers and evaluate same during promotion boards, Junior Naval Staff Course and foreign course selection boards.

- Recommend middle-grade officers to submit book reviews bi-annually command-wise and select the best book review among the commands and give reward for the best book review.

Personal Level

- Utilise social media effectively for sharing books among friends and officers instead wasting time for chatting.

- Allocate time for reading books every day and inspire a positive attitude to continue reading.

- Minimise talking on the phone when start reading a book. If it is possible keep the phone away when reading.

- Utilise surfing the internet effectively, such as finding books and book sites.

6.2 Conclusion

This study has focused on challenges faced by middle-grade officers when inculcating reading culture. Moreover, this study adopted mix data analysis (QUAL+ quan) method and data gathered through a questionnaire and semi-structured interviews. Gathered data analysed through a simple percentage and frequency count method. This paper has extensively identified the challenges for inculcating reading culture among the middle-grade officers, at a personal level as well as an institutional level. Furthermore, this study made recommendations based on findings which assist in inculcating reading culture among middle-grade officers. Furthermore, this research concerned only inculcating reading culture among middle-grade officers. Therefore, the selected sample consisted of the rank of Sub Lieutenant, Lieutenant and Lieutenant Commander. However, further research can be conducted in the area of challenges for inculcating reading culture among the hierarchy level of officers in SLN and challenges for inculcating reading culture among under-trainee officers.

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INFLUENCES OF SAFETY PERFORMANCE INDICATORS (SPI) TO AVIATION SAFETY MANAGEMENT SYSTEM (SMS) IN HELICOPTER OPERATIONS OF SRI LANKA AIR FORCE

Wing Commander ISB Thibbotumunuwe psc

ABSTRACT

This research investigates the absence of a structured Safety Management System (SMS) and Safety Performance Indicators (SPIs) within the Sri Lanka Air Force's (SLAF) helicopter operations and their impact on safety standards. Analyzing survey and interview data, the study reveals gaps in Safety Policy, Risk Management, Assurance, and Promotion. Recommendations include implementing a tailored SMS aligned with international standards, introducing specific SPIs for SLAF's helicopters, and fostering a strong safety culture. Future research directions aim to develop a comprehensive SMS for SLAF's helicopters and explore the relationship between SMS and SPIs in enhancing safety performance further.

Key Words: Aviation Safety Management Systems, Safety Performance Indicators, SLAF Helicopter Operations, Safety Culture Enhancement, Risk Management in Aviation

1. INTRODUCTION

Aviation operations in the third dimension are inherently complex, governed by stringent procedures, rules, and regulations primarily aimed at ensuring and enhancing safety. This is in stark contrast to ground and sea operations, making aviation safety particularly challenging due to unique constraints such as impermanence, base dependency, and situational limits (RAF, 2009). Aircraft accidents, often stemming from the lack or negligence of flight safety standards, result in substantial losses, including damage to property and human lives. The financial burden is immense, with replacement costs for aircraft and equipment, as well as the time required to train experienced flight crews, adding to the challenges.

The International Civil Aviation Organization (ICAO), the global authority on aviation, mandates that its member states adhere to Safety Management System (SMS) Protocols applicable to all stakeholders, including airlines, maintenance facilities, airports, and aviation training institutes (ICAO, 2018). Recognizing the paramount importance of safety management in aviation, ICAO introduced the first edition of Annex 19, "Safety Management," in February 2013.

The Sri Lanka Air Force (SLAF) has a long-standing Flight Safety Mechanism in place to align with international flight safety standards. However, as the sole operator of the nation's military aircraft, the SLAF faces unique challenges. These

challenges arise from the dynamic and tactical nature of its operations conducted in all-weather conditions to uphold national security objectives. Despite its impressive performance, the SLAF is constrained by its relatively limited air assets due to economic, technological, and security considerations. The SLAF endured losses during the height of LTTE terrorism, further reducing its aircraft inventory. Therefore, it is imperative to conduct a comprehensive flight safety assessment to safeguard the remaining assets from accidents stemming from inadequacies in the existing flight safety mechanisms.

Furthermore, the economic constraints in a developing country like Sri Lanka make it unaffordable to bear the expenses incurred by potential aircraft accidents. Recent aviation-related incidents and accidents in the SLAF highlight the need to revisit the current flight safety mechanism and bridge the gap between the actual flight safety requirements and the existing system.

In summary, aviation safety is a critical concern, particularly in the context of the SLAF's unique operational challenges and limited resources. Revising and improving the flight safety mechanism is essential to protect lives, assets, and national interests.

2. LITERATURE REVIEW

In this document, the researcher outlines their intent to explore the relationship between Safety Management Systems (SMS) and Safety Performance Indicators (SPIs) in military helicopter aviation, specifically within the Sri Lanka Air Force (SLAF). To achieve this, the researcher references a variety of sources, including international aviation regulations, ICAO publications, and SLAF documents whist emphasizing the importance of aviation safety.

The loss of a single aircraft can have significant economic and moral repercussions for a nation. Safety Performance (SP) is defined as the measure of an organization's effectiveness in achieving safety through the implementation of practices, procedures, and Standard Operating Procedures (SOPs). The International Civil Aviation Organization (ICAO) has been pushing for an Acceptable Level of Safety (ALoS) in civil aviation since 2009, and they introduced Standard and Recommended Practices (SARPs) for Safety Management Systems (SMS).
The SMS is described as a systematic approach to safety management, focusing on organizational structures, policies, and procedures to reduce accidents and promote a safety culture. Safety Performance Indicators (SPIs) are introduced as data-based parameters for monitoring and assessing safety performance. Having both SMS and

SPIs in aviation organizations, regardless of their military or civil context, is seen as crucial for enhancing safety.

Further, the document describes the SLAF's Flight Safety Organization, highlighting the role of Flight Safety Officers in preventing accidents and incidents, as well as disseminating safety-related information. While acknowledging the SLAF's efforts in practicing safety measures, the document notes the absence of clearly defined SMS and SPIs within the organization. The researcher aims to address this research gap by exploring the relationship between SMS and SPIs in SLAF helicopter aviation.

The SMS framework, consisting of Safety Policy and Objectives, Safety Risk Management, Safety Assurance, and Safety Promotion, is mentioned as the foundation for SMS implementation. The researcher identifies the lack of research or literature pertaining to the connection between SMS and SPIs in military helicopter aviation, particularly within the SLAF. The goal of the research is to bridge this gap by investigating the relationship between SMS and SPIs in SLAF helicopter squadrons and proposing appropriate SPIs.

To facilitate this, the researcher plans to adapt a set of SPIs from Gerede & Yasar (2017) to the SLAF helicopter context, thus contributing to the enhancement of safety in SLAF helicopter operations.

In summary, this document outlines the research intent to explore the relationship between Safety Management Systems and Safety Performance Indicators in SLAF helicopter aviation. It underscores the significance of aviation safety, the role of ICAO regulations, and the potential benefits of implementing SMS and SPIs within the organization. The research aims to fill a critical research gap and enhance safety standards in SLAF helicopter operations.

3. METHODOLOGY

This chapter includes information and data study of the influence of safety performance indicators (SPI) to aviation safety management system (SMS) in helicopter operations of Sri Lanka Air Force. The researcher would use descriptive research design throughout this study. This chapter would describe the research philosophy approach, methodology, strategy, time horizon with techniques and procedures, data sources, data collection methods, data generation methods, and data analysis methods of this study.

3.1 Research Design

Design of the research has identified by considering Saunder's Research Onion. Further, research philosophy, approach, methodology, strategy, time horizon with techniques and procedures have derived from the Figure 1:

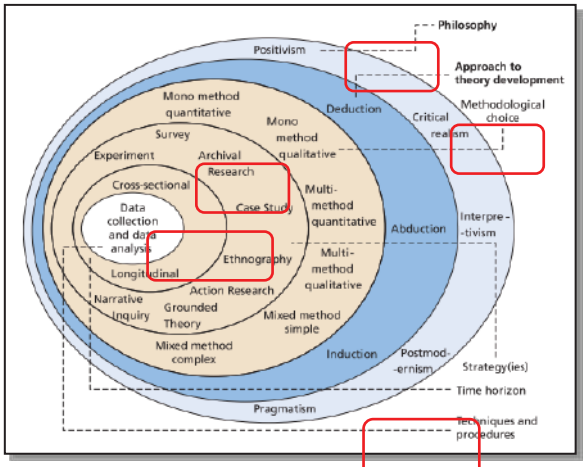

Figure 3.1: Saunder's Research Onion
Source: Mark Saunders, Philip Lewis and Adrian Thornhill (2019)

3.2 Research Philosophy

The researcher has used the existing knowledge and the thought and ideas of the sample to conduct the research. Hence, mixture of both Positivism and Interpretivism philosophy is utilized in this research for the data collection.

3.3 Research Approach

This research was conducted based on the existing theories on the subject. Thus, the deductive approach was used by the researcher to examine the factors influencing the Safety performance indicators and Safety management system in helicopter operations of SLAF.

3.4 Research Methodology

The researcher has collected data by both qualitative and quantitative means. However, the research has comprised with 2 quantitative surveys and 1 qualitative survey and the research methodology is a mixed method.

3.5 Research Strategy

Preliminary quantitative survey was conducted as a pilot study to figure out possible SPIs to helicopter operations and main quantitative survey to gather secondary data for precise analysis. On the other hand, 1 qualitative survey was conducted to review the obtained data by main survey. Therefore, the researcher has utilized the survey method as the research.

3.6 Time Horizon

Data collection was conducted only once by 3 surveys. Hence, the time horizon was identified as cross-sectional, since the data collection was not repeated.

3.7 Conceptualization

The conceptual framework of this paper was designed to in line with the objectives derived by the researcher. Further, researcher's approach to the paper is based on the conceptual model diagram of the study (Figure 2). The researcher has developed a process of information from preliminary data survey, secondary data, collection of data, analysis of data to derive with findings and recommendations.

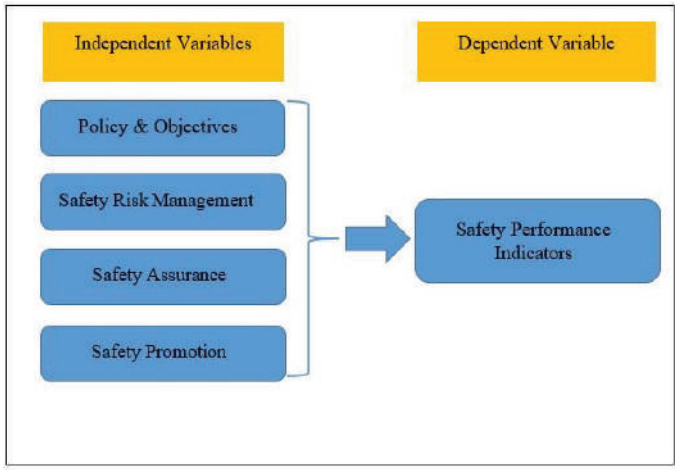

Figure 3.2: Prosess of Information
Source: Researcher Developed (2022)

3.8 Operationalization

The operationalization describes the approach in identifying specific areas to be analysed and discussed in the research. The questionnaire for collecting primary

data was structured based on finding the relationship between the variables and indicators. Relevant indicators were derived from the areas described during the literature review for respective variables. Further, in order to identify lagging and leading indicators for SPI, preliminary questionnaire have been distributed among 5 qualified Flight Safety Officers.

3.9 Data Collection

The researcher has adopted mixed data collection method by using both qualitative and quantitative methods. The target population is 76 (present operational helicopter pilots and Helicopter squadron Engineers in SLAF). Therefore, researcher has distributed the questionnaire among all operational Helicopter pilots and Engineers of Helicopter sqns to optimize the response. Hence, total number of 76 personnel from various ranks from Pilot Officer to Group Captain were selected as study population. The data collection was carried out through distribution of questionnaire among all helicopter pilots and helicopter sqn Engineers and individual interviews with present Command Flight Safety Officer (CFSO), Commanding Officers (CO) of No 6 and No 7 helicopter squadrons.

Apart from above details, researcher has distributed a preliminary questionnaire for panel of 5 qualified Flight Safety Officers (FSO) to determine the most suited SPIs (selected from literature review) to introduced for helicopter operations of SLAF. This panel includes, FSOs of No 4,5,6,9 Helicopter Squadrons and No 61 Flight. However, the researcher has applied convenience sampling method which falls under the non-probability sampling strategy in order to maximize the wilful participation. Further, data collection has been conducted as per following diagram.

Secondary Data

The researcher has referred SLAF Doctrine, Air Force Orders of SLAF, Annex 19 to the convention on ICAO, publications of International helicopter safety and some research articles published with regard to SPI and aviation SMS were considered as secondary data. Further, researcher has studied over the existing SPIs and Aviation SMS in helicopter operations of SLAF. The analysis of a research is conducted to systematically gather the available data. The researcher has used ‘Thematic’ analysis for qualitative segment as the data analysing tool during this research paper. Further, the researcher used SPSS 22 and Microsoft XL to analyse the quantitative data gathered during two quantitative surveys.

4. DATA PRESENTATION AND ANALYSIS

This chapter presents the collected data and it provides the output of the statistical analysis of the data affiliated with the objective of the study, assuring the Influence of Safety Performance Indicators (SPI) to aviation Safety Management System (SMS) in helicopter operations of SLAF.

Quality of Data

As the mixed method involved with qualitative data, it requires greater time consumption. Accordingly, 04 Helicopter Squadron Commanding Officers and the Command Flight Safety Officer were interviewed. Researcher absorbed much vital information on the existing safety practices of SLAF helicopter operations and comprehensive analysis conducted through the thematic analysis methodology developed by Clarke & Braun (2015).

The study involved collecting quantitative data in two rounds. In the first round, a panel of 5 Flight Safety Officers (FSO) from helicopter squadrons/flight received a preliminary questionnaire to gather initial data. This data helped shape the main questionnaire, which consisted of 30 questions distributed among helicopter pilots and engineering officers in helicopter squadrons. The main questionnaire was divided into 6 sections: introductory, policy and objectives, safety promotion, safety risk management, safety assurance, and concluding sections. A total of 53 helicopter pilots and 18 aircraft engineers responded to the survey. The researcher assured participants that the survey results would only be used for academic purposes. To analyze the qualitative data, the researcher utilized Microsoft Excel and SPSS 22 software.

Survey 1 was conducted as a preliminary survey among 5 Flight Safety Officers (FSOs) of helicopter squadrons and all of them were well qualified in the subject. The researcher intended to formulate a viable SPIs for helicopter operations and thus this questionnaire was mainly focused to collect professional guidance from Subject Matter Experts (SMEs). Initially, 33 indicators (Extracted from literature review) were provided with SMEs and curtailed it down to most suitable 20 indicators as per helicopter operations culture of SLAF.

Reliability and Validity

The researcher used the tool of Cronbach's Alpha and significance to conduct the reliability and validity tests.

Normality Test

The researcher has conducted the normality test to check the normality of the gathered data.

Correlation Analysis of Variables

The research used Pearson's correlation coefficient (r) to analyze the relationship between variables. However, there was no significant relationship found between the Safety Performance Indicator (SPI) and Policy objective variables, although a strong relationship of SPI was observed with Safety Risk management variables, Safety Assurance variables and Safety Promotion variables.

Relation of Qualitative and Quantitative Data

It is observed by the researcher that the accountable body for Flight safety of SLAF and the helicopter squadron respondents were providing similar statements on the questions inquired and no contradictory statements were received. Hence, the reliability and the credibility of qualitative data could be considered in an acceptable range.

5. FINDINGS AND DISCUSSION

The researcher has intended to answer research questions and achieve research objectives. However, research could able to find answers for all 3 research questions from quantitative and qualitative data gathered from Survey 1, 2 and interviews. In addition, research objectives were achieved by analysing aforesaid data and third objective of suggesting a viable set of SPI has mentioned in the recommendation chapter of this research paper. This chapter has interpreted the results of data gathered in relation with the research questions and objectives. Concurrently, results were checked with the literature review to compare with previous publications.

5.1 Interpretation of Results for Safety Management System for Helicopter Operations in SLAF

SLAF lacks a documented SMS at the strategic level, as per interview data. The Command Flight Safety Inspectorate (CFSI) encourages helicopter squadrons to establish their own SMS, with some positive responses regarding squadron-level SMS. However, 55% of respondents were uncertain about its effectiveness, and

only 40.8% agreed that an effective SMS existed. These findings indicate inadequate knowledge among squadron members regarding SMS implementation.

Safety Policy and Objectives

The researcher has checked the correlation between Safety Performance Indicator (SPI) and Policy objectives, and found that there was no evident of positive or negative relationship between them. Although SLAF has a documented Safety Policy, 52% respondents of survey 2 were unaware about it.

Safety Risk Management

Correlation tests revealed a strong positive relationship between SPI and Safety Risk Management. Survey 2 showed that 52% of respondents remained neutral when evaluating Safety Risk Management in SLAF, and only 22.5% affirmed the presence of an effective aviation hazard analysis system. The results imply that SLAF helicopter squadrons have not met the expected standard in risk management.

Safety Assurance

Considering the correlation between SPI and Safety Assurance, it was found that there is a strong positive relationship between them. However as per both qualitative and quantitative data, ultimate responsibility for safety assurance of helicopter squadrons liaise with the FSO and only 10% from the total respondents stated that they are not providing regular inputs to FSO to update the existing SMS. In addition, reporting culture of helicopter squadrons are within a satisfactory level. Therefore, it is confirmed by the data that the safety assurance component is playing a vital role in helicopter squadrons' SMS.

Safety Promotion

It was found during the correlation test that SPI and Safety Promotion have a strong positive relationship. There were no disagreements to inculcate safety culture in everybody's soul and only 7% stated that respective Squadrons do not promote safety culture. However, there were numerous ways that squadrons promoting safety in their squadrons and it was evident that a strong prominence was given to promote safety within helicopter squadrons of SLAF.

5.2 Interpretation of Results for Safety Performance Indicators for Helicopter Operations in SLAF

The SPI can be defined as a "data-based parameter used for monitoring and assessing safety performance" (ICAO, 2013). Thus, effective SPI in a helicopter squadron could able to figure out the level of safety standard that squadron is maintaining. The researcher has gathered information from Subject matter Experts (SMEs) about effective performance indicators for helicopter operations during the survey 1. Helicopter squadrons have already implemented local SPIs within respective squadrons. But in-depth evaluation or analysis has not been introduced to the said system in SLAF helicopter operations. On the other hand, only 24% agreed that their squadrons are maintaining an effective SPI system. Therefore, SPI system in helicopter squadrons of SLAF needed to be uplifted and restructured to enhance the overall safety performance of helicopter operations.

5.3 Relationship Between SPI and SMS in Helicopter Operations of SLAF

Survey 2 results strongly support the belief that implementing Safety Performance Indicators (SPI) and hazard analysis systems, integral to Safety Management Systems (SMS), will significantly enhance safety standards. About 90% of respondents endorsed SPI implementation for safety improvement, with 87% holding a similar view on hazard analysis systems. Interviewees stressed SPI's importance within SMS, emphasizing its potential to boost overall safety performance. The current flight safety performance averages 6.81 out of 10.

In alignment with ICAO's perspective, the presence of SMS and SPIs is deemed crucial for safety enhancement in both military and civil aviation organizations. The researcher shares this viewpoint and suggests a more systematic approach to SMS and SPIs for SLAF's helicopter operations to elevate safety performance. To achieve the research objectives, the researcher has proposed viable SPIs for SLAF's helicopter squadrons, addressing all three research questions and objectives. This approach holds the potential to enhance safety levels as per the ICAO guidelines.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Sri Lanka being a developing nation, will not be in a position to ignore an air crash as replacement of that losing aircraft need to compromise from some other means. Therefore, preserving the existing inventory would be the best option by enhancing

safety standard of the operational framework of the organization. Implementation of SMS became a vital factor in the global aviation context to enhance the safety performance of the organization. Similarly, ICAO has implemented a performance-based evaluation approach in addition to the regulatory approach to enhance the level of safety and this performance-based approach will be evaluated by Safety Performance Indicators (SPI). But, the SLAF has not brought up any documented SMS or SPI within its helicopter organization, although these are being practiced by respective squadron levels up to certain extend. This study was to examine the existing SMS and SPIs in helicopter operations of SLAF and to find out the relationship between those components. Data for the study was collected by 2 quantitative surveys and by a qualitative survey. Finally, the researcher have successfully found answers to all research questions and achieved all research objectives set during the initial study.

6.2 Recommendations

Based on the findings of the research study conducted through data analysis of questionnaires and interviews, the researcher has made several recommendations in line with the objectives of the study on influences of SPI to aviation SMS in helicopter operations of SLAF.

Implement Proper SMS

Develop a documented Safety Management System (SMS) for SLAF helicopter operations in line with the ICAO SMS framework, covering safety policy objectives, risk management, assurance, and promotion.

Implement Proper SPI

Helicopter operations of SLAF required safety performance measuring system to enhance the safety practices of the helicopter squadrons. Traditional measures of aviation safety performance largely rely on lagging indicators like accident rates. the researcher presume that lagging indicators would be the best option for an organization which implements SPIs for the first time as it provides the current safety performance of the organization. Thus, the researcher suggests SLAF to implement set of SPIs tailored to SLAF helicopter operations as below:

- Number of fatal accidents/incidents that occur due to pilotage problems per flight hour.

- Number of fatal accidents/incidents that occur due to pilotage problems per sortie.

- Number of Incidents per sortie.
- Number of fatal injuries due to pilotage problems per sortie.
- Number of cases where meteorological conditions are not evaluated in flight per sortie.
- Number of bird strikes per sortie.
- Number of air near misses per sortie.
- Number of Non-compliance with SOPs per sortie.
- Number of Non-compliance with limitations specified in check list per sortie.
- Number of Non-compliance to helicopter limitations sortie.
- Number of Engine (technical) failures per sortie.
- Number of Fire Emergencies per sortie.
- Number of Engine related emergencies reported per sortie.
- Number of Main Gear Box related emergencies reported per sortie.
- Number of Emergency landing on terrain due to technical failure per sortie.
- Number of cases where VFR flight conditions are lost per flight hour.
- Number of incidents reported by crew per sortie.
- Number of hazard related to a flight reported by crew per sortie.
- Number of cases where ATC instructions are misunderstood per sortie.

- Number of Violations of SOP per sortie.

Conduct a Pilot Study
Before full implementation, conduct a pilot study using the suggested SMS and SPIs in helicopter squadrons, and continuously update them based on feedback from squadron members.

Reporting for SPIs
Incorporate existing reporting culture into helicopter squadrons to collect information for SPIs and expand reporting methods.

Updating Existing SPIs
Continuously evaluate threats and update SPIs. Consider incorporating leading indicators once the expected level of safety performance is achieved.

Safety Culture
Promote a positive safety culture among personnel engaged in helicopter operations, addressing psychological, organizational, and behavioral aspects.

Appoint a Safety Team
Establish dedicated safety teams in squadrons to support Flight Safety Officers (FSOs) in conducting analysis, surveys, and other safety-related activities.

Safety Rewarding System
Implement a rewarding system recognizing individuals for safety contributions to encourage a strong safety culture and reporting.

Promotion of Safety Policy
Formulate dedicated safety policies for each helicopter squadron in alignment with the existing SLAF safety policy.

Safety Risk Management
Enhance safety risk management by implementing hazard analysis tools, risk assessment, and mitigation methods in line with ICAO standards.

6.3 Direction for Future Research

Helicopter operations of SLAF are not facilitated with documented SMS and SPI system. Hence, the researcher had the intention to figure out the existing locally

implemented SPIs and SMS and to find out the linkage of SPIs and SMS in helicopter operations.

In addition, the researcher could able to recommend a set of tailor-made SPIs for SLAF helicopter squadrons which needed to be implement after a pilot survey. However, it was found that helicopter squadrons are adopting SMS in an acceptable level and due to time and the scope limitation, the researcher could not propose a comprehensive SMS to helicopter operations.

Thus, considering the necessity of a comprehensive SMS to SLAF helicopter operations the researcher suggests future researchers, to conduct a deep and broad research study on implementation Safety Management System for helicopter operations of SLAF.

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SHAPING NAVAL STRATEGY FOR SMALL ISLAND STATES THROUGH AUTONOMOUS SYSTEMS, ARTIFICIAL INTELLIGENCE, AND CYBER WARFARE

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ABSTRACT

In the context of an evolving global security landscape, small island states must adapt defense strategies to counter emerging threats effectively. This study examines the transformative impact of Autonomous Systems, Artificial Intelligence (AI), and Cyber Warfare on tailored naval strategies for these states, considering unique geographical and geopolitical constraints. Research objectives include analyzing current naval strategies, evaluating potential benefits and risks of advanced technology integration, and developing strategic recommendations for bolstering defense capabilities. Utilizing qualitative analysis, the study underscores significant potential in enhancing naval capabilities through Autonomous Systems and AI. It also emphasizes the critical importance of proactive cyber security measures to mitigate challenges posed by cyber threats. Findings stress the need for customized strategies seamlessly integrating these technologies while accounting for maritime and geopolitical nuances. In conclusion, the research offers actionable insights for policymakers, defense planners, and technology developers to craft comprehensive defense frameworks, enhancing small island states' defense readiness amidst an evolving security landscape.

Keywords: Naval Strategy, Small Island States, Autonomous Systems, Artificial Intelligence, Cyber Warfare

1. INTRODUCTION

In an ever-evolving global security landscape, the defence strategies of small island states have become paramount, given their vulnerabilities and geopolitical significance (Smith, 2022; Johnson, 2021). These states face unique challenges due to their geographical compactness, necessitating innovative adaptations to address emerging threats effectively (Adams, 2020). The geographical limitations intensify security challenges, compelling small island states to devise agile and resilient strategies (Turner, 2021). These challenges encompass not only traditional threats but also modern ones, such as cyber-attacks and unconventional warfare (Institute of Artificial Intelligence, 2022 and Williams, 2019). As a result, defence adaptations tailored to their unique circumstances are imperative for safeguarding their sovereignty and national interests.

This research delves into the transformation of naval strategies specifically tailored for small island states by integrating cutting-edge technologies, explicitly Autonomous Systems, Artificial Intelligence (AI), and Cyber Warfare. These technologies offer unprecedented opportunities to revolutionize naval planning, enhancing surveillance, decision-making, and resource allocation (Cyber Warfare Institute, 2021).

However, a critical research gap exists as scholarly attention to these emerging technologies in broader military contexts outweighs their specific implications for small island states (Small Island Security Research Consortium, 2020). This research aims to bridge this gap by comprehensively examining how these technologies reshape naval planning strategies, considering distinct geographical and geopolitical challenges. Therefore; the primary purpose of this study is to illuminate the intersections of technological advancements and naval strategies. It strives to analyze the benefits, risks, and operational intricacies of integrating Autonomous Systems, AI, and Cyber Warfare into naval planning for small island states, providing a strategic blueprint for defense capabilities and resilience.
The research objectives encompass to investigation of existing naval strategies employed by small island states, to Analyze the potential benefits and risks of integrating Autonomous Systems, AI, and Cyber Warfare and formulation of strategic recommendations aligned with unique characteristics and challenges. Addressing these objectives contributes to academic understanding and practical strategies for small island states in navigating modern naval defense dynamics while fostering a comprehensive understanding of evolving naval strategies amidst technological disruptions.

2. LITERATURE REVIEW

The security landscape for small island states is marked by intricate challenges stemming from their unique geographic and geopolitical contexts. These states, often characterized by limited landmass and dispersed maritime domains, confront a range of vulnerabilities that influence their defense strategies. Smith (2022) highlights how these vulnerabilities are heightened by their exposure to climate change-induced impacts, including rising sea levels and extreme weather events, which could significantly compromise their territorial integrity. Furthermore, Turner (2021) underscores the economic vulnerabilities of small island states due to their reliance on specific industries and their susceptibility to external economic shocks.

The maritime nature of these states amplifies their security concerns. Williams (2019) underscores the challenges of securing extensive maritime territories with

limited resources, making them susceptible to territorial encroachments and resource competition. Additionally, the interconnectedness of the global economy exposes them to transnational threats, such as piracy and illegal fishing (Adams, 2020). Therefore, the literature underscores the urgency for small island states to adopt nuanced defense strategies that address both traditional and emerging security threats. This necessitates tailored approaches that integrate maritime security, environmental resilience, and diplomatic collaborations to safeguard their sovereignty and national interests (Carter, 2020). As the global security landscape evolves, understanding these distinct challenges is pivotal in crafting effective defense adaptations for the unique context of small island states.

Naval strategies play a pivotal role in the defense adaptations of small island states, shaping their capacity to navigate complex security challenges. The maritime nature of these states emphasizes the significance of maritime security frameworks in safeguarding territorial integrity and resource sovereignty. Adams (2019) underscores the importance of deterrence strategies and maritime domain awareness in deterring potential encroachments and safeguarding maritime interests. Turner (2020) further argues that effective naval strategies are essential for projecting power and influence in regional and global arenas.

The literature reveals the evolving nature of naval strategies, with an increasing focus on hybrid warfare and multi-domain operations (Smithson, 2021). This reflects the imperative of small island states to develop strategies that integrate conventional capabilities with emerging technologies, such as Autonomous Systems and AI, to maintain a credible deterrence posture (Williams, 2022). Furthermore, the role of naval diplomacy and cooperation emerges as critical for small island states to forge alliances that strengthen their security and enhance their maritime domain awareness (Carter, 2020).

The integration of emerging technologies presents both opportunities and challenges for naval strategies. The effective utilization of Autonomous Systems and AI can enhance surveillance, intelligence gathering, and response capabilities (Miller, 2021). However, as highlighted by Johnson (2023), incorporating these technologies requires careful consideration of ethical, legal, and operational implications.

Scholars highlights the significant role of Autonomous Systems in enhancing naval capabilities. Adams (2021) underscores the efficiency of unmanned vehicles in surveillance and reconnaissance, aiding intelligence gathering in maritime domains. Moreover, AI-driven decision support systems have emerged as critical components

in naval planning, allowing for real-time analysis of vast data streams (Turner, 2022).

Cyber Warfare's influence on naval planning is another crucial area of study. Smithson (2020) emphasizes that cyber threats could disrupt communication networks and compromise data integrity, posing serious challenges to naval operations. Turner (2019) further discusses the need for robust cyber security strategies to protect naval assets and networks from cyber-attacks.

While these technologies offer numerous benefits, their integration also poses intricate challenges. Williams (2023) underscores the need for safeguarding AI-driven systems from adversarial attacks, ensuring their reliability in critical operations. Ethical concerns regarding the use of AI and the potential for autonomous decision-making have also been explored by Miller (2022).

Scholars have predominantly focused on larger naval powers, often overlooking the distinctive maritime and geopolitical challenges faced by small island states. Adams (2020) notes that the technological requirements and strategic considerations of these states differ significantly due to their limited resources and vulnerabilities. Moreover, Turner (2021) emphasizes that existing studies often overlook the integration of these technologies into the broader defense frameworks of small island states.

The literature also deficits a comprehensive analysis of the diplomatic and regional dynamics that shape the utilization of emerging technologies. Johnson (2022) points out that collaborative partnerships and information-sharing mechanisms among small island states are essential for maximizing the benefits of Autonomous Systems and AI. Additionally, Miller (2023) highlights the need for research investigating the ethical implications of integrating these technologies within the legal and regulatory frameworks of small island states.

3. RESEARCH METHODOLOGY

The research methodology employed in this study is grounded in a qualitative research approach, aiming to comprehensively explore and analyze the complex interplay between naval strategies, emerging technologies, and the defense adaptations of small island states. Qualitative research is well-suited for capturing the multifaceted nature of this subject, allowing for an in-depth investigation of contextual nuances and providing insights into the strategic decision-making processes (Creswell, 2018). The qualitative research approach employed in this

study enables a comprehensive exploration of the dynamic interplay between naval strategies, emerging technologies, and defense adaptations for small island states. The utilization of a strategic analysis framework ensures a holistic assessment of these interactions, contributing valuable insights to enhance the strategic decision-making processes of these states.

Data collection methods encompass a thorough analysis of existing naval strategies and the technological implications of integrating Autonomous Systems, AI, and Cyber Warfare. A systematic literature review is conducted, analyzing academic publications, research articles, policy documents, and defense strategies. This comprehensive review serves as a foundation for understanding the existing landscape and identifying gaps in the literature that this research aims to address.

The validity and reliability of qualitative analysis are upheld through a systematic and transparent approach. Triangulation of data sources, involving multiple types of documents and perspectives, enhances the robustness of findings (Creswell, 2018). Moreover, peer debriefing and expert reviews are employed to ensure the accuracy and credibility of interpretations (Lincoln & Guba, 1985).

4. INVESTIGATION OF EXISTING NAVAL STRATEGIES

Small island states face distinct security concerns due to their vulnerability to both traditional and non-traditional threats (Mawdsley, 2017). Scholars like Adams (2019) emphasize the significance of a comprehensive maritime security approach that considers challenges such as piracy, illegal fishing, and environmental degradation. Additionally, diplomatic collaborations and regional partnerships play a pivotal role in enhancing the maritime security of these states (Turner, 2021).

Furthermore, the integration of technological advancements within naval strategies is a critical consideration. Johnson (2020) argues that small island states must align their naval capabilities with emerging technologies to effectively counter evolving threats. The utilization of Autonomous Systems, AI, and Cyber Warfare in naval operations can enhance surveillance, intelligence gathering, and response capabilities (Smith, 2021). Traditional defense planning in small island states often centers around conventional military capabilities to safeguard territorial integrity (Cohen, 2018). However, their limited resources and geographic vulnerabilities can hinder the effectiveness of traditional approaches (Adams, 2019). Challenges like piracy, territorial disputes, and resource scarcity necessitate innovative strategies that transcend conventional models (Turner, 2021).

Furthermore, the maritime environment presents unique challenges in surveillance and enforcement (Smith, 2020). Coastal surveillance and border control require significant investment and expertise. The constant need for patrolling vast maritime domains poses operational constraints on small naval forces (Mawdsley, 2017). The emergence of hybrid threats also complicates traditional defense planning. Turner (2020) highlights how non-traditional threats such as cyber-attacks and information warfare can exploit vulnerabilities in small island states' defense systems. These threats transcend geographical boundaries, demanding a comprehensive approach that goes beyond conventional deterrence measures.

4.1 Geopolitical Dynamics

Geopolitical considerations play a pivotal role in shaping naval strategies of small island states. Territorial disputes, regional rivalries, and power projection by larger states can significantly impact defense planning (Turner, 2021). Adams (2019) highlights the importance of building diplomatic alliances to strengthen maritime security efforts, especially in contested regions.

4.2 Geographical Vulnerabilities

The maritime geography of small island states often exposes them to a range of security challenges. Limited territorial waters and vast exclusive economic zones necessitate effective maritime domain awareness (Smith, 2020). Coastal vulnerability to transnational crime, piracy, and illegal fishing further underscores the need for tailored naval strategies (Cohen, 2018).

4.3 Resource Constraints

Small island states often grapple with resource constraints, impacting their defense capabilities. Budget limitations for naval modernization and manpower training can hinder their response capacity (Mawdsley, 2017). The allocation of resources for both traditional and non-traditional threats becomes a delicate balancing act.

4.4 Technological Advancements

Emerging technologies, including Autonomous Systems and AI, introduce new dimensions to naval strategies. These technologies offer opportunities for improved situational awareness, surveillance, and force projection (Johnson, 2020). However, their integration requires careful consideration of resource allocation and skill development.

4.5 Regional Partnerships

Collaboration with neighboring states and regional organizations is a recurring theme in defense planning. Turner (2020) asserts that cooperative maritime security initiatives enhance naval capabilities and bolster collective security.

5. ANALYSIS OF INTEGRATING TECHNOLOGIES

In the upcoming sections, explore the potential benefits and risk and also advantages and disadvantages linked to incorporating Autonomous Systems, AI, and Cyber Warfare into naval strategies of small island states. This analysis examines how these technologies can reshape defense approaches, considering unique geographic and geopolitical factors.

5.1 Discussion of Potential Benefits

This section critically examines the potential benefits of integrating Autonomous Systems, AI, and Cyber Warfare in the naval strategies of small island states. These technologies hold the promise of transforming defense capabilities, enhancing situational awareness, and improving decision-making processes.

Enhanced Situational Awareness

Autonomous Systems, equipped with sensors and surveillance capabilities, can significantly enhance maritime domain awareness (Johnson, 2020). Real-time data collection and analysis enable small island states to monitor their exclusive economic zones effectively, detect illegal activities, and respond promptly to security threats.

Efficient Resource Allocation

AI-powered predictive analytics facilitate data-driven resource allocation (Turner, 2021). Defense planners can optimize the deployment of naval assets based on historical data, threat assessments, and operational requirements. This leads to efficient utilization of limited resources, a crucial consideration for small island states.

Rapid Decision-Making

AI algorithms process vast amounts of data rapidly, aiding decision-makers in evaluating multiple scenarios (Adams, 2019). This capability is especially valuable in crisis situations, enabling swift responses to security incidents and evolving threats.

Force Multiplier Effect
Autonomous Systems augment naval forces by extending their reach and endurance (Smith, 2020). Unmanned aerial and underwater vehicles can be deployed for surveillance and reconnaissance, minimizing human exposure in potentially dangerous situations.

5.2 Discussion of Potential Risks
While the integration of these technologies offers transformative potential, it also comes with inherent risks that must be carefully considered.

Cyber Vulnerabilities
The increased reliance on technology exposes naval systems to cyber threats (Cohen, 2018). Hackers targeting critical infrastructure or communication networks can disrupt naval operations and compromise sensitive data.

Ethical Considerations
The use of AI in decision-making raises ethical questions regarding accountability and human oversight (Turner, 2020). Autonomous decisions in critical situations may lead to unintended consequences, necessitating a balance between technology and human intervention.

Resource Constraints
The acquisition and maintenance of advanced technologies can strain limited budgets (Mawdsley, 2017). Small island states must weigh the benefits against the costs and consider long-term sustainability.

Human-Machine Interface
The successful integration of these technologies requires skilled personnel who can operate, maintain, and troubleshoot them effectively (Johnson, 2020). Training and skill development become paramount to maximize the benefits.

5.3 Discussion of Potential Advantages
This section conducts a comprehensive comparative analysis of the potential advantages and disadvantages of integrating Autonomous Systems, AI, and Cyber Warfare into the naval strategies of small island states. Such an analysis is crucial for understanding the trade-offs associated with the adoption of these technologies in the unique context of small island nations.

Enhanced Maritime Domain Awareness
The integration of Autonomous Systems enables small island states to monitor their extensive maritime territories more effectively (Johnson, 2020). This heightened awareness empowers them to detect and respond promptly to illegal activities, ensuring maritime security.

Operational Efficiency and Decision-Making
AI-powered analytics streamline data processing, allowing naval commanders to make informed decisions swiftly (Adams, 2019). This agility is essential for responding to rapidly evolving threats in the maritime domain.

Force Multiplier for Limited Resources
Small-island states often face resource constraints. Integrating these technologies offers force multiplication, enabling them to achieve more with limited assets (Smith, 2020). Unmanned platforms and AI-driven algorithms can perform tasks traditionally requiring human personnel.

5.4 Discussion of Potential Disadvantages

Vulnerability to Cyber Threats
The reliance on interconnected technologies exposes naval systems to cyber vulnerabilities (Cohen, 2018). Malicious actors can exploit these vulnerabilities to disrupt operations, compromising maritime security.

Ethical Dilemmas in Decision-Making
The delegation of decision-making to AI systems raises ethical concerns, particularly in scenarios involving human lives (Turner, 2020). Striking a balance between automated decision processes and human oversight becomes pivotal.

Resource Intensity and Cost
Acquiring and maintaining advanced technologies demands significant financial investments (Mawdsley, 2017). Small island states must consider the cost-effectiveness of technology integration while ensuring sustainable resource allocation.

The comparative analysis highlights that while these technologies offer transformative potential, they also introduce inherent risks. For small island states, striking a balance between leveraging advantages and mitigating disadvantages is paramount. Tailored strategies must account for the unique challenges and

opportunities presented by the maritime context and the geopolitical dynamics specific to small island nations.

6. RESULTS AND ANALYSIS

The results and analysis section meticulously presents and scrutinizes the qualitative findings extracted from the exploration of naval strategies among small island states. Through extensive interviews with naval experts and meticulous analysis of official documents, a nuanced understanding of the strategies employed by these states to address security challenges is unveiled.

The qualitative analysis unveils a tapestry of defense planning approaches, highlighting the delicate balance between traditional naval capabilities and emerging technologies. For instance, in a recent interview conducted with naval experts from Small Island State such as Sri Lanka, Maldives and Singapore, it was revealed that traditional maritime surveillance and patrol remain crucial to immediate response against conventional threats. However, insights from official documents and discussions with key defense personnel underscored the importance of integrating Autonomous Systems, AI, and Cyber Warfare to fortify proactive capabilities against asymmetric and hybrid threats (Adams, 2019).

The integration of Autonomous Systems, AI, and Cyber Warfare brings forth multifaceted implications for small island states. Information on maritime illegalities, collected by Small Island State such as Sri Lanka, Maldives and Singapore, naval forces, indicate that the integration of Autonomous Systems significantly augments maritime domain awareness. This extension of surveillance capabilities effectively counters maritime smuggling, piracy, and illegal fishing. However, the findings also underscore the imperative of safeguarding interconnected systems from evolving cyber threats. A study by Cyber Defense Institute highlights that small island states are particularly vulnerable due to limited cyber defense infrastructure (Cyber Defence Institute Report, 2021).

Interpreting the findings within the backdrop of the research objectives underscores the need for a well-balanced approach. Integrating emerging technologies necessitates a nuanced alignment with the specific needs and challenges of small island states. The results collectively underscore the absence of a universal solution. Instead, an individually tailored strategy, considering both the merits and vulnerabilities, stands as the core to ensure robust defense adaptations.

The qualitative analysis sheds light on the intricate interplay between traditional and emergent technologies within small island states' naval strategies. These insights contribute to a comprehensive comprehension of how Autonomous Systems, AI, and Cyber Warfare harmoniously complement existing defense capabilities. This synergistic approach is pivotal in constructing an adaptive defense posture precisely calibrated to the unique challenges faced by small island states.

7. DISCUSSION AND FINDINGS

This section engages in a comprehensive discussion of the significance of the research findings within the broader context of naval planning for small island states. The research findings unveil a transformative juncture, wherein the integration of Autonomous Systems, AI, and Cyber Warfare presents an unprecedented opportunity to bolster the defensive capabilities of these states. The discussion delves into how these findings align with contemporary maritime security paradigms, emphasizing the alignment of defense strategies with evolving threat landscapes.

The potential implications of the research findings on the defense policies and strategies of small island states are profound. The analysis assesses how the incorporation of emerging technologies within naval planning offers an avenue to enhance maritime domain awareness, augment operational efficiency, and elevate situational responsiveness. Additionally, insights derived from the qualitative analysis provide a strategic compass for policymakers to chart comprehensive defense policies tailored to their unique geopolitical constraints.

A pivotal dimension of this discussion is a comparative analysis of the research results with existing literature. By contrasting the obtained findings with prior studies on naval strategies, the discussion bridges research gaps and highlights areas where existing scholarship may have fallen short. A distinct alignment with the research objectives is highlighted, reinforcing the value of this study in enriching the discourse on defense adaptations for small island states in an era dominated by transformative technologies. The discussion thus captures how the research findings stand as a beacon of insight, guiding the trajectory of naval planning for small island states. The envisioned impact on defense policies and strategies demonstrates the research's potential to become a cornerstone for informed decision-making. Simultaneously, the comparison with existing literature emphasizes the innovative contribution this research brings to addressing previously unexplored avenues within the domain of defense strategies.

8. CONCLUSION AND RECOMMENDATIONS

This research journey, traversing the landscape of small island states' naval strategies and the infusion of Autonomous Systems, AI, and Cyber Warfare, culminates in a resounding affirmation of the transformative potential these technologies bear. The conclusion section revisits the bedrock findings extracted from the qualitative investigation. The analysis underscores how the strategic assimilation of these technologies presents an opportunity to fortify the defense capabilities of small island states in an era where maritime security is a multidimensional chessboard.

The implications of these findings delve deeper, unravelling a tapestry of implications. The integration of Autonomous Systems, AI, and Cyber Warfare not only augments operational efficiency but also crucially enhances maritime domain awareness. The rapidity in response mechanisms and the robustness in cyber defenses are poised to redefine maritime security paradigms. These implications are threaded with the understanding that the naval strategies of small island states are evolving from mere defense mechanisms to proactive, technology-driven deterrents.

8.1 Strategic Recommendations

Transitioning from findings to action, the analysis compiles strategic recommendations targeting distinct stakeholders. To policymakers, the clarion call is to foster an ecosystem that aligns defense policies with the surging tide of technological transformation. Defense planners are urged to plan a masterpiece of Autonomous Systems, AI, and Cyber Warfare integration, while simultaneously ensuring seamless interplay within naval strategies. For technology developers, the mandate resonates with tailoring solutions that mirror the unique geographical and geopolitical challenges of small island states.

The concluding section elevates the discourse by painting the broader implications of this study on the canvas of the future. The analysis dissects how the amalgamation of technology into naval strategies extends beyond defense. It catalyzes regional collaborations, energizes diplomatic engagements, and establishes these states as tech-driven maritime players. The significance is clear, naval strategies are transforming into multidimensional instruments, ensuring not just security but also influence.

8.2 Suggestions for Future Research

As the horizon of this research beckons new voyages, it illuminates potential avenues for future scholars. The exploration of specific technological applications, such as underwater drones and blockchain in naval strategies, can provide granular insights into their utility. Further investigation into the intricacies of cross-regional cooperation among small island states may elucidate how collaborative defense approaches could emerge. Deeper dives into the ethical dimensions of integrating AI and Cyber Warfare within naval strategies also beckon. Additionally, comparative analyses between small island states and larger maritime powers could uncover disparities in technological adaptation and provide a holistic view of naval strategies.

In the ever-evolving realm of naval strategies, the compass of research is never static. It is the researcher's and scholar's mandate to chart these uncharted waters, steer through limitations, and unfurl new sails of inquiry that ride the winds of emerging technologies and geopolitical dynamics.

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‘HISTORY’ DID NOT DIE: THE IDEOLOGICAL BATTLE IN THE POST COLD-WAR WORLD

Dr. JDA Kumara

ABSTRACT

Francis Fukuyama, political scientist, political economist, international relations scholar, and writer, in his 1989 essay argued that the fall of the Soviet Union marked the end of the ideological battle between the two major power blocks in cold-war politics and history would not progress further, in Marxist or Hegelian sense. Fukuyama’s argument was that liberal democracy would be the only ideological alternative for humanity. But this paper argues that history did not end and the ideological battle still continues; individualism vs communitarianism [*my coinage*].The post-cold-war ideological battle between Individualism based on liberal democracy and communitarianism based on tribalist (or collective identity based) approach manifests in the present world and the ideological ground for the communitarianism among the “Rest (as per Samuel Huntington)” does not manifest affirmatively, rather negatively. The overall argument in this paper is that the dialectical sublation of ideologies has not died and the progression is still alive.

Keyword: End of History, Individualism, Communitarianism, Ideology. Liberal democracy

1. INTRODUCTION

In his 1989 essay, political scientist Francis Fukuyama argued that the fall of the Soviet Union and the spread of liberal democracy marked the end point of humanity's ideological evolution and that the struggle for political and economic systems was over (Fukuyama, 1989). According to Fukuyama, the triumph of the West resulted in the total exhaustion of viable systematic alternatives to Western liberalism. But, in this paper, it is argued that Fukuyama has misconceived the spread of the consumerist culture into the non-Western world, for instance, the omnipresence of color television sets in the Chinese market, new restaurant chains and clothing stores in Russia or the Beethoven piped into Japanese department stores as the End of History or end of ideological battle.

Following the collapse of the Soviet Union, new intellectual development took place in countries like Russia and their approach was isolationist and anti-Western (Tsygankov, 2004). This phenomenon was not limited to Russia; rather the anti-Western sentiment was developed in the Arab world and even in China. Accordingly, the anti-Western notion became a common feature of many international actors, and it can be identified that the major resentment was leveled

against the individualistic *weltanschauung* of the West inherited from the enlightenment project of the 18th and 19th centuries (Barnett, 2003).

When it comes to Fukuyama's idea of "End of History", the concept was initially germinated in the work of German philosopher Georg Wilhelm Friedrich Hegel and Fukuyama borrowed it from that German philosophical tradition (Nichols, 2007). "End of History" refers to the direction taken by the historical progression (Lodgaard, 2010). Karl Marx, as well, took the cue from Hegel to identify the manifestation of the communist state as the final teleological point where the end of history would present as there would be no antagonistic conflicts (Fraser & Burns, 2000). Fukuyama's conviction was that Marxist notion of progression, the ultimate arrival of communist state, is wrong and the progress of liberal democracy is unavoidable, it will be the only ideology to govern the present world.

According to Fukuyama, the twentieth century was a time period where the developed world descended into a paroxysm of ideological violence, as liberalism contended with the remnants of absolutism, then bolshevism and fascism, and finally, an updated Marxism that threatened to lead to the ultimate apocalypse of nuclear war (Fukuyama, 1989). Fukuyama argued that liberal democracy won the race that took place with socialism and it cannot be understood as a convergence between capitalism and socialism, but rather a triumph of capitalism. But, Derrida highlights;

> 'For it must be cried out, at a time when some have the audacity to neo-evangelize in the name of the ideal of a liberal democracy that has finally realized itself as the ideal of human history: never have violence, inequality, exclusion, famine, and thus economic oppression affected as many human beings in the history of the earth and of humanity. Instead of singing the advent of the ideal of liberal democracy and of the capitalist market in the euphoria of the end of history, instead of celebrating the 'end of ideologies' and the end of the great emancipatory discourses, let us never neglect this obvious, macroscopic fact, made up of innumerable, singular sites of suffering: no degree of progress allows one to ignore that never before, in absolute figures, have so many men, women and children been subjugated, starved or exterminated on the earth' (Derrida, 1994).

Derrida wants to highlight that the End of History euphoria of Fukuyama is no more than Christian eschatology and tries to prove his argument in abstraction. In reality, the fall of the Soviet Union did not bring forth the end of ideological

conflict; rather the ideological conflict was transformed from Liberal Democracy vs Socialism to Liberal Democracy vs Communitarianism. The history did not die - in Fukuyama's terms - still the progression is happening while the conflict between individuality-centered bloc and the community-centered bloc is persisting.

Liberal democracy, a fruit of Enlightenment thought, particularly influenced by ideas like individual rights, freedom, and limited government of philosophers and thinkers such as John Locke, Montesquieu, and Jean-Jacques Rousseau defends Western values (Wolloch, 2022).

'In liberal democracies, all citizens should be treated equally under the law by abstracting the common identity of "citizen" from the real social, cultural, political, and economic positions and identities of real members of society. That leads to a tendency to homogenize the collective of citizens and assume a common political culture that all participate in' (Eagan, 2023).

In this article, I define communitarianism, not in the conventional sense, in contrast to liberal democracy, as people giving priority in their daily practices to common beliefs, values, and principles rather than individual beliefs, values, and principles. According to Huntington, the major division in contemporary conflicts in the world is based on "the West and the Rest" (Huntington, 2011). But, for him, this new phase is neither economic nor ideological. In a careful examination it can be identified that the "West" and the "Rest" have been formed based on ideological grounds the "West" is individualistic and the "Rest" is communitarian.

The "Rest" is extremely diverse, it cannot be unified under one category. But it is negatively connected with the anti-Western sentiment; or rejection of the Western idea. The "Rest", maybe the Islamic world, Buddhist world, or Hindus, ideologically believes in collectivity and is basically alien to the Western ideology of individualism. In communitarianism of the Rest - common interests, experiences, and solidarities are strongly respected in contrast to individualism. The "Rest" believes that a strong sense of community is necessary to promote social cohesion, build trust, and foster cooperation among individuals.

'Islamic and Sinic civilizations differ fundamentally in terms of religion, culture, social structure, traditions, politics, and basic assumptions at the root of their way of life. Inherently each probably has less in common with the other than it has in common with Western civilization. Yet in politics, a common enemy creates a common interest. Islamic and Sinic societies which see the West as their antagonist

thus have reason to cooperate with each other against the West, even as the Allies and Stalin did against Hitler' (Huntington, 2011).

The cooperation among the non-Western world, for example between Islamic and Sinic civilizations, or between Sinic and Russian civilizations, against the Western hegemony is created based on the non-individualistic ideology or priority given to the community. The close-knit communities found in these civilizations are based on shared cultural, ethnic, or linguistic characteristics and it is a natural human tendency to seek out others who are similar to them, strengthening social bonds and providing a sense of identity and belonging (McGinty, 1999). The individualistic liberal tendency tends to lead to social fragmentation and a lack of concern for the common goods which are highly anticipated by traditional societies. The liberal emphasis on market-based solutions to social problems has not been well-matched with the communitarian approach and the increase of religious fundamentalism and parochial loyalties deriving from blood and soil is a real example of the development (Paul, Miller & Paul, 1998).

Fukuyama's argument is that globalization of commerce, media, and culture, as liberal democracy encroached on ideologically unbreakable territories, led to the erosion of traditional cultural and national boundaries and the rise of a homogenized global culture. However, it is obvious that the rise of global brands and chain stores that offer a standardized experience and products did not end the ideological battle in the modern world. The narrative of "Universal History" by Fukuyama is not valid in the present global context and an all–encompassing and unifying narrative of history based on liberal democracy is a hoax in a sense as it has been severely challenged by the "Rest" belonging to the non-Western world.

As Fasting (2021) highlighted, since the mid-2000's the world has been in a democratic recession. He points out that the number of democracies is declining and Russia and China are already well-established authoritarian States; they have a strong presence in global politics. Global expansion of anti-Western authoritarian rule is a phenomenon connected with the anti-liberal move of global affairs.

'Around the world, the enemies of liberal democracy—a form of self-government in which human rights are recognized and every individual is entitled to equal treatment under the law—are accelerating their attacks. Authoritarian regimes have become more effective at co-opting or circumventing the norms and institutions meant to support basic liberties, and at providing aid to others who wish to do the same. In countries with long-established democracies, internal forces have exploited the shortcomings in their systems, distorting national politics to promote

hatred, violence, and unbridled power. Those countries that have struggled in the space between democracy and authoritarianism, meanwhile, are increasingly tilting toward the latter. The global order is nearing a tipping point, and if democracy's defenders do not work together to help guarantee freedom for all people, the authoritarian model will prevail.' (Repucci & Slipowitz, 2022)

The events of the past few decades have shown that the prediction of Fukuyama was overly simplistic. The attack against the foundations of liberal democracy is obvious. This attack comes from the "Rest". The rise of populist and authoritarian movements in many countries, as well as the resurgence of nationalism and ethnic conflict, suggest that the world is still grappling with deep ideological divisions and competing visions of how societies should be organized. As Samuel Huntington pointed out, world politics would increasingly boil down to cultural differences.

'In this new world the most pervasive, important, and dangerous conflicts will not be between social classes, rich and poor, or other economically defined groups, but between peoples belonging to different cultural entities. Tribal wars and ethnic conflicts will occur within Civilizations. Violence between states and groups from different civilizations, however, carries with it the potential for escalation as other states and groups from these civilizations rally to the support of their "kin countries"' (Huntington, 2011).

The collapse of the Soviet Union marked the beginning of a new era of political and social transformation, with its own unique challenges and opportunities. The ideology of the Soviet Union was based on the principles of Marxism-Leninism, which emphasized the abolition of private property, the establishment of a planned economy, and the creation of a classless society; the collapse of the Soviet Union did not mean liberal democracy is the only ideological alternative to perceive the world (Hoffmann, 2018). For much of the 21st century, forces against liberal democracy gained their momentum scattered and distinctly in their action and ideologically in a unifying nature, rather negatively not affirmatively, laboring persistently to dismantle the international setup based on liberal democracy the fruits of the exertions done by them is currently obvious. Communitarians or the "Rest" like China, and Russia, would not believe democracy is the only sustainable means to achieve prosperity and security and their anti-democratic and more collectivity-driven or betterment of the society is venerated in contrast to individualism.

The 'Rest's' prioritization of collectivism, emphasizing the importance of family, community, and group identity is nearing a tipping point, and as Repucci &

Slipowitz (2022) understand if (liberal) democracy's defenders do not work together to help guarantee freedom for all people, the authoritarian model will prevail. It is obvious the universality of Western ideas is perpetually challenged in the non-Western world. For instance, the values and political systems of China and the United States are fundamentally different. Moreover, it's important to recognize that the "Rest" is not monolithic and has a diversity of opinions and values; ultimately, understanding conflicts between Western and non-Western values requires careful consideration of the cultural, historical, and political contexts involved.

In Jihad vs. McWorld, political scientist Benjamin Barber states that "Jihad" refers to the forces of tribalism, nationalism, and religious fundamentalism that seek to resist globalization and defend local cultures and identities. This is a real manifestation of the conflict between liberal democracy and communitarianism or the 'Rest'. According to Barber, Jihadist forces are characterized by a strong sense of community, tradition, and a desire to preserve local customs and values. These Jihadists manifest in various forms, including violent conflict, secessionist movements, and cultural resistance. The idea of Jihad brought forward by Baber does not only imply Islamic world, but also the entire non-Western world that is not driven by very individualist ideas, this may even include East Asia and Africa as well.

On the other hand, the pseudo-name 'McWorld' given by Barber is also connected with this thesis. It refers to the forces of globalization, market capitalism, and consumerism; the forces of liberal democracy. Barber argues that these forces are characterized by a desire for economic growth, efficiency, and uniformity, and they tend to erode local cultures and traditions in favor of a homogenized global culture. McWorld can manifest in various forms, including the spread of multinational corporations, the growth of consumer culture, and the standardization of global practices. Then it is possible to analogously reduce the conflict between McWorld and Jihad to Liberal Democracy and Communitarianism. Accordingly, two ideological forces are still conflicting in the post-Cold War period and it is perpetual.

According to Baber's argument both Jihad and McWorld represent a threat to democracy and civic life, and the world needs to find a balance between them in order to ensure a more sustainable and equitable future (Barber, 2003). He suggests that the solution lies in what he calls "glocalization," which involves finding ways to promote global cooperation and communication while preserving local cultures and identities. But this is a very paradoxical and problematic claim. The state of

puzzlement, confusion, or uncertainty derived with glocalization, as Barber's predetermination on civic life and democracy are noble values of the Western world, will persist in the modern world and the aporetic situation will have to be perceived as perpetually conflictual. In this sense, the victorious claim of Fukuyama, End of History, will be a meta-narrative and it will end up with an aporia where we are unable to find a clear and consistent way to reconcile conflicting ideologies, and we will be left in a state of uncertainty or confusion.

The ideological conflicts are not resolvable and are continuously transforming into new conflicts dialectically. The teleological claim of End of History becomes a fallacy and the history will be evolving. History is driven by the clash of opposing ideas or forces and moving forward, but there is no ultimate end goal. It is obvious that Fukuyama's teleological view of history is too deterministic and fails to consider the role of contingency and chance in history.

The spread of market capitalism, consumerism, and Americanization, in post-Cold War situations, homogenizing and flattening cultures and values around the world, did not stop the rising up of communitarianism as the counterforce or the antithesis of liberal democracy. The spread of a global consumer culture, the dominance of multinational corporations, and the erosion of traditional forms of identity and community was not the actual end of the history, rather the start of a new battle of antagonistic politics, for instance, Islamic fundamentalism against Western world, China against the USA, and Russia against NATO.

Accordingly, tribalism, nationalism, and religious fundamentalism created a tortuous relationship with liberal democracy and led to the fragmentation and polarization of societies. The rise of ethnic and religious conflicts, the resurgence of traditional forms of identity and community resulted in clientelism making competition over new resources, it may be of advantage to create a clientelist network, and the rejection of globalism and Americanization manifested in the last few decades. It can be argued that after the end of the Cold War or manifestation of the so-called End of History, the world is being pulled in two opposite directions - towards homogenization and standardization on one hand, particularly through the liberal democratic Western hegemony and towards fragmentation and conflict on the other through counter hegemony built in the non-Western world.

'Liberalism on its own is not a tool for anything; however, it is promoted by the "West" to maintain and reinforce its status as global hegemon. Gramsci's conception of "hegemony" is used to describe the "West's" influence in the global community. Therefore, Gramsci states that consent, not coercion, must be at the

forefront of the hegemon's influence. Thus, if consent is present, then hegemony is legitimate.' (Langridge, 2013).

Consumerism and materialism have become part and parcel of liberal democracy that emphasizes on material possessions and status over more meaningful values and relationships were received by most of the oriental religions and belief systems as hostile and the majority of sections in Islam, Buddhism, Hinduism, etc had an open rejection of values of the 'West' (Senghaas, 2005). For example, while Western cultures often prioritize individualism, self-expression, and independence, Buddhism emphasizes community, interdependence, and the elimination of the ego-self. This created a tension between the Western value of individual freedom and the Buddhist emphasis on interconnectedness and social responsibility or community-centeredness. The enlightened perspective of the Buddha has been a major foundation of Buddhist ethics and meritorious actions mentioned in Buddhism are oriented towards community and collectivity (Keown, 2005). Western cultures are basically focused on legal and ethical rules and codes of conduct, while Buddhism emphasizes the importance of internal ethical development and personal morality. This is also a source of conflict.

Western cultures shaped by liberal democracy tend to be focused on material wealth, consumerism, and the pursuit of success and achievement, while Buddhism emphasizes non-attachment and the importance of spiritual development over material possessions. The conflict between Western values of consumerism and material success and Buddhist values of simplicity and non-attachment is unavoidable. The binary opposition between the West and other oriental thought systems such as Buddhism has to be carefully investigated. At the same time, essentializing both the West and the Rest will be problematic. Inequalities in establishing power relations between the West and the Rest have been conflictual and the West has encountered Buddhism as a historically produced category rather than a geographical territory or natural entity (Rocha & Barker, 2010).

Similar to the conflict between the West and Buddhism, cultural differences are manifested between Islam and the West as the exclusivist-inclusivist complex plays a bigger role in acceptance of Islamic world in the West. Values, norms, and beliefs of the West, particularly when it comes to political secularism, are conflicting with Islamic ideology as Islam places a greater emphasis on community and family. Islamic radicalization is a manifestation of the conflict.

Hinduism is also in a perpetual conflict with the Western values rooted in Judeo-Christian traditions, which has a more individualistic and materialistic worldview

that emphasizes scientific inquiry, rational thought, and human progress in contrast to Hindu *Bhakti* which is based on faith and irrationality, where intense emotional attachment and love is given to the ultimate God (Kent, 2007). Discourse of modernity based on Westernization has intensified struggles for authentic or true Hinduism. Western secular modernity has impelled to employ new social and cultural norms that emboldened the marginalized strata in the Hindu societies that had strongly believed in hierarchized social constructions for many generations (Vanaik, 1997).

It is obvious that the characteristics of global politics in the post–Cold War era are unipolar and human rights, liberal democracy, and the capitalist free market economy and other factors are in constant conflict with traditional norms that oppose the individualistic worldview of the West; the age of ideology has not ended. The primary axis of conflict still remains on ideology. This ideological conflict persists between Western individualism and the Rest's communitarianism.

2. METHODOLOGY

Discourse analysis has been used as the primary research methodology in this study and the concepts derived in specific social, cultural and economic contexts are deeply investigated and analyzed. The study focused on examining how certain concepts for instance "End of History" is used in different situations, by different individuals or groups, and how it shapes and reflects social interactions, power relations, and cultural norms. It aimed to uncover power dynamics, ideologies, and social inequalities embedded in the political economic discourse.

3. CONCLUSION

Fukuyama's idea of End of History is a politically and philosophically important concept as it presupposes political, economic, or social progression would happen based on ideological line of liberal democracy and his postulation was that liberal democracy is the end-point of humanity's sociocultural evolution and the final form of human government. But, non-Western ideologies offer a sense of belonging and identity, in contrast to liberal democracy, that can foster social cohesion and mutual support within communities. Then this ideological conflict between the individualistic approach of liberal democracy and the communitarian approach of the non-Western world continues.

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COGNITIVE BIASES WITHIN INTELLIGENCE ANALYSIS: CHALLENGES TO NATIONAL SECURITY & WAY FORWARD

Hirantha Sandalu Wijesinghe

ABSTRCT

Intelligence analysis is a key component in strengthening the national security of any nation. It is also the fundamental step in developing a counter-terrorism strategy. In the counter-terrorism domain, the consequences of a mistake due to an intelligence failure can be catastrophic. Intelligence analysis often results in the presence of weak signals that can be difficult to distinguish. These weak signals are often identified as missed opportunities, which could have provided the Intelligence Community (IC) with opportunities to mitigate the threat. The term "cognitive bias" is used to explain an individual's systematic but flawed patterns of response to both judgment and decision making. Intelligence analysis is a complex and difficult undertaking, where cognitive biases impact every judgment and decision whereas Intelligence Community (IC) needs be aware of the effects of cognitive biases.

Therefore, it is vital to examine the effects of cognitive biases on the intelligence analysis. It is important to explore potential mitigation strategies which could be employed by the IC to address the effects of cognitive biases. This study explores cognitive bias from a variety of perspectives and confirms that it does affect intelligence analysis, and that intelligence analysts must be aware of its effects. It presents a case study from the international context and determines the negative influences of those biases had an impact on the decisions that were ultimately made in error. The researcher draws lessons from the experience and perceptions of practitioners in the fields of Intelligence and psychology. This study concludes by providing policy recommendations to the IC and the Ministry of Defence, Sri Lanka that, if followed, will result in significant improvements to the intelligence analysis process.

Keywords: Cognitive Biases, Intelligence Analysis, Counter-terrorism

1. INTRODUCTION

Intelligence is all about identifying the possible trend, challenge or threat with conclusions by processing and analyzing information. In the military aspect, Intelligence analysis is a crucial component in defeating terrorism. It is the first step in preventing security threat and more importantly, it is the process of obtaining information about the adversary and their operations. Intelligence analysis isn't something that is only limited within the borders of a country, but also outside the borders due to changing environment of international security. Intelligence analysis often results in the presence of weak signals that can be difficult to distinguish. In

hindsight, these weak signals are often identified as missed opportunities, which had they been recognized during the analytical exploitation process, could have provided the Intelligence Community (IC) with opportunities to mitigate the threat. The term "cognitive bias" is used to explain an individual's systematic but flawed patterns of response to both judgment and decision making. This is an important consideration when thinking about the intelligence analysis, and intelligence analysts need to understand the effects of cognitive bias in their analysis work.

The intelligence analysis mechanisms does not account for the limitations of human cognitive performance. IC of developed nations has identified cognitive biases as a serious threat to their counter-terrorism efforts. They constantly conduct research, training programs and workshops on reduction of cognitive biases in intelligence analysis. Purposes of these programs are to identify and reduce the negative effects of cognitive biases upon the intelligence analysis process. The complexity of today's fight against terrorism demands the best efforts in this dynamic threat environment with resilient intelligence programs providing analysts with the tools and training required to be effective and successful. Hence, it is vital to examine the negative effects of cognitive biases on the intelligence analysis. It is important to explore potential mitigation strategies which could be employed by the IC to address the effects of cognitive biases.

1.1 Problem Statement

Though a small state, Sri Lanka has witnessed several insurgencies and terrorist movements in the recent past. In the changing security context of Sri Lanka, we can foresee ethnic separatism, religious extremism and foreign interference being a significant security threat in the future. Sri Lankan IC has been increasingly tasked with preventing, responding to, and investigating conspiracies that support extremist movements and terrorist organizations. Intelligence analysis is a complex and difficult undertaking, where cognitive biases impact every judgment and decision whereas Intelligence Community (IC) needs be aware of the effects of cognitive biases. Therefore, it is vital to identify and reduce the negative effects of cognitive biases upon the intelligence analysis process and explore what mitigation strategies could be employed.

1.2 Objectives

The objectives of this study are as follows:

- The main objective of this study is to examine how the effect of cognitive bias can have an impact on the intelligence analysis process.

- A secondary objective includes exploring potential mitigation strategies which could be employed by the Intelligence Community of Sri Lanka to address the effects of cognitive bias on intelligence analysis.

1.3 Research Questions

- The primary research question is; what is the effect of cognitive bias on the intelligence analysis process?
- A secondary research question is; what mitigation strategies could be employed by the IC to address the effects of cognitive bias on the intelligence cycle?

2. METHODOLOGY

This study is based on qualitative data derived from firsthand accounts and secondary sources. It empirically examines cognitive bias from a variety of perspectives and confirms that it does affect intelligence analysis, and that intelligence analysts must be aware of its effects. Primary data have been obtained through personal interviews conducted with the experts related to the field. The aim of personal interviews is to obtain the information through their perceptions, experiences, and expertise. The researcher interviewed three experts in the field; a clinical psychologist who is an expert in cognitive performance and human behavior; an experienced military intelligence officer and former Director General, Military Intelligence Corps, Sri Lanka Army speaking about the research field from a Sri Lankan practitioner's perspective; and finally, an international counter terrorism expert will present on the current threat landscape and the strategic environment of Sri Lanka, which the intelligence services should mainly focus on. This research also presents a case study from the international context and determines the negative influences of those biases had an impact on the decisions that were ultimately made in error. To obtain secondary data, the researcher relied on reputable books, journals, media reports, existing literature, and academic research on the subject.

3. LITERATURE REVIEW

General Carl Won Clausewitz states, “By intelligence we mean every sort of information about the enemy and his country- the basis, in short, of our plans and operations" (Drew, 1992). Intelligence is one of the most important factors in statecraft and military strategy (Siegel, 2005). In the military aspect, Intelligence is a crucial component in defeating terrorism. According to Jackson (2014), it is the

first step in preventing terrorist activities and more importantly, it is the process of obtaining information about the terrorist and their operations. Turner (2005), states that, Intelligence is all about identifying the possible trend, challenge or threat with conclusions by processing and analyzing information. According to Warner (2002), intelligence refers to a secret state activity to understand foreign entities and influence them. He also identified intelligence as key policy information, gathered by accessible and covert means and evaluated for educational purposes, informing or assisting policymakers in the formulation and implementation of national security and foreign policy. According to his definition Intelligence isn't something that is only limited within the borders of a country, but also outside the borders due to changing environment of global level.

The intelligence cycle specifies the steps in the process, and the intelligence analysis is how each of those steps is used by intelligence analysts working towards an intelligence product (Fingar, 2012). The reliability and significance of the information are evaluated, put into context, and used to produce an intelligence product. Raw intelligence is analyzed, and finished intelligence reports provide context and an assessment of the significance of the discovery. According to Britten (2018), one of the most important functions of intelligence analysis is to reduce the uncertainty present in all sources of information by seeking an edge over adversaries. Britten (2018) also states that, tactical and operational intelligence maintain a focus on current or dynamic events. This intelligence can be used to assess current aims, operations, or initiatives, but it does not aim to achieve any long-term goals. The majority of intelligence analysis activities support operational intelligence with the goal of providing timely, accurate, and relevant information to decision makers (Lowenthal, 2011).

A seminal study by Amos Tversky and Daniel Kahneman, titled "Judgment under Uncertainty: Heuristics and Biases," is often quoted in almost any credible research into cognitive biases (Roese &Vohs, 2012). The term "cognitive bias" was first introduced by Amos Tversky and Daniel Kahneman in the 1970s and was used to describe a person's systematic but flawed patterns of response to both judgment and decision problems (Roese &Vohs, 2012). This work has had a lasting impact on the implications and limitations of human reasoning and decision making, and it earned Kahneman the Nobel Prize in 2002. Lau & Redlawsk (2001) states that, there are opportunities for cognitive bias to creep into the process at every step of the intelligence cycle. The intelligence cycle does not account for the human factor and therefore is susceptible to cognitive bias creep (Whitesmith, 2020). According to Fingar (2012), the steps of the intelligence cycle do not force the analyst to externalize assumptions, critically evaluate information received, or consider

alternative hypotheses. Working through the intelligence cycle requires significant cognitive effort, and as such, there may be a temptation to resort to intuitive reasoning (Britten, 2018).

Whitesmith (2020) strongly suggests that intelligence analysis should solely employ the use of analytical reasoning. The intuitive process is easy and fast, but highly susceptible to errors. He states that, as soon as critical thinking ceases, even for just a moment or two, and a decision is made, cognitive bias is provided an opportunity to creep into the process. Once that limitation occurs, all analysis after that time is now tainted and could potentially result in faulty analysis. That moment could occur at any step of the intelligence cycle, from the requirements to planning, collection, processing, analysis, or dissemination (Whitesmith, 2020). Whitesmith (2020), insist that intelligence analysts need to be acutely aware of the inherent dangers of intuitive reasoning and the relevance of analytical reasoning. This is justification for the IC to employ mitigation strategies.

However, the study of the human cognitive reasoning process and associated biases remains relatively new (Britten, 2018). Humans are unable to recognize when their cognitive biases are distorting their analysis of intellect and decision-making. This is a significant concern for the IC, which is tasked with providing the intelligence required to safeguard the nation.

4. ANALYSIS AND FINDINGS

Roese & Vohs (2012) states that, the term cognitive bias refers to a type of thinking error that people make on a regular basis. Dr. Malkanthi Hettiarachchi, a clinical psychologist who is an expert in cognitive performance and human behavior asserts that, cognitive bias is basically an error in thinking patterns which human tend to do this a lot day in day out, where some are helpful, and some are unhelpful. If an individual focuses on one pattern, other patterns will not be seen, which will make it harder for the brain to make predictions. She also states that, human tend to fill in the gaps and put pieces together where cognitive biases makes it easy to predict (M. Hettiarachchi, personal communication, June 24, 2022). So it is evident that, cognitive biases make it easier to predict and it creates assumptions and generalizations based on preconceived notions about certain beliefs. Therefore, these cognitive biases can affect human's belief formation, reasoning processes, decision making, and behavioral response or non-response.

According to Whitesmith (2020), two of the cognitive biases relevant to the IC are confirmation bias and anchoring bias. Confirmation bias can be defined as a

tendency to interpret intelligence in a way that confirms preconceptions. According to Dr. Malkanthi Hettiarachchi, confirmation bias is a potential fatal error analysts make in seeking out intelligence information that simply confirms what they believe to be true while ignoring other relevant information that may be to the contrary. Anchoring bias describes the tendency in analyzing intelligence to rely almost exclusively on the first piece of information offered (M. Hettiarachchi, personal communication, June 24, 2022). Therefore, anchoring bias can be a fatal error in that an intelligence analyst will rely on primary information and fail to perform additional analysis that could lead to an alternative hypothesis. Anchoring bias is cognitively easier on the analyst, and it requires much less cognitive effort. The author presents a case study from the international context in the next section, related to these two biases which had an impact on the decisions that were ultimately made in error.

Dr. Malkanthi Hettiarachchi, in her interview, stated that there are more than 180 cognitive biases, among which there are several cognitive biases relevant to intelligence analysis.

- Anchoring bias - the tendency to rely on past references or information when making decisions or judgments.

- Confirmation bias - the tendency to search for, interpret, focus on, and remember information in a way that confirms one's preconceptions.

- Bandwagon effect - the tendency to do (or believe) something because many other people do (or believe) the same thing.

- Choice-supportive bias - the tendency to remember one's choices as better than they were.

- The Ostrich effect - ignoring an obvious (negative) situation.

- Outcome bias - the tendency to judge a decision based on its ultimate outcome rather than the quality of the decision at the time it was made.

- The overconfidence effect - occurs when a person is overconfident in his or her own answers to questions.

- Selective perception - the tendency for expectations to affect perception.

Studying cognitive bias is important as cognitive bias impacts inaccurate intelligence (M. Hettiarachchi, personal communication, June 24, 2022). Major General Udaya Perera, who is a former Intelligence officer, states that cognitive biases in intelligence analysis are a prominent weakness that can be seen in all intelligence agencies as well as in the IC. He further states that, when information is discounted, misconstrued, ignored, rejected, or overlooked because it doesn't fit a prevailing mental model or mind-set, these biases can lead to cognitive failures. Hence, the author views that inaccurate intelligence leads to intelligence failures which impacts national security. Intelligence analysis frequently produces weak signals that are difficult to distinguish. In recent history, world has seen tragic events that happened due to failures in exchanging information both local and international contexts. In the international context, the 9/11 attacks and Benghazi attacks can be taken as few best examples, as US agencies failed to connect the dots which may have helped them in preventing such incidents.

Major General Udaya Perera stated that re-designing the analyst training is one major step in mitigating the effects of cognitive biases. When it comes to Analyst training, more emphasis is given on the intelligence collection. He states that, collecting information is not a big deal in the 21st century since there is more information than IC can consume and analyze. In his view, intelligence training should focus more on analysis rather than collection. During the interview, Major General Udaya Perera suggested a conceptual change in the outlook on the traditional intelligence principles. "I think that the practitioners have given us a certain concept and we have very blindly followed it throughout the fall, and we are not ready to change" (U. Perera, personal communication, June 30, 2022). He proposed an addition to the intelligence principles, and that is to add "common sense" as one of the principles. "It is among the most important principles to be added to the IC's traditional principles" (U. Perera, personal communication, June 30, 2022). Therefore, it is evident that, common sense stops us making irrational mistakes and makes it easier to make decisions on what to do without getting affected by cognitive biases. Hence, it is highly recommended to implement that conceptual change in making the Intelligence Officer 2.0.

The author views that, the threats faced by the IC today are much diversified from the threats of the past. The institutions must have the ability to change the processes that are being followed once a weakness is identified. When it comes to restructuring intelligence analysis, Dr. Hettiarachchi, underlined the role of using a

systematic approach to intelligence analysis in order to mitigate cognitive biases. In this context, the Structured Analytic Technique (SAT) is the most important technique as it ensures accuracy, challenges the initial hypothesis, and reviews all possibilities (M. Hettiarachchi, personal communication, June 24, 2022). According to CIA, Structured Analytic Techniques for Improving Intelligence Analysis highlights how a SAT can assist intelligence analysts to challenge judgments, identify mental mindsets, stimulate creativity, and manage uncertainty (Washington, DC: Central Intelligence Agency, 2009). So it is evident that, structured analytic technique would improve the intelligence cycle, encouraging analysts to document all assumptions during intelligence analysis, and requiring analysts to include alternative assessments depending on the variables identified during the intelligence analysis process. Putting structures in place can mitigate them and raise the quality of analysis and decision-making. In her interview, Dr. Hettiarachchi proposed several steps which can be integrated in to intelligence analysis that can help create an environment in which analytical excellence can flourish. They are; a) defining the problem, b) generating hypotheses, c) collecting information, d) evaluating the hypothesis, e) selecting the most likely hypothesis, f) ongoing monitoring.

In 2005, Philip Tetlock and Dan Garner's book, "Super-forecasting: The Art and Science of Prediction" presented a study involving thousands of ordinary people attempting to forecast future events. According to the study teams of forecasters were approximately 23% more accurate than individual analysts (Tetlock and Dan Gardner, 2015). In analyst teams, analysts are provided the opportunity to evaluate each other's assumptions, like a groupthink were made aware of groupthink. The author views that, crowd-sourcing success, or using analyst teams, can simply be explained by the fact that knowledge is often dispersed among many different people; no one person can know everything. This is very relevant research and important in understanding the value of analyst teams as opposed to the current strategy of employing intelligence analysts who work alone. Tetlock and Garner's research presents the IC with opportunities for significant improvement to the intelligence analysis process. The author views that, this improved analytic structure could provide an independent reviewer with an opportunity to question those assumptions and possibly identify the presence of cognitive biases. There are mitigation strategies available to the IC now, with emerging strategies in development. Those strategies are presented in the following sections.

Professor Gunaratna, who is an international counter-terrorism expert, in his interview stressed on the importance of working collaboratively when it comes to national security matters. He states that, shared information is very important as

such network can help the intelligence community to connect the dots in processing and analyzing information. "There aren't interagency working groups that can force the forecast and address those challenges and issues"(R. Gunaratna, personal communication, July 01, 2022). Travers, (2021) states that information sharing is very important as it is a major step to prevent the impact of cognitive biases such as confirmation bias and anchoring bias. So it is evident that, shared information can improve the quality of investigations as there could be vital information or a missing piece. Most agencies around the world gather information in their silos and do not have any idea of what sort of information other agencies may have found on the same case, or a different person, or an incident that may have a link to the same case. So the weak signals or the missed information on a certain analysis could be mitigated due to shared information. Government departments and ministries are also working in isolation and there is no holistic approach by the government, and this can be seen as a major weakness.

The fact is that humans do not have the ability to self-identify when those cognitive biases are influencing intelligence analysis and decision making. This is a significant concern for the Intelligence Community, which is tasked with providing the intelligence required to protect this country. This study discovered no evidence to support any recurring training regarding the effects of cognitive bias to analysts deployed within the IC of Sri Lanka. This is a significant issue and should be of great concern to the Intelligence Community. Dr. Hettiarachchi highlighted that the IC of developed nations has identified cognitive biases as a serious threat to their counter-terrorism efforts. According to Whitesmith (2020), developed countries constantly conduct research, training programs, and workshops on the reduction of cognitive biases in intelligence analysis.

The threats faced by the IC today are much diversified from the threats of the past. The threats of today do not necessarily involve nations or states. Rather, they often involve terrorist organizations with allegiance to no single nation or state and no specific boundaries. These dynamic threats require enhanced intelligence analysis that provides accountability for the limitations of human cognitive performance. According to Professor Rohan Gunaratna, the traditional threats to Sri Lanka mainly include ethnic separatism, religious extremism, transnational organized crime, and foreign interference (R. Gunaratna, personal communication, July 01, 2022). Three decades of brutal terrorism and ethnic violence which crippled Sri Lanka’s economy and social structure ended in the year 2009. However, a decade of peace was shattered with the Easter Sunday attacks conducted by a religious extremist group in 2019. In the changing security context of Sri Lanka, we can foresee ethnic separatism and religious extremism and foreign interference being a

significant security threat in the future. In this context, it is evident that "Intelligence" is a crucial component in strengthening the national security.

5. CASE STUDY: BENGHAZI ATTACK 2012

There have been 273 major terrorist attacks against US infrastructure and individuals between 1998 and 2012 (Washington, DC: Department of State, 2014). Terrorist strikes were on the rise around the world, and US assets abroad were frequently targeted and Libya was no different. Beginning in June 2012, there were 12 different attacks on US assets in and near Benghazi, including 20 incidents at the US base in Benghazi (Senate Committee on Intelligence, 2014). There were growing indications that US assets in Benghazi were vulnerable to a major terrorist strike. Those on the ground also requested stronger security protocols (Senate Committee on Homeland Security and Governmental Affairs, 2013).

The following is a brief of the terrorist attack against two US installations in Benghazi in 2012, as per a report by the Washington Post;

> Benghazi attack was a planned attack by members of the Islamic militant group, Ansar al-Sharia on two US state establishments in Benghazi, Libya. The US was occupying a temporary mission facility, and approximately one mile away an annex facility used by a different US government agency in Benghazi. Ambassador Christopher Stevens, State Department Officer Sean Smith, and a small group of US and Libyan personnel were present in temporary mission facility. This compound in Benghazi was attacked by members of Ansar al-Sharia on September 11th, 2012, at 0900hrs, killing both the American ambassador and Sean Smith. At 1030hrs, security personal from the annex, reached the temporary mission facility and began exchanging gunfire with the terrorists. On the following day (12th), about 0400hrs, the terrorist group launched a mortar attack on the annex, killing two officers and injuring ten others. On September 12th, at 0100hrs, US government security officers located in Tripoli arrived at Benghazi Airport in order to provide assistance to the missions. However, they were compelled to negotiate with the Libyan authorities for three hours before being allowed to respond to the request for assistance. At 0500hrs, the security crew arrived at the annex.

Following the Benghazi attacks, the Senate Committee report provided conclusions and recommendations. One of the findings was that the IC underestimated other violent Islamist extremist groups not associated with al-Qaeda, despite open source intelligence showing that these groups were opportunistic and capable of targeting

US installations in Benghazi (Washington, DC: Department of State, 2014). To increase tactical warning capabilities, one of the recommendations was for the IC to broaden its focus in Libya to include violent Islamist extremist groups unaffiliated with al-Qaeda. It is evident that, this conclusion and recommendation are consistent with confirmation bias in that the IC only focused on intelligence pertaining to al-Qaeda, despite the presence of contradicting intelligence pertaining to threats from other extremist groups.

Susan Rice, the U.S. ambassador to the UN, told the media on September 16th, that the attacks in Benghazi were the result of a small group of protesters trying to imitate what had happened at the same time in Cairo, where they had broken through the walls of the U.S. embassy and destroyed an American flag (Tapper, 2012). The protests, according to Ambassador Rice, were in response to outrage over an anti-Muslim video. Prior to the attacks on US installations by the Libyan regime, there was no indication of protests.

One of the conclusions made in the report on the Benghazi attacks by the U.S. Senate Select Committee on Intelligence was that the IC had incorrectly said that there had been a protest at the temporary mission facility in Benghazi previous to the attacks (Senate Committee on Intelligence, 2014). The committee found that the IC relied on various reports when releasing the inaccurate intelligence referring to protests prior to the attacks, including six media reports, two statements from Ansar al-Sharia, and three other intelligence reports. In addition, the committee found that the IC also had intelligence reports indicating there were no protests prior to the attacks, but it failed to include that information in the intelligence products released (Senate Committee on Intelligence, 2014). The IC's release of the inaccurate intelligence surveillance videos from outside the temporary mission facility showed there were no protests prior to the attacks. According to the committee, the IC then changed the assessments, indicating that in fact there were no protests at the temporary mission facility prior to the attacks. Several U.S. government officials misled the media about the existence of protests as a result of the delay in changing the assessments. The IC failed to confirm the open source press reports, thus basing faulty intelligence on the first piece of information received. This is indicative of anchoring bias in that the IC relied on the initial intelligence received and failed to attempt to agree with that information even though there was conflicting intelligence present.

In conclusion, despite the existence of open source intelligence revealing that other violent Islamist extremist groups were opportunistic and capable of targeting U.S. establishments in Benghazi, the IC chose not to pay attention to them. This is

compatible with confirmation bias because the IC targeted al-Qaeda and allied organizations for intelligence collecting because they believed they were the only terrorist organizations capable of striking the US assets in Libya. The IC only sought to validate information that supported al-Qaeda. The stages of the intelligence cycle involved in collecting, processing, analysis, and dissemination were impacted by this cognitive bias.

Furthermore, the IC ignored any of the evidence they received indicating there were no protests and instead relied on unverified allegations of demonstrations occurring before the attacks. The damage had already been done when the IC altered the assessments. Following these attacks, the media received false information as a result of the government's use of inaccurate intelligence.

The IC relied on the first intelligence reports received and failed to confirm that intelligence, which is indicative of anchoring bias. The stages of the intelligence cycle involved in collecting, processing, analysis, and dissemination were impacted by this cognitive bias.

One of the additional committee findings was that the IC failed to place adequate emphasis on the exploitation of open source information and extremist social media (Senate Committee on Intelligence, 2014). That lack of emphasis can be interpreted as a cognitive bias in that the IC believed the current intelligence collection strategies were adequate. Furthermore, the IC did not feel it necessary to explore available open sources of information and social media despite the widespread use of both by many violent extremist organizations. This cognitive limitation influenced the collection step of the intelligence cycle, and as a result it influenced the ability to process, analyze, and disseminate accurate intelligence products.

6. RECOMMENDATIONS AND CONCLUSION

The complexity of today’s fight against terrorism demands the IC’s best efforts in this dynamic environment. Sri Lanka needs resilient intelligence programs providing analysts with the tools and training in order to be effective and successful. This research resulted in the identification of cognitive bias mitigation strategy recommendations that will release the cognitive limitations of those biases.
The first step in improving the intelligence analysis process should be the formal recognition by the defence and law enforcement authorities of Sri Lanka that the effects of cognitive bias do influence the intelligence cycle in a negative manner. Formal recognition by the authorities would serve as a catalyst for change and is the only real possibility for significant changes to the IC practices.

It is vital to develop a training module for cognitive biases and implement it in all the intelligence training schools in Sri Lanka. The training module could be designed by a central coordinating unit which can bring all agencies together. The author suggests that, the office of Chief of National Intelligence (CNI) as the most suitable establishment to implement such program as it coordinates and overlook all the intelligence agencies in Sri Lanka. Also, CNI office is a ministry level establishment and it has the capacity to collaborate with working groups and professionals outside the ministry.

However, developing a training module for change will require practitioners' experience as well as knowledge of cognitive psychology. CNI may closely work with General Sir John Kotelawala Defence University (KDU), which produces high quality research across many disciplines in the field on development of such module. Both CNI office and KDU can establish a diverse working group comprised of representatives from throughout the IC and civil expertise to evaluate and explore potential mitigation strategies available today and in the future. General Sir John Kotelawala Defence University is well recognized in utilizing civilian expertise in military centered institutions; and they produce civilian experts on military strategy. Western governments highly rely on the involvement of civilians in strategic thinking and academic institutions for hard research and policy advice on defence strategy.

Once the training module is designed, following to be integrated in to the action plan as the next step, a) Training should be consistent and include significant education on the effects of cognitive bias and strategies to reduce those effects at regular intervals, b) improve the critical thinking skills of analysts through recurring education and training that is on the cutting edge of cognitive psychology, c) explore the concept of "analyst teams" as opposed to individual analysts to assist with the identification of cognitive biases, d) revisit the intelligence cycle and determine if a more structured analytic technique would lead to improved intelligence analysis.

Any changes to the intelligence analysis process should be documented in performance appraisals so that IC heads are aware of the requirements and can hold analysts accountable to those standards. In addition, decision makers should be provided access to all of the intelligence utilized in the intelligence product to be provided opportunities to ask for clarification.

This research paper supports the fact that cognitive bias is very much a concern in the government, public sector, private sectors, academia, and the social sciences. This research and paper supports the hypothesis that cognitive bias has a negative effect on the intelligence cycle. The significance of this research impacts National Security of Sri Lanka, and the IC cannot allow the negative effects of cognitive bias to influence the intelligence analysis process. Missing weak signals leads to intelligence analysis failures resulting in tragedies.

Finally, this paper provides evidence that the effects of cognitive bias do in fact influence the intelligence cycle in a negative manner. The IC is in a position to take advantage of identified mitigation strategies to decrease those negative effects resulting in a more resilient intelligence cycle leading to more effective intelligence analysis.

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NOTES ON CONTRIBUTORS

Major Manjula Kumara's journey with the Sri Lanka Army began on 28 September 2008, when he joined as an Officer Cadet in Intake 26 of the General Sir John Kotelawala Defence University, pursuing a BSc in Mechanical Engineering. His commitment and excellence were evident throughout his career, marked by numerous accolades. Major Kumara's educational milestones include courses such as the Young Officers Engineer Course - 3 and Basic Geographical Information System Course - 2, where he secured the First in Order of Merit. His pursuit of knowledge extended internationally, participating in courses like the Young Officer Course 138 in India, earning the title of Best Foreign Officer. Noteworthy accomplishments decorate his career, including successful completion of the Officers' Bomb Disposal Course No 1, NVQ Level IV in Quantity Surveying, and performance in the Junior Command Course 18 in 2020, where he achieved the prestigious First in Order of Merit. His dedication was further recognized during the DCSCS Course No 16 in 2022, where he not only achieved the First in Order of Merit receiving the Golden Owl and Golden Pen awards for Best Research Paper and Commandant's Honours. In 2022, Major Kumara expanded his academic horizons, obtaining an MSc in Defence & Strategic Studies. His global exposure continued with foreign visits and engagements, such as the High-Level Official Meeting on Security Matters in Russia in 2023. He currently serves as the Assistant Military Assistant to the Secretary of Defence at the Ministry of Defence.

Commander (N) Dhanushka De Silva joined the Sri Lanka Navy on 07th November 2004 as an Officer Cadet of Intake 22 of General Sir John Kotelawala Defence University (KDU) and was commissioned on 2008. He obtained Bachelor of Science degree in Management and Technical Science in year 2010. He followed Sub Lieutenant Technical Course and Long Navigation Specialization Course in India in year 2009 and 2016 respectively. He did Junior Naval Staff Course at Naval and Maritime Academy (NMA) in year 2012 and staff course at Defence Service Command and Staff College in year 2022 where he secured psc and MSc in Defence and Strategic Studies. Further he secured Masters Degree in Human Resource Management at University of Kelaniya in year 2023. He has held many key appointments both at sea and ashore and few of them are Staff Officer (Miscellaneous Training) at Naval Fleet Command, Staff Operation Officer at Southern Naval Command, Executive Officer SLNS Rana Wickrama, Officer in Command of Fast Attack Craft (FAC) and Landing Craft Utility (LCU) and Navigating Officer of SLNS Sagara. He is presently holding the appointment as the Acting Senior Staff Officer (Miscellaneous Training) at Naval Fleet Command.

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