IJGPPA

International Journal of Governance and Public Policy Analysis

International Journal of Governance and Public Policy Analysis

IJGPPA - 2024

International Journal of Governance and Public Policy Analysis (IJGPPA) – 2024

Associate Professor Huong Ha

School of Business

Singapore University of Social Sciences

Singapore

Dr. Ramasamy Ramesh

Department of Political Science

Faculty of Arts

University of Peradeniya, Sri Lanka

Editorial Assistants

Ms. W.M.R.Y. Wijesinghe

Ms. M.S. Abuthahir

Formatting & Cover Page Designing

Ms. W.M.R.Y. Wijesinghe

Ms. M.S. Abuthahir

Language Editing

Dr. Ms. Lishanthi Wijewardene

Publishing

Panel of Reviewers: IJGPPA – 2024

1. Prof. T.L. Sajeevanie — University of Sri Jayewardenepura, Sri Lanka

2. Prof. L.A. Pavithra Madhuwanthi — University of Sri Jayewardenepura, Sri Lanka

3. Prof. S.R. Manoratne — University of Colombo, Sri Lanka

4. Dr. H.E. Niluka Priyadarshani — University of Sri Jayewardenepura, Sri Lanka

5. Dr. Mahfuzul Haque — Bangladesh University of Professionals (BUP), Dhaka

6. Dr. W.S.P.Y. Nelum Kanthilatha — University of Sri Jayewardenepura, Sri Lanka

7. Dr. Menik R. Wakkumbura — University of Colombo, Sri Lanka

8. Dr. M.A.S. Wijesinghe — University of Sri Jayewardenepura, Sri Lanka

9. Dr. Wilfred Urounu Lameck — Mzumbe University, Tanzania

10. Dr. P.I. Anuradha — University of Sri Jayewardenepura, Sri Lanka

11. Dr. Shamini Chandran — University of Colombo, Sri Lanka

12. Ms. A. Muthulingam — University of Sri Jayewardenepura, Sri Lanka

13. Mr. W.G.T.S. Senanayaka — University of Sri Jayewardenepura, Sri Lanka

14. Ms. A.W.G.N.M. Abeyrathna   University of Sri Jayewardenepura,
Sri Lanka

15. Mr. Devaka J. Punchihewa   University of Sri Jayewardenepura,
Sri Lanka

16. Mr. W.M.D.M. Dissanayaka   University of Sri Jayewardenepura,
Sri Lanka

Mediating Effect of Energy Management on SME Development amid the Power Crisis in Sri Lanka: Lessons and Public Policy Insights

C. R. Edirimuni
Ceylon Electricity Board, Colombo, Sri Lanka
chamil.edirimuni@ceb.lk

H. D. D. C. Liyanagamage
The Open University of Sri Lanka, Nugegoda, Sri Lanka
hdcha@ou.ac.lk

Abstract

This study investigates the multifaceted impact of power crises on the development of Small and Medium Enterprises (SMEs) in Sri Lanka, focusing on the period from March 2022 to February 2023 and examines how power shortages and load shedding affect SME productivity, employment, competitiveness, sustainability, and growth, by exploring the role of energy management in mitigating these adverse effects. Using quantitative methods, the study analyzes survey data of 143 SMEs selected through convenience sampling in the Western Province of Sri Lanka. The findings highlight the significant negative impact of power crises, revealing reduced productivity, diminished employment opportunities, decreased competitiveness, and obstacles to business sustainability and growth. Notably, the study demonstrates the positive effect of energy-efficient practices in mitigating the impact caused by power crises. The study provides further evidence that the negative influence of power-related issues is consistent across different SME sizes and industries. These insights have important policy implications, suggesting the need for collaboration between the government and the private sector to address SME challenges. The study underlines the importance of investing in power infrastructure, promoting economic diversification, and encouraging sustainable business practices. Furthermore, long-term planning, financial literacy initiatives, and targeted support to ensure the resilience and development of SMEs in the face of power crises are suggestive.

Keywords: Energy Crisis, Energy Management, Public Policy Insights, SME Development, Sri Lanka

1. Introduction

The power crisis that Sri Lanka experienced from March 2022 to February 2023 has had a severe impact on the country's Small and Medium Enterprises (SMEs), affecting their operations, productivity, and competitiveness. The power crisis, along with the economic downturn in 2022, created substantial hindrances for the industry (Central Bank of Sri Lanka, 2022). The report noted that power curtailments, fuel shortages, and electricity supply cuts severely hindered manufacturing activities, leading to a contraction in the Purchasing Managers' Index (PMI) and a decline in production output.

In August 2022, the electricity tariffs increased by an average of 75%, adding further strain on SMEs. According to the study *History Repeating Itself: Sri Lanka's Electricity Crisis* (2022) energy sector of Sri Lanka has played a crucial role in driving the economic growth of the nation. However, the recurring power outages and erratic energy supply have created obstacles to economic progress and poverty alleviation efforts. As the study reveals, the energy demand is closely tied to the Gross Domestic Product (GDP) of the country, meaning power disruptions can have an immediate and detrimental impact on GDP.

Across various media platforms, the sentiment is clear; the inadequacy of power supply and continuous blackouts have significantly increased operational expenses for SMEs, lowered productivity, and diminished business sustainability. Addressing these issues is crucial for the growth of the SME sector of Sri Lanka, which is responsible for employing a significant portion of the labor force and contributing 40% to the country's GDP. The sector accounts for 93.3% of total industries and 32.3% of employment, according to the Asian Development Bank (ADB) in 2021. The social and economic contributions of SMEs are critical for Sri Lankan society.

The adverse impact of power crises on SMEs is not unique to Sri Lanka. Studies from other countries, such as Turkey, Uganda, Pakistan, and China, show that power outages and shortages reduce productivity, increase operational costs, and harm competitiveness. For instance, Cole et al. (2018) found that power disruptions in Turkey led to decreased productivity and profitability for SMEs. Similarly, power failures in Uganda lowered SME productivity by 31%. In Pakistan, Zaidi et al. (2020) observed a decrease in SME sales and revenue due to power outages. In China, Fisher-Vanden et al. (2015) found that energy shortages negatively affected company revenues, even if productivity losses were less severe.

Power outages are common in developing countries and often have a severe impact on SMEs due to their limited financial resources and technical expertise.

Additionally, SMEs typically lack access to alternative energy sources, which makes them more vulnerable to revenue losses, equipment damage, supply chain interruptions, and reduced competitiveness. In Sri Lanka, the recent power crisis, driven by government-imposed curtailments from March 2022 to February 2023, has left a lasting impact on businesses. SMEs have had to cope with prolonged power failure, fuel shortages, and higher energy costs, all of which have reduced their operational efficiency.

According to reports from the Public Utilities Commission (2022) the average weekly loss of production due to power cuts is approximately 10 hours. This loss of productivity, combined with rising costs for backup generators and other power sources, has put massive financial pressure on SMEs. Equipment damage, supply chain delays, and lost sales have further intensified these challenges, hindering business growth and causing social disruptions.

Another significant effect of the electricity crisis is the decrease in investment in the SME sector. Investors are becoming increasingly hesitant to commit to businesses in an environment of uncertainty. Additionally, the power crisis has made it more difficult for SMEs to export their products, as power outages prevent them from meeting production demands. The financial burden on SMEs due to rising production costs has been substantial, leading to a decline in business growth and competitiveness. This, in turn, has wider economic implications for Sri Lanka, including a decline in GDP growth, rising unemployment, and a decrease in living standards.

The power crisis has also created barriers to sustainable business practices. Many SMEs struggle to adopt energy-efficient measures due to the high upfront costs and lack of government support. In the long term, energy-efficient technologies could help reduce operational costs and mitigate the impact of future power crises, but such solutions are often out of reach for smaller businesses without financial support or incentives. Hence, this research aims to analyze the impact of the power crisis on SME development in Sri Lanka and to identify potential policy solutions that could alleviate the burden on these businesses. By exploring key dimensions such as business growth, productivity, employment, competitiveness, and business sustainability, the study provides a comprehensive understanding of the challenges faced by SMEs during the power crisis. The research also examines whether the size and industry type of SMEs influence the relationship between power disruptions and SME development.

Additionally, the study will investigate the mediating role of energy-efficient practices in mitigating the negative effects of the power crisis. The adoption of such

measures could help SMEs reduce their reliance on conventional energy sources and improve their operational efficiency during times of power shortages. However, widespread implementation of energy-saving initiatives will require coordinated efforts from policymakers, the private sector, and international partners. The future of Sri Lanka's SME sector depends on the country's ability to address the underlying causes of the power crisis and to develop long-term strategies for energy sustainability. By implementing evidence-based policies and fostering collaboration between key stakeholders, the government can help ensure that SMEs remain a vital force in Sri Lanka's economic recovery and growth. Strengthening the resilience of SMEs will not only protect jobs and livelihoods but also contribute to a more sustainable and competitive economy in the long term.

This research provides valuable insights into the impact of the power crisis on Sri Lankan SMEs and offers a roadmap for policymakers to support the recovery and growth of the sector. By addressing the challenges of the power crisis head-on and promoting energy-efficient practices, Sri Lanka can ensure a brighter future for its SME sector and the broader economy.

2. Literature Review
2.1. Theoretical and Empirical Background
2.1.1. Power Crisis and SME Development
The literature on the impact of power crises on SMEs covers several key theoretical frameworks and empirical studies that shed light on how these challenges affect business operations, growth, and productivity.

Several theoretical frameworks are employed to understand how power crises impact SMEs. The Environmental Uncertainty Theory (Lawrence & Lorsch, 1967) explains how external disruptions, such as energy issues, create challenges for businesses, forcing them to adapt. In this context, power crises create uncertainty, leading SMEs to modify their operations and strategies. Institutional theory (Scott, 2013) further highlights the role of laws, regulations, and government policies in influencing organizational behavioaber during crises. Porter's Five Forces model (2008) adds another dimension by analyzing the competitive pressures that SMEs face, including the bargaining power of suppliers, which is heightened during power shortages. The Resource-Based View (RBV) by Barney (1991) is particularly useful for analyzing how SMEs use their internal resources to navigate power crises. This model helps explore how SMEs' unique resources, such as innovation capabilities and adaptive strategies, help them overcome energy-related challenges, ensuring competitive advantage and long-term sustainability.

Empirical evidence from various countries shows the wide-ranging effects of power

crises on SMEs. For instance, Cole et al. (2018) found that power outages in Turkey significantly reduced productivity, increased operational costs, and lowered profitability. Similarly, they also observed a 31% decline in SME productivity in Uganda due to power outages, while Zaidi et al. (2020) documented revenue losses for SMEs in Pakistan during power shortages. Power crises also have social and psychological impacts. Ajibola et al. (2021) reported that power outages in Nigeria caused stress and anxiety among SME owners and employees. Furthermore, power shortages hinder technological adoption and innovation, slowing down business growth, as shown by Gajdzik et al. (2024).

The rising cost of electricity compounds these problems. Abeberese (2017) demonstrated how increased electricity costs in India negatively affected business profitability, productivity, and investment. The study found that higher electricity rates not only raise operational costs but also discourage SMEs from adopting energy-efficient technologies, further lowering productivity. For instance, a 1% reduction in electricity prices could increase firm output by 1.5%, underscoring the substantial economic benefits of affordable power.

Fisher-Vanden et al. (2015) studied the impact of electricity shortages on firms in China, a country with growing energy demands, and found that electricity shortages lead to significant declines in labor and total factor productivity, with firms adjusting their operations and seeking alternative energy sources to mitigate the impact. The study emphasizes the importance of proactive strategies to mitigate power shortages, as similar issues could impact SME productivity in countries like Sri Lanka. Kessides (2013) explored the effect of Pakistan's power crisis on industries, including SMEs and found that power shortages crippled industries like textiles, which account for a large portion of exports and jobs. SMEs, particularly, faced severe production delays, increased operational costs, and reduced competitiveness, collectively hindered their growth. The study also highlighted the link between power outages and employment, as job losses were rampant due to the disruption of business operations.

Power crises have a direct impact on employment. Kessides (2013) showed that power outages in Pakistan led to job losses and reduced employment growth, particularly in industries reliant on a consistent power supply. The study pointed out that SMEs, as major employers, were severely affected, with layoffs and reduced hiring during blackouts. Similar findings were reported in Istepanian's (2014) study on Iraq, where power shortages led to job losses and reduced production capacity, stalling business expansion plans. Shrestha et al. (2023) studied the February 2021 power crisis in the U.S. Southwest, highlighting how increased electricity costs and outages disrupted businesses. Although the context differs from Sri Lanka, the financial and operational challenges faced by businesses in the U.S. Southwest during

this period provide valuable insights into how power crises could impact SMEs in other regions.

Carlsson et al. (2020) examined the financial impact of power outages on industrial firms in Ethiopia. The study quantified the cost of power outages in terms of production losses, reduced productivity, and additional expenses, such as the use of backup power sources. While the study focused on larger manufacturing firms, its findings can be applied to SMEs, which may face even higher costs due to their smaller operational scale and dependence on reliable electricity. Similarly, Cissokho (2019) studied the impact of electricity shortages on SMEs in Senegal's industrial sector, revealing significant productivity losses. The study emphasized the need for a reliable and affordable power supply for SME growth, noting that power outages severely hampered business development. Cole et al. (2018) supported these findings, showing that power outages in Sub-Saharan Africa reduced productivity and profitability for local businesses, further underlining the importance of a consistent electricity supply for SME success.

2.1.2. Energy Efficiency Measures in Different Contexts

The literature on energy efficiency measures for SMEs across different contexts highlights technological, operational, and policy-driven strategies, with particular emphasis on challenges in developing countries. Technological upgrades, such as adopting energy-efficient equipment (e.g., Light-Emitting Diode (LED) lighting and energy-efficient motors), integrating renewable energy like solar or wind, and employing energy management systems (EMS), are frequently recommended (Aboelmaged & Hashem, 2019; Hasanbeigi et al., 2012). Operational measures, including employee training on energy-saving practices and conducting energy audits, are also crucial for identifying inefficiencies and optimizing resource use (Trianni et al., 2016). Similarly, policy support plays a significant role, with government incentives like subsidies, tax breaks, and low-interest loans to facilitate energy efficiency adoption (Thollander et al., 2020). Challenges such as limited financial resources and knowledge gaps, which are unique to SMEs in developing countries, often hinder the implementation of these measures (Otoo et al., 2018).

Studies from regions like South Asia and Sub-Saharan Africa emphasize localized solutions, such as small-scale solar installations and community-based energy projects, to address unreliable power supply and high energy costs (Hubble et al., 2016). Several studies show that while SMEs in developed countries leverage advanced technologies, adapting these solutions to resource-constrained settings is essential for effective implementation (Nehler et al., 2018). Overall, these interventions demonstrate the potential for energy efficiency to enhance SME productivity, sustainability, and resilience.

2.2. Hypotheses Formulation

The existing studies on power crises mostly focus on larger enterprises, with less attention given to the specific challenges faced by SMEs. Although significant research has been conducted in the context of developing countries such as Turkey, Uganda, Pakistan, and Nigeria, many of these studies concentrate on the impact of power outages on general business performance, productivity, and profitability. However, few studies investigate deeply into the unique vulnerabilities of SMEs during power crises, particularly in terms of their capacity to adopt innovative solutions, adjust to rising energy costs, or sustain long-term growth.

Moreover, while research such as Abeberese (2017) and Fisher-Vanden et al. (2015) address the impact of rising electricity costs and power shortages on business performance, these studies focus on large industrial firms, leaving a gap in understanding the specific implications for SMEs. Similarly, insights from studies like those conducted by Cissokho (2019) provide valuable information on the financial burden of power crises however, they do not fully address the particular context of SMEs in smaller economies like Sri Lanka.

Furthermore, limited attention has been paid to how power crises affect employment within SMEs. Although findings of Kessides (2013) and Istepanian (2014) explore job losses in the broader industrial context, there is inadequate research on how SMEs cope with employment challenges during blackouts and energy disruptions. Finally, while recent studies such as Shrestha et al. (2023) offer insights into the impact of power crises on businesses, they are based in regions like the U.S. Southwest, where the economic and energy infrastructure significantly differs from that of Sri Lanka. This highlights the need for research that is specific to the Sri Lankan SME sector, particularly in understanding the local challenges posed by power crises and rising electricity costs.

In summary, the lack of focused research on SMEs, especially in smaller, developing economies like Sri Lanka, and the limited exploration of employment and innovation strategies during power crises, represent critical gaps that need to be addressed. The present study develops the following hypotheses to address this knowledge gap in the context of Sri Lanka.

H1: *Power crises significantly impact the business growth of SMEs.*

This hypothesis is based on prior research by Von Ketelhodt et al. (2008) and Cole et al. (2018), which shows that power crises disrupt SME operations, resulting in lost business opportunities and hindering growth.

H2: *Power crises significantly impact productivity in the SME sector.*

Power outages and related disruptions can negatively affect SME productivity by interrupting operations and raising costs, as documented by Abeberese (2017) and Fisher-Vanden et al. (2015).

H3: *Power crises significantly impact employment within the SME sector.*

This hypothesis is grounded in findings by Kessides (2013) and Istepanian (2014), which indicate that power crises can reduce employment opportunities and contribute to job losses in the SME sector.

H4: *Power crises significantly impact the competitiveness of SMEs.*

Studies of Cole et al. (2018) establish a clear link between power crises and competitiveness, demonstrating that power disruptions undermine the competitive standing of SMEs.

H5: *Power crises significantly impact the business sustainability of SMEs.*

According to Bansal (2000) and Abeberese (2017), power cuts can increase operational costs and reduce profitability, ultimately threatening the long-term sustainability of SMEs.

H6: *Energy management measures mediate the relationship between power crises and SME sector development.*

Drawing on the work of Akil (2020) and other research, this hypothesis posits that energy-efficient measures can mitigate the negative effects of power shortages, playing a crucial role in SME sector development amid power crises.

H7: *The impact of power crises on SME sector development varies with firm size.*

Cissokho (2019) and Cole et al. (2018), suggest that SMEs of different sizes experience varied impacts from power shortages. Larger SMEs, for instance, may have more resources to manage these challenges than smaller ones.

H8: *The impact of power crises on SME sector development varies by industry type.*

Research by Cole et al. (2018) and Von Ketelhodt et al. (2008) indicates that the nature of an industry influences how power shortages affect SMEs, with manufacturing businesses, which are heavily reliant on electricity, often experiencing greater impacts than service-oriented firms.

3. Methodology

This study investigates the association between power crises and multiple dimensions of SME sector development in Sri Lanka. It aims to assess how power shortages, particularly power curtailments, impact SME development, with a focus on business growth, productivity, employment, competitiveness, and sustainability. To offer a comprehensive analysis, the research also considers moderating variables, including industry type and firm size, as well as the mediating role of energy management practices, which may affect the strength and nature of these relationships.

The independent variable is the *power crisis*, measured through the effect on day-to-day operations and the challenging nature of power cuts, using a five-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). The dependent variables include various dimensions of business performance: *business growth* (measured by income level, profitability, new market entries, and an increase in customer base), *productivity* (measured by output increase and production efficiency), *employment* (assessed through the hiring of new employees, employee benefits, competitive salaries, and workforce growth), *competitiveness* (gauged by competitive position, price changes, and market share growth), and *business sustainability* (measured by sales growth and new investments). These dependent variables are also assessed on a five-point Likert scale, indicating the degree to which respondents agree with the statements.

Moderating variables include *firm size*, classified by the number of employees (micro, small, or medium enterprises), and *industry type*, categorized by business sectors such as manufacturing, services, trading, agriculture, or other, both measured on a Likert scale. The mediator variable, *energy efficiency*, is assessed through the implementation of energy-efficient measures and the resulting electricity cost savings, also using a five-point Likert scale. This framework helps to understand how the power crisis influences SME performance, while considering moderating factors like firm size and industry type, and the potential mediating role of energy efficiency measures in mitigating the impact of power shortages.

To comprehensively assess the impact of power crises on the development of the small and medium enterprise (SME) sector, this study adopts a quantitative research approach, emphasizing objectivity, accuracy, and statistical analysis. To ensure the reliability and validity of the results, data were collected from a representative sample of SMEs across various industries. The study employs primary data sources to analyze the effects of power crises on the SME sector. A structured survey questionnaire was the primary tool for data collection, designed to capture the impact of power crises on SME development in Sri Lanka. The survey included closed-ended questions with Likert scale items to facilitate the quantification of responses, enabling

comprehensive statistical analysis.

The SME sector in Sri Lanka is diverse and consists of various industries, including manufacturing, construction, agriculture, services, and trade. Many SMEs in Sri Lanka are micro-enterprises with a total investment of less than LKR 15 million. According to ADB 2021, Sri Lanka, by 2018 there were 21,260 enterprises out of which 14, 890 are small and 5,074 are medium enterprises which accountable to 94% of total industries. The target population for this study comprised SMEs from a range of industries operating within the Western Province of Sri Lanka. Data collection was conducted between 30th March 2023 and 30th May 2023. Industry-specific social media groups and professional networks were leveraged to reach the target population. Convenience sampling was used by distributing the questionnaire in professional networks where SME owners and managers were active. An invitation email containing the survey link was sent to SMEs. A total of 143 responses were collected, which meets the sample size requirement for statistical analysis as calculated based on a 95% confidence level. Participants provided informed consent before accessing the survey, and their responses were anonymized. Ethical considerations, including informed permission and data protection safeguards will be given priority throughout the whole research process. This methodology effectively captures the current challenges faced by SMEs in relation to power crises, providing valuable insights for policymakers to develop strategies aimed at supporting the SME sector amidst ongoing energy challenges.

4. Analysis and Discussion

4.1. Sample Overview

The preliminary analysis of the survey data shows a diverse representation of SMEs across various size categories, industries, and stages of development. The majority of respondents (44%) are micro-enterprises with 1 to 10 employees, followed by 36% representing small-sized enterprises, and 20% from medium-sized businesses with 51 to 250 employees. This distribution reflects the dominance of smaller firms within the sample. In terms of the age of businesses, 41% of SMEs have been operational for 1 to 5 years, indicating a substantial presence of young firms. Meanwhile, 29% are in their mid-growth phase (6 to 10 years), and 15% have been established for 11 to 15 years. Only 4% of SMEs are less than a year old, while 11% have been in business for over 15 years, highlighting a diverse mix in terms of business maturity.

The survey also covers a wide range of industries, with 35% of respondents from the services sector, 33% from manufacturing, and 20% from agriculture. Trading companies make up 10% of the sample, while only 1% represents the food and beverage industry, indicating a very limited presence of such businesses. This diverse composition provides a comprehensive dataset for analyzing the impact of power

crises on SMEs, with the results highlighting a notable focus on manufacturing and services, alongside other sectors like agriculture and trading. However, the limited representation of food and beverage firms is notable.

4.2. Validity and Reliability Analysis

The reliability and validity of the research questionnaire were evaluated to ensure accurate measurement of the study's constructs and variables. Cronbach's Alpha was used to assess internal consistency, yielding a value of 0.760 overall and 0.769 for standardized items, indicating high reliability. This demonstrates that the questionnaire is a reliable tool for data collection, ensuring that participant responses accurately reflect the underlying constructs. Validity was assessed using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The high KMO value of 0.905 exceeded the recommended threshold of 0.6, confirming the dataset's suitability for factor analysis due to strong inter-correlations among variables. Bartlett's Test of Sphericity also showed significant relationships between variables, with a low p-value and high chi-square statistic, further validating the questionnaire's ability to capture the intended constructs.

Together, the reliability and validity results confirm that the questionnaire is a robust and effective tool for measuring the constructs of interest, enhancing the overall quality of the research.

4.3. Descriptive Statistics–SME Development, Power Crisis Effect, and Energy Management Measures

This analysis uses descriptive statistics to provide a comprehensive overview of survey responses regarding the impact of power crises on the SME sector development. Key statistics, such as mean, standard deviation, mode, minimum, and maximum values, are presented for each variable, allowing for a clear understanding of the characteristics and patterns within the dataset.

Table 01: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Power Crisis	143	1.00	5.00	4.1002	1.02170
Business Growth	143	1.00	5.00	1.9720	1.00356
Productivity	143	1.00	5.00	1.9580	0.94849
Employment	143	1.00	4.75	2.1014	0.96517
Competitiveness	143	1.00	4.75	2.1189	1.05518

Bus Sustainability	143	1.00	5.00	2.1119	0.98894
Energy Mgt	143	3.00	4.60	3.6335	0.34964
Valid N (list wise)	143				

Source: Survey Data

The descriptive statistics offer valuable insights into the severity of the power crisis from the perspective of small and medium enterprises (SMEs) and the overall development of the SME sector across various dimensions. The data reveals that SMEs in the sample experienced a significant power crisis, with an average impact rating of 4.1002 and a low standard deviation of 1.02170, indicating that the SMEs' assessments of the crisis impact were relatively consistent. Respondents reported generally low levels of business growth and productivity within their enterprises. The mean employment score of 2.1014 suggests that SMEs struggled to maintain their workforce during the crisis. Similarly, the average competitiveness score of 2.1189 implies that the ability of SMEs to compete effectively in the market was somewhat weakened during the power crisis. Additionally, the mean business sustainability rating of 2.1119 indicates that SMEs encountered substantial challenges in sustaining their operations, requiring additional efforts to remain viable. The mean value 3.6335 suggests that SMEs perceive their energy management initiatives as being at a moderate level. This value reveals that while the measures are beneficial, they have not yet reached optimal effectiveness.

These findings underscore the need for further hypothesis testing and in-depth analysis to better understand the broader implications of the power crisis on the development and resilience of the SME sector.

4.4. Correlation Between Power Crisis and SME Development

This section employs correlation analysis to explore the relationships between the power crisis and various aspects of SME sector development, as business growth, productivity, employment, competitiveness, and sustainability. The findings show significant negative correlations between the power crisis and each of these aspects of growth, productivity, workforce retention, competitiveness, and sustainability.

Table 02: Results of Correlation Analysis

		Power Crisis	Business Growth	Productivity	Employment	Competitive ness	Bus Sustainability
Power Crisis	Pearson Correlation						
Business Growth	Pearson Correlation	-.774**					
Productivity	Pearson Correlation	-.721**	.906**				
Employment	Pearson Correlation	-.694**	.866**	.864**		.888**	.885**
Competitiveness	Pearson Correlation	-.626**	.852**	.913**	.888**		.883**
Bus Sustainability	Pearson Correlation	-.703**	.897**	.910**	.885**	.883**	
	N	143	143	143	143	143	143

Source: Survey Data

4.5. Hypotheses Testing: The Impact of Power Crisis on SME Sector Development

Regression analysis was used to test hypotheses and estimate the importance of relationships established. The purpose is to determine the nature and degree of the associations between the variables. We specifically sought to ascertain the relationship between changes in the power crisis variable and changes in business growth. The study enables us to understand the importance of the power crisis as a predictor of business growth. The results of the regression analyses are summarized in Table 03.

Table 03: Results of Regression Analysis

Model	Aspect of SME Dev	R^2	Adjusted R^2	Standard Error of Estimate	F-statistic (ANOVA)	P-value (ANOVA)	Coefficient (B)	Significance (P-value)
1	Business Growth	0.599	0.596	0.63778	210.589	0.0000	-0.76	0.000
2	Productivity	0.519	0.516	0.65985	152.4	0.0000	-0.669	0.000
3	Employment	0.482	0.478	0.6972	131.135	0.0000	-0.656	0.000

4	Competitiveness	0.392	0.388	0.82556	90.979	0.0000	-0.647	0.000
5	Business Sustainability	0.494	0.49	0.70608	137.564	0.0000	-0.68	0.000
6	SME Development	0.543	0.540	0.6417	167.61	0.0000	-0.682	0.000

Source: Survey Data

The results of the regression analysis examining the casual relationship between the power crisis and business development dimensions, including business growth, productivity, employment, competitiveness, and business sustainability in the SME sector are presented in this table. Model 1 has an R-squared value of 0.599, indicating that 59.9% of business growth variance can be explained by the power crisis. The model is statistically significant (p-value < 0.001), and an F-statistic of 210.589 confirms this. Hence, the hypothesis suggesting a relationship between business growth and the power crisis is accepted. The R-squared value is 0.519 of model 2 evidenced that the model explains 51.9% of productivity variance relative to power crisis. The model is significant (p < 0.001) with a negative coefficient for the power crisis, indicating that increased power issues negatively affect productivity.

Similarly, the R-squared value of model 3, 0.482, indicates that 48.2% of employment variance is explained by the power crisis. The model's statistical significance (p < 0.001) supports the hypothesis that the power crisis negatively impacts employment. Whereas model 4 shows a strong linear relationship with an R-squared value of 0.392. The power crisis hurts competitiveness, confirmed by a p-value of 0.000. Model 5 shows an R-squared value of 0.494, indicating that the power crisis significantly affects business sustainability. The model is statistically significant (p < 0.001), with a negative coefficient for the power crisis. Overall, the regression analyses consistently indicate that the power crisis is a significant predictor negatively impacting business growth, productivity, employment, competitiveness, and sustainability in SMEs, with strong statistical support across various metrics. The results of the regression analysis indicate that 76% of business growth, 67% of productivity, 66% of employment, 65% of competitiveness, have been adversely affected by power crises in SMEs in Sri Lanka. Accordingly, at the 95% confidence level, the hypotheses HI–H5 are accepted, indicating that the results are statistically significant.

Power crises are found to disrupt multiple aspects of SME operations, with the acceptance of hypotheses H1 and H2 confirming the negative consequences for business growth and productivity. The extremely low p-values (0.000 for both

hypotheses) highlight the severity of these effects. The study builds on previous research by Abeberese (2017), which established that unstable power supplies disrupt businesses, increasing operational costs and hampering productivity, which in turn affects employment. These results affirm existing literature stressing the importance of reliable power for SME growth. When faced with power disruptions, SMEs experience production delays and higher expenses, making it challenging to sustain operations and retain staff.

The study also found that power crises diminish competitiveness of SMEs and sustainability, as seen with the acceptance of H3, H4, and H5. These hypotheses also reported low p-values of 0.000, indicating the strong impact of irregular power supplies on business performance. The findings confirm studies by Carlsson et al. (2020) and Cissokho (2019), which discussed the difficulties SMEs face during power crises, including maintaining competitiveness and employment levels. This may be particularly true as businesses find it more challenging to succeed in the market when they deal with an irregular power supply, as it lowers their level of competitiveness. The results of the regression analysis also indicate long-term sustainability challenges of Sri Lankan SMEs with unrealistic power supply. This can happen when SMEs struggle to compete with the increased cost of production. These findings are consistent with Hunjra et al. (2015) whose findings revealed that job retention becomes more difficult during power crises, as businesses face pressure to cut costs, including labor.

4.6. Exploring the Mediation Effect of Energy Management

This analysis explores the mediating role of Energy Management (EnergyMgt) in the relationship between Power Crisis and the development of Small and Medium Enterprises (SMEs). In this context, EnergyMgt functions as a mediating variable, revealing the mechanism by which an independent variable influences a dependent variable. For this analysis, SME sector development was considered as a composite variable covering all five development dimensions considered in this study. The objective is to gain insights into how EnergyMgt may mediate the relationship between the Power Crisis and the development of the SME sector.

Table 04: Results of Mediation analysis

Antecedent		M (Engy Mgt)					Y (SME Dev)			
		B	*SE*	*p*	*β*		*B*	*SE*	*P*	*β*
X (Power Crisis)						c				
						ć	-0.682	0.053	0.000	-0.737
	a	0.199	0.37	0.000	0.417		-0.555	0.052	0.000	-0.599

M (Engy Mgt)	-	-	-	-		-			
					b	0.643	0.109	0.000	-0.331
	$R^2 = 0.174$					$R^2 = 0.634$			
	F = 29.63, p< 0.001					F = 121.19, p< 0.001			

Source: Survey Data

From a simple mediation analysis conducted using ordinary least squares path analysis (performed by the PROCESS SPSS macro, Hayes, 2022), evidence was found for the hypothesis that energy management significantly mediated the relationship between power crisis and SME development. As can be seen in Table 4, the power crisis was positively associated with energy management (a= 0.199), and energy management was negatively associated with SME development (b=-0.643). A bootstrap confidence interval for the indirect effect (ab =-0.128) based on 5,000 bootstrap resamples was entirely above zero (-0.188 to -0.061), suggesting that energy management mediates the association between power crisis and SME development, and hence accepting H6.

The acceptance of H6 highlights the potential benefits of energy-efficient practices for SMEs during power crises. The p-value of 0.000 for H6 suggests that energy-saving measures can help SMEs mitigate the harmful effects of unstable power supplies. In other words, the results of the above analysis reveal that the negative impact of the power crisis on SME development is significantly reduced when energy management measures are in place. This finding could particularly be true as SMEs that adopt energy-efficient technologies are more resilient to power crises, better managing energy consumption and reducing costs. This finding is in contrast to Fisher-Vanden et al. (2015), who argued that energy-efficient practices might have a limited impact. However, the present study aligns with the findings of Nyanzu and Adarkwah (2016), underscoring the positive role of energy efficiency in enhancing SME resilience. These findings suggest that energy policy initiatives should focus on encouraging SMEs to invest in energy-saving technologies, as this can reduce their vulnerability to power disruptions and foster growth.

4.7. Exploring Moderation Effect of Firm Size and Industry Type

The regression analysis (presented in table 5) investigates how power crisis, along with interactions involving SME Size and Industry type, impacts SME Development. The table provides coefficients for two models and includes significance tests (p-values), R-squared values, and F-statistics.

Table 05: Summary Results of the Moderator Analysis

Coefficient	Model 1 (PowerCri x SizeSME)	Model 2 (PowerCri x Industry)
Constant	5.164 (p = 0.000)	4.744 (p = 0.000)
PowerCri	-0.833 (p = 0.000)	-0.693 (p = 0.000)
SizeSME	-0.172 (p = 0.539)	-
Industry	-	0.051 (p = 0.756)
Int_1	0.084 (p = 0.204)	0.004 (p = 0.923)
R2	0.57	0.55
F Stat	60.82***	56.61***

Source: Survey Data

As per the results presented in table 5, size of the SME (SizeSME), shows a non-significant effect on SMEDev (β = -0.172, p = 0.539), meaning that the size of the firm does not independently affect SME development. The interaction between PowerCri and SizeSME (Int_1) is also non-significant (β = 0.084, p = 0.204), indicating that SME size does not significantly moderate the effect of power crisis on SME development. The model explains 57% of the variation in SME development (R^2 = 0.57), with an overall F-statistic of 60.82, which is highly significant (p< 0.001).

Industry type, also does not show a significant effect on SMEDev (β = 0.051, p = 0.756), suggesting that the industry in which an SME operates does not independently drive development. The interaction between Power Crisis and Industry (Int_1) is non-significant (β = 0.004, p = 0.923), indicating that industry type too does not moderate the relationship between power crisis and SME development. This model explains 55% of the variation in SME development (R^2 = 0.55) and has an F-statistic of 56.61, which is also highly significant (p < 0.001). Both models highlight the significant negative impact of the power crisis on SME development. Hence, both H7 and H8 are rejected. Neither the size of the SME nor the industry significantly moderates this effect, suggesting that the negative influence of power-related issues is consistent across various SME sizes and industries.

Rejection of Hypothesis H7 indicates that the size of an SME is irrelevant, and it is severely affected by power crises. Further H8, which was rejected, indicates that the nature of the firm does not significantly affect how power crises impact operations; however, affect all industries uniformly. The study highlights that power crises

between March 2022 and February 2023 impacted SMEs of all sizes indiscriminately, making it difficult for them to maintain operations.

5.   Conclusion and Recommendations

The results from the regression models demonstrate that the power crisis has a consistently negative impact on various aspects of SME development, hindering business operations, reducing output, limiting employment opportunities, diminishing competitiveness, and impeding overall business sustainability. More interestingly, findings of the present study suggest that energy-saving measures can help SMEs mitigate the harmful effects of unstable power supplies. These findings underscore the critical need for addressing power supply issues to support the resilience and growth of SMEs and encourage energy management strategies among SMEs.

Based on the findings of this study, several actionable recommendations are proposed to address the energy challenges faced by SMEs in developing countries. SMEs should prioritize conducting regular energy audits to identify inefficiencies and high-energy-consuming processes, enabling targeted improvements. Investing in energy-efficient technologies, such as light-emitting diode (LED) lighting, improved insulation, and energy-efficient motors, can significantly reduce operational costs without compromising productivity. Exploring renewable energy sources, such as solar and wind power, is particularly crucial in regions with abundant natural resources, as small-scale installations can reduce reliance on unreliable grid power and lower energy costs. Implementing Energy Management Systems (EMS) is also recommended, as they allow SMEs to monitor energy usage in real-time, optimize consumption, and identify opportunities for improvement. Additionally, training employees in energy-saving practices, such as switching off equipment when not in use, fosters a culture of energy awareness and efficiency. Policymakers and governments must provide financial incentives, such as subsidies, low-interest loans, and grants, to facilitate SME investments in energy-efficient technologies, while ensuring stable energy tariffs to enable long-term financial planning. Strengthening energy infrastructure to improve reliability and expanding access to renewable energy sources are also critical steps to minimizing disruptions and enhancing competitiveness. Collaboration with local energy experts and stakeholders is encouraged to gain insights, share best practices, and align with regional sustainability goals. Finally, investing in research and development for alternative energy solutions and innovative technologies is essential to reduce SMEs' vulnerability to energy crises. By adopting these measures, SMEs can enhance their

resilience, improve competitiveness, and continue contributing to economic growth and sustainability.

In conclusion, this study provides a thorough analysis of the challenges faced by Small and Medium-sized Enterprises (SMEs) in Sri Lanka during the power crisis between March 2022 and February 2023. The findings demonstrate the significant negative impact of power disruptions on SME growth, productivity, competitiveness, and job creation. These challenges highlight the need for targeted policies to address the specific vulnerabilities of SMEs, based on their size and industry. The power crisis also disrupted Sri Lanka's labor market, causing layoffs and stunting employment growth, which in turn hinders broader economic development and poverty reduction efforts. Power shortages have constrained SME productivity, limiting their ability to compete both domestically and internationally. Addressing the energy crisis is essential not only for SME survival and expansion but also for Sri Lanka's overall economic progress.

A key insight from this research is the role of energy-saving initiatives in reducing SMEs' dependence on conventional energy sources, lowering operational costs, and maintaining productivity during power crises. The adoption of energy-efficient technologies is vital for SME sustainability and competitiveness. Policymakers should prioritize such initiatives through government programs to mitigate the effects of power crises on SMEs and contribute to national energy sustainability. Ultimately, the study emphasizes the need for evidence-based policies to enhance SME resilience, recognizing their importance as engines of economic growth in Sri Lanka. Strengthening SME resilience to power crises will be crucial for sustaining the nation's economic development and improving citizens' well-being.

6.   Limitations and Future Research

Low representativeness of the sample, with a significant number of young firms, presents a limitation in this study. Younger firms, often in their growth stages, may be more adaptable to challenges like power crises, whereas older firms typically have established processes and infrastructure to better manage disruptions. This difference in maturity can influence the findings, potentially skewing the results and limiting their generalizability to the broader SME population.

This study underscores the need for further research on the impact of power crises on SMEs across different regions, noting that findings from Sri Lanka may not apply universally due to unique economic and infrastructure factors. Future studies should explore local power supply variations and use qualitative approaches to gain insights into the specific challenges SMEs encounter during power emergencies.

Global benchmarking studies on SME resilience across countries with varying energy

policies, which could reveal effective regulatory models, are also suggestive. Feasibility studies on energy storage and renewable solutions would further identify economically viable options, reducing SMEs' reliance on unstable grids. Additionally, research on the combined effects of energy crises and other disruptions, such as supply chain issues, could inform multifaceted crisis management strategies.

References

Abeberese, A. B. (2017). Electricity cost and firm performance: Evidence from India. *Review of Economics and Statistics*, *99*(5), 839-852.

Aboelmaged, M., & Hashem, G. (2019). Absorptive capacity and green innovation adoption in SMEs: The mediating effects of sustainable organisational capabilities. *Journal of Cleaner Production*, *220*, 853-863.

Asian Development Bank. (2021). *ADB Asia Monitor – Sri Lanka.*

Ajibola, A. A., Sodeinde, G. M., Aderemi, T. A., & Yusuf, M. O. (2021). Impact of electricity supply on the performance of small and medium-scale enterprises (SMEs) in Nigeria: A case study. *Economic Insights-Trends & Challenges*, (4).

Akil, Y.S. (2020). Perceptions and Determinants of SMEs Consumers' Behaviors for Electricity Saving: Evidence from Indonesia. *International Journal of Energy Economics and Policy,10* (3).

Bansal, P. A. (2000). Why companies go green: A model of ecological responsiveness. *Academy of management journal, 43*(4), 717-736.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Carlsson, F., Demeke, E., Martinsson, P., & Tesemma, T. (2020). Cost of power outages for manufacturing firms in Ethiopia: A stated preference study. *Energy Economics, 88*, 104753. https://doi.org/10.1016/j.eneco.2020.104753

Cissokho, L. (2019). The productivity cost of power outages for manufacturing small and medium enterprises in Senegal. *Journal of Industrial and Business Economics*, *46*(4), 499-521.

Cole, M. A., Elliott, R. J., Occhiali, G., & Strobl, E. (2018). Power outages and firm performance in Sub-Saharan Africa. *Journal of Development Economics*, *134*, 150-159.

Central Bank of Sri Lanka. (2022). E*conomic development highlights of 2022 and prospects for 2023*.

Fisher-Vanden, K., Mansur, E. T., & Wang, Q. J. (2015). Electricity shortages and firm productivity: evidence from China's industrial firms. *Journal of Development Economics*, *114*, 172-188.

Gajdzik, B., Wolniak, R., Nagaj, R., Žuromskaitė-Nagaj, B., & Grebski, W. W. (2024). The influence of the global energy crisis on energy efficiency: A comprehensive analysis. *Energies*, *17*(4), 947.

Hasanbeigi, A., & Price, L. (2012). A review of energy use and energy efficiency technologies for the textile industry. *Renewable and Sustainable Energy Reviews*, *16*(6), 3648-3665.

History Repeating Itself: Sri Lanka's Electricity Crisis. (2022). *Strategic Insight*, *13*. https://www.chamber.lk/wp-content/uploads/2024/05/History-Repeating-Itself_Sri-Lanka-Electricity-Crisis_Final.pdf.

Hubble, A. H., & Ustun, T. S. (2016, June). Scaling renewable energy based microgrids in underserved communities: Latin America, South Asia, and Sub-Saharan Africa. In *2016 IEEE PES PowerAfrica* (pp. 134-138). IEEE.

Hunjra, A. I., Ali, B. Alvi, M.A.M and Chani, M.I. (2015). The impact of electricity crisis and prices on the consumption behavior of small and medium enterprises. *Bulletin of Energy Economics, 3*(1), 25-40.

Istepanian, H. H. (2014). Iraq's electricity crisis. *The Electricity Journal*, *27*(4), 51-69.

Kessides, I. N. (2013). Chaos in power: Pakistan's electricity crisis. *Energy policy*, *55*, 271-285.

Lawrence, P.R. and Lorsch, J.W. (1967). Differentiation and integration in complex organizations. *Administrative Science Quarterly,12*(1), 1-47.

Otoo, M., Lefore, N., Schmitter, P., Barron, J., & Gebregziabher, G. (2018). *Business model scenarios and suitability: smallholder solar pump-based irrigation in Ethiopia. Agricultural Water Management–Making a Business Case for Smallholders* (Vol. 172). International Water Management Institute (IWMI).

Nehler, T. (2018). Linking energy efficiency measures in industrial compressed air systems with non-energy benefits–A review. *Renewable and Sustainable Energy Reviews*, *89*, 72-87.

Nyanzu, F. and Adarkwah, J. (2016). Effect of Power Supply on the performance of Small and Medium Size Enterprises: A comparative analysis between SMEs in Tema and the Northern part of Ghana.

Porter, M.E. (2008). The five competitive forces that shape strategy. *Harvard Business Review, 86*(1), 78.

Public Utilities Commission of Sri Lanka. (2022). *Annual Report, Sri Lanka.* https://www.pucsl.gov.lk/wp-content/uploads/2023/05/Annual-Report-2022-1st-Draft.pdf

Scott, W.R. (2013). Institutions and organizations: Ideas, interests, and identities. *Sage publications.*

Shrestha, S., Panchalogaranjan, V., & Moses, P. (2023). The february 2021 us southwest power crisis. *Electric Power Systems Research*, *217*, 109124.

Thollander, P., Rohdin, P., Moshfegh, B., Karlsson, M., Söderström, M., & Trygg, L. (2013). Energy in Swedish industry 2020–current status, policy instruments, and policy implications. *Journal of Cleaner Production*, *51*, 109-117.

Trianni, A., Cagno, E., & Farné, S. (2016). Barriers, drivers and decision-making process for industrial energy efficiency: A broad study among manufacturing small and medium-sized enterprises. *Applied energy*, *162*, 1537-1551.

Von Ketelhodt, A. and Wöcke, A. (2008). The impact of electricity crises on the consumption behavior of small and medium enterprises. *Journal of Energy in Southern Africa, 19*(1),4-12.

Zaidi, S., & Salam, A. (2020). Electricity issues and their effects on small and medium-sized enterprises in Pakistan. *Journal of Energy and Environmental Policy Options*, *3*(3), 86-95.

Alliances on Balance of Power in International Peace and Security in the East Asian Hub and Spokes

Rukundo Odasi Rutaboba
University of Queensland – Australia
rutadasin@gmail.com

Thomas Otieno Juma
University of Kabianga – Kenya
thomasjuma@kabianga.ac.ke

Abstract
This study sought to evaluate the workings of alliances in the exercise of Balance of Power (BOP) in international relations, importantly whether BOP undermines or enhances international peace and security in reference to East Asian 'Hub and Spokes'. The discourse on international peace is a very delicate area of inquiry among scholars of global studies and practitioners. Available new thinking experts know peace as a situation that represents an occurrence when human people are endowed with real human dignity that depicts their life and they are able to carry out their daily transactions without regard to who they are, where they are, and what they do. This study used three objectives as a guide to answer whether BOP undermines or enhances desired peace and security. The objectives of this study are 1) examining nature of security alliance in the global dispensation and why they have existed, 2) establishing whether alliances on balance of power undermine or enhance international peace and security, and 3) evaluation of alliances in relation to East Asian 'Hub and Spokes'. The study employed a desktop research, using available relevant literature to the research surrounding the objective themes. Conclusions indicate; these states seem to forget what they should do in anarchic international system; balancing the most powerful states or balancing the most threatening ones, no country claims to form military alliances to contain China in Asia as had happened to the Soviet Union, and other realists suggest soft balancing under unipolarity.

Keywords: Balance of Power, Global Security, Hub and Spokes, International Peace, International Relations, International Security, Military Alliances, Non-Military Alliance, Unipolarity

1. Introduction
The concept of Balance of Power (BOP) has been central to international relations theory, particularly in understanding the dynamics of conflict and cooperation between states. BOP refers to a situation in which power is distributed among states

in such a way that no single state becomes dominant, thereby preventing the outbreak of major conflicts (Mearsheimer, 2014). In the context of East Asia, the "Hub and Spokes" alliance system, largely shaped by the United States, plays a critical role in the region's security framework. The U.S. serves as the central "hub," with its bilateral security arrangements with countries such as Japan, South Korea, and Taiwan forming the "spokes" that collectively maintain regional stability (Ikenberry, 2011). However, the evolving dynamics of these alliances and their relationship to regional power shifts, particularly the rise of China, have prompted debates about the effectiveness of BOP in maintaining peace and security in East Asia.

The theoretical foundation of BOP and its application to international security is well established in global literature. Scholars argue that BOP prevents unilateral dominance and reduces the likelihood of large-scale wars (Waltz, 2010). In this view, alliances based on BOP principles help preserve stability by deterring aggressive actions from emerging powers. However, others contend that such systems may not always guarantee peace, especially when they lead to misperceptions or provoke regional arms races (Gilpin, 2011). The application of BOP in East Asia, where the U.S. is the dominant external power, is particularly contentious due to the region's complex security environment, characterized by competing interests and historical tensions.

Focusing on East Asia, the "Hub and Spokes" alliance system has been both praised and criticized. On the one hand, the U.S.-led alliances are viewed as critical to containing potential threats from North Korea and China (Cha, 2018). These alliances are believed to offer deterrence and foster cooperation among regional powers, thus contributing to regional security. On the other hand, these alliances may exacerbate tensions by framing the U.S. as an external force in the region, potentially intensifying Sino-U.S. competition and fostering insecurity (Callahan, 2017). The rise of China as a global power has raised questions about the sustainability of the current alliance structure and whether it may lead to a new Cold War-like environment in East Asia (Zhao, 2019).

At the local level, scholars have highlighted how individual states perceive the "Hub and Spokes" system in terms of their own security interests. In Japan and South Korea, these alliances are seen as essential for countering threats from North Korea and maintaining a balance against China's growing influence (Svärd, 2023). However, regional actors like China and Russia view the U.S.-led alliances with skepticism, often framing them as a tool for encircling China and undermining its rise (Zhang, 2021). Local analyses have suggested that these alliances, while beneficial

in providing security guarantees, might also limit the autonomy of the countries involved, pushing them into a security dilemma where they must align with the U.S. even if it conflicts with their own regional interests (Burgess, 2020).

In sum, the above through our observation suggests that, literature suggests while the "Hub and Spokes" system plays a significant role in maintaining regional stability in East Asia, it also generates complexities that challenge the traditional BOP theory. These dynamics necessitate further exploration to assess whether such alliances enhance or undermine international peace and security in a rapidly changing geopolitical landscape.

In setting off to discuss the above question, it is important to understand meaningful definitions of relevant concepts used herein as the study underscores the nature of security alliance in the global dispensation and why they have existed. This discussion will then move to ascertain whether alliances on balance of power undermine or enhance international peace and security; and finally, this discourse will survey these alliances in relation to East Asian 'Hub and Spokes'.

Without definition, peace is attached to why it is required and its effects thus knowing peace is related to precondition of any curiosity about finding 'good peace' and distinguishing it from a 'bad peace'. International peace is a very delicate subject among scholars of international relations and likewise to practitioners in the field. It does not have one meaning hence defining it creates a divide. On the one hand therefore there exists traditional thinking to peace which was directed only to avoid the war and because of being unaware of the peace removing ongoing process based on social and economic inequalities, it was never successful. The concern being the status quo, but counts on the same goal such as preservation of unequal conditions, which doesn't make peace universal and not all inclusive. It rarely calms down inflamed conditions. New thinking experts know peace as a representing situation in which all human beings are endowed with real human dignity and human life whoever they are. This means they can carry out their dailies; education, health, employment, equality before the law, free elections among others and are safe with freedoms pertaining to human existence. In this context, any agent or biological factors expose these components to damage, and are threatening to peace (Vankovska & Wiberg, 2002).

On the contrary, peace is attached to why it is required and its effects thus knowing peace is related to precondition of any curiosity about finding good peace and distinguishing it from a bad peace. It is thought the most important thing is whether peace should simply be defined as the absence of war and direct violence (negative

peace), or whether it involves both the means of absence of war and direct violence in the presence of social justice (positive peace) (Kurtz, 1999). Peace is a political condition that guarantees social justice and stability through institutions, procedures and the formal and non-formal norms (Miller, 2005).

Peace is also used synonymously with international security. The crux of security for our purposes is captured by Hedley Bull: 'Security in international politics (Bull, 1995) means no more than safety: either objective safety, meaning safety which actually exists, or subjective safety, meaning safety which is felt or experienced.' While understanding the term international security, it is also good to ask security in (or of) what? The answer to this (Bull, 1995) recognizes the vulnerability of humans who live in social circumstances. An isolated individual is inviolable from attack by other people: Robinson Crusoe knew no fear of this kind until Man Friday arrived on the island. The idea of security is directed at the problem of harmful acts by other people, either fellow citizens or foreigners and not the forces of nature.

Jackson-Preece (2011) however, suggests knowing 'security from what?' which he uses Hobbes' 'state of nature' every human being as a potential threat because of the struggle for survival limited resources and 'war of all against all' as an explanation. He continues to point, one human being may be stronger and cunning, but each is capable of inflicting harm. It implies there can never be complete trust and mutual security among human beings whose condition is precarious even in the most hospitable of circumstances. International security, therefore, is what we often refer to as pluralists or rationalists, in a world characterized by a mixture of conflict and cooperation. The international security paradigm operates somewhat differently to either the national or human security paradigms. Whereas both national and human security imagines insecurity as an external threat, there is no similar external dynamic within international security.

The current security challenges and risks in a global security environment are of a military and non-military nature; however, the majority in close evaluation is of a non-military nature. Alliances are formed between two or more countries to counter a common adversary or to deter a likely aggressive state or inter-alliances. Nature of security is determined further by states conception of their safety in the international environment which is indeed a theoretical issue. Speaking international relations is about talking alliances and their role in world politics and international relations has covered it in many articles and analyses. In reference to East Asian military alliances, the understanding of spoke is an explanation of a center of a wheel in which wire rods connect within the military alliance formation.

2. Methodology

This study applied a desktop research approach making it appropriate to use qualitative research methods and document-based research design. A desktop study, also known as secondary data analysis, allows for the exploration of existing literature, official documents, and policy reports, offering a comprehensive understanding for this case, the U.S.-led "Hub and Spokes" alliance system in East Asia within the Balance of Power (BOP) framework. This design is particularly suitable given the availability of extensive academic, governmental, and think-tank literature on the subject (Hart, 2018).

This study used secondary data, selecting documents that provide in-depth analysis of the U.S. alliances with Japan, South Korea, and Taiwan, as well as the regional dynamics involving China. These sources include academic journal articles, policy briefs, government documents, international relations reports, and historical treaties, all focusing on East Asian security, BOP theory, and alliance politics.

Content analysis is normally employed to systematically evaluate the selected documents. This method helps identify key themes, patterns, and relationships between the "Hub and Spokes" system and regional security outcomes. The analysis in such focuses on understanding of how these alliances are perceived by involved states, the role of external powers, and the implications of these alliances on regional stability. By organizing the data into thematic categories, this approach provides a clear understanding of the impact of these alliances on East Asian peace and security (Krippendorff, 2018). This methodology allows the study to efficiently utilize existing materials while ensuring rigorous analysis of complex geopolitical issues.

3. Analysis and Discussion

To address the objectives of the study, data will be presented narratively.

3.1. Nature of security alliance in the global dispensation and why they have existed

Security alliances have been triggered by numerous factors globally over many decades; the sympathy of other powers concerned and interests too, starting from Westphalia peace of 1648 to WWI, WWII, and Cold War among a few major unprecedented altercations. According to the Stockholm International Peace Research Institute (SIPRI) a total of twenty-three countries doubled their military spending in real terms during this century. They all differ in terms of size, development, geographical location, economic output and access to resources (Carbonnier & Wagner, 2015).

Most of the countries from the former two regions are members of NATO (Clowes & Choros-Mrozowska, 2015). In contrast defense spending increased in non-NATO countries such as China, Russia and India, but also in Saudi Arabia reflecting the instability and ongoing conflicts in the Middle East. Global military expenditure (Shah, 2013) stands at over $1.7 trillion in annual expenditure at current prices for 2012. It fell by around half a percent compared to 2011 — the first fall since 1998. Summarizing some key details from the Stockholm International Peace Research Institute (SIPRI)'s Yearbook 2013 summary on military expenditure; World military expenditure in 2012 is estimated to have reached $1.756 trillion, which is a 0.4 per cent decrease in real terms than in 2011. The USA, with its massive spending budget, has long been the principal determinant of the current world trend, often accounting for close to half of all the world's military expenditure. The effects of global financial crisis and the post-Iraq/Afghanistan military operations have seen a decline in its spending, now accounting for 39% of spending in 2012.

It is confirmed that from 2011 global defense spending fell with most of the reductions occurring in North America, Western and Central Europe and Oceania and this was partially due to the effects of the global recession (Perlo-Freeman et al., 2014).

The current security challenges and risks (Ivancik et al., 2014) in global security environment are of a military and non-military nature; however, the majority in close evaluation are of a non-military nature. These security challenges and risks are closely interconnected; consequently, the situation in one area can seriously affect the situation in other areas. Simultaneously, most of the current challenges and risks in one region of the world are also common to the adjacent regions, or we could even say, also in many outlying areas. This merely underlines the complexity of the contemporary international security environment.

Alliances play a central role (Dwivedi, 2012) in international relations because they are seen to be an integral part of statecraft. Alliances are formed between two or more countries to counter a common adversary or to deter a likely aggressive state or inter-alliances. Their focus in the theory of international relations is understandable because one of the central foreign policy debates in every country centers on the issue of, which nation to ally with and for how long, among strong and weak nations. Weak states enter into alliance when they need protection against strong states (mechanism for self-defense). Alternately, strong states enter into alliances as a counter to other strong states (through maintaining balance of power). In all, states expect their allies to help militarily and diplomatically in war and conflict situations. Moreover, alliances are best explained theoretically according to Stephen Walt (1987), who

asserts balance of power theory of alliances as the main tool used in the discipline of international relations to explain the formation and duration of alliances which on the contrary is explained by a concept 'balance of threat' (BoT), which in the end turns out to be a theory.

Nature of security is determined further by a state's conception of its safety in the international environment, which are indeed theoretical issues. According to the realist theory, states are the central political actors and their actions are governed by perceptions of sovereignty, national interest, and security and how to yield survival of the state as a discrete actor. This pushes states to understand threat (a perceptual concept) and security (free from threats and dangers). The scenario altogether necessitates some options; alliance - promise of mutual military assistance (Snyder, 1990), coalition - set of members acting concertedly (Fedder, 1968), ententes – partnership with no firm commitments (Snyder, 1990), alignments - policy cooperation (Snyder, 1990), balancing - seeking for states that share in fear (Waltz, 1979), and bandwagoning - joining the stronger side (Schroeder, 1994). Many theories have been advanced to explain alliance formation. Liska (1962) affirms it is impossible to speak of international relations without referring to alliances. Fox and Fox (1967) again posits theoretically that alliances are military compacts for scholars of international politics.

Digressing from the previous security arrangements, the end of the cold war marked the beginning of a new era, characterized by economic liberalization and political freedom under stimulated waves of regional integration around the world. The North Atlantic Free Trade Agreement (NAFTA) replaced the Canada-United States Free Trade Agreement of which Mexico became a part in 1994. A number of countries from the former Soviet East bloc signed association agreements and later joined the European Union (EU). The expansion of these two trade blocs together with the Association of South East Nations (ASEAN) connected the world and generated increased economic opportunities. All of them vary in terms of scale, duration, strategic approach and in their outcomes. The projection and/or defense against acts of war and aggression require a range of resources (Clowes & Choros-Mrozowska, 2015). Underlying trading together is an indication of threat and a solution to it.

3.2. Alliances on balance of power in international peace and security

The question as to whether alliances undermine or enhance is about asking why peace and security alliances exist in the first place. Alliances are a central and constant phenomenon in international politics throughout history (Bergsmann, 2001). Whether we look at ancient periods, at the Middle Ages or at the centuries of Bismarck or Napoleon, we find states forming alliances. George Liska said, speaking international

relations is about talking alliances. Prematurely to say, these alliances enhance security and peace in as much as they seem to undermine.

Reflecting this important role of alliances in world politics, the literature in international relations has produced quite an impressive list of interesting studies, articles and analyses in this area of research (Bergsmann, 2001). However, it seems striking that despite this scholarly assiduity not much thought has been given to the question "What is a military alliance?" (Walt, 1993). Now one might argue that there exists such a broad consensus about the concept that no further analysis is needed. But exactly the opposite is the case. The concept of alliance in the literature of international relations is ambiguous and amorphous (Liska, 1968, as cited in Edwin Fedder, 1968). Five years later, Holsti et al. came to the same conclusion by observing "the lack of an accepted definition of alliance" (Holsti et. al., 1973). The lingering discourse by most has been escapist trend skewed towards defining despite alliances having a significant part in global peace.

"No man is an island, entire of itself," wrote the English poet John Donne in 1624 a statement that best describes why alliances in the midst of mistrust and suspicions. George Washington, in his Farewell Address of 1796, warned his countrymen that they should not "entangle our peace and prosperity in the toils of European ambition," an admonition that has come to be viewed as a warning against "foreign entanglements" (Spalding & Garrity, 1996). But while he urged Americans to take advantage of their country's geographical isolation from the world's troubles, he was not advancing an argument for political isolationism (Lagon & Lind, 1991). If anything, he was anticipating (and sharing) the sentiment of British Prime Minister Lord Palmerston, who, speaking in the House of Commons on March 1, 1848, avowed that "We have no eternal allies, and we have no perpetual enemies. Our interests are eternal and perpetual, and those interests it is our duty to follow" (Ratcliffe, 2016).

Alliances have been a fact of international political life since antiquity (Livius, 2016), they perform a number of different functions for states, often at the same time, which makes categorization difficult. The degrees to which alliances are institutionalized also differ. Most alliances throughout history have been loose (Moore, 1999). Alliances exist to advance their members' collective interests by combining their capabilities which can be industrial and financial as well as military to achieve military and political success. Ad hoc alliances often contain strange bed-fellows. Britain, a constitutional monarchy with laws passed by Parliament, established common cause with autocratic Russia to defeat Napoleon. Similarly, in World War II, the Anglo - American democracies found it necessary, if they were to defeat Nazi

Germany, to join forces with Stalin's totalitarian state, which had been their enemy in fact, as Robert Osgood (1968) argues, "next to accretion, the most prominent function of alliances has been to restrain and control allies."

3.3. Evaluating alliances in relation to East Asian 'Hub and Spokes'

The terminologies used here in reference to East Asian military alliances are applications of how the English meaning of the two work in a military sense. Understanding a spoke as an explanation of a Centre of a wheel in which wire rods connect to the outer edge illustrate spoke relationship, where the hub (the axle) is the USA or rather the Centre from which spokes rotate around. This is very descriptive of geopolitical proxy strategy employed by superpowers.

Shelton (2016) explains these relationships thus; in the wake of World War II and in the earliest moments of a dawning Cold War, the U.S.A sought the opportunity for lasting peace through the diplomatic arrangements, alliances, and partnerships it established to provide regional stability and security. Much debate exists among international relations theorists concerning the type of alliance structure established in the post-war Asian-Pacific region. Whether as individual nations or as a collective body, the Asian-Pacific states lacked the means to deter external threats. The United States, as the new hegemonic leader of the free world, yoked itself with the disproportionate economic and security burdsheens of regional bilateral alliances in an effort to contain Communism. The burden of these bilateral arrangements "embodied a distinctive bargain: unusual and asymmetrical U.S. economic concessions to the host nation, particularly with respect to trade and investment access, in return for unusual and asymmetrical security concessions from the United States" to guarantee U.S. regional military presence and geopolitical influence in the unstable region. These bilateral treaties and agreements were designed as a network of "hub-and-spokes".

In other words, the "Hub and Spokes" security architecture became known as 'The San Francisco System' networking bilateral alliance pursued by the United States in East Asia: The United States as a 'hub', and other dependent states of Japan, South Korea, the Philippines, Taiwan, and Australia as 'spokes'.

The study examines the implications of the U.S.-led "Hub and Spokes" alliance system in East Asia within the framework of the Balance of Power (BOP) theory. Findings from the literature suggest a complex relationship between such alliances and regional peace and security, highlighting both positive and negative aspects. On the one hand, the "Hub and Spokes" system, where the U.S. plays a central role with allies like Japan, South Korea, and Taiwan, has contributed significantly to regional

stability by deterring potential aggressors, particularly North Korea and China (Cha, 2018). The military presence of the U.S. in East Asia provides a credible deterrent against the expansion of regional threats and reinforces the U.S.'s strategic interests in containing Chinese influence (Cha, 2018). This aligns with traditional BOP theory, which argues that balancing against a rising power promotes stability by preventing any one state from achieving dominance (Mearsheimer, 2014).

However, a significant portion of the literature also points to the unintended consequences of these alliances. Critics argue that the "Hub and Spokes" structure may exacerbate tensions rather than alleviate them. Specifically, the U.S.-centric nature of these alliances could provoke China, which perceives the alignment as an attempt to contain its growing power (Zhang, 2021). This perception of encirclement may lead to heightened regional insecurity, as China seeks to counterbalance the U.S.'s influence, often through military and diplomatic means (Zhao, 2019). The alignment of states under U.S. leadership might also foster security dilemmas, particularly for countries like South Korea and Japan, which face the difficult challenge of balancing their relationships with the U.S. while managing complex relations with China (Burgess, 2020). As such, rather than promoting peaceful cooperation, these alliances can contribute to an arms race or escalate regional rivalries.

The findings also highlight the role of local perceptions and regional actors in shaping the impact of these alliances. For instance, in South Korea and Japan, the U.S. alliances are viewed as essential for maintaining national security in the face of North Korean aggression and China's rising influence (Cha, 2018). Yet, these countries also recognize the limitations of their security dependence on the U.S., particularly as U.S.-China relations become more strained. As a result, there is a growing debate within these states about the need to balance their security obligations with the desire for greater strategic autonomy (Burgess, 2020).

4. Conclusion

Realism, especially balance of power theory, is in crisis after the Cold War (Elman, 2008). States seem to forget what they should do balancing the most powerful states or balancing the most threatening ones in the anarchic international system (Walt, 1987). Under US primacy, the secondary powers fail to balance militarily against the United States with either internal or external efforts (Brooks & Wohlforth, 2008).

Facing a rising China, no country claims to form military alliances to contain China, a potential threat, as had happened to the Soviet Union during the Cold War

(Shambaugh, 2004). The empirical puzzle is why is it that states do not choose traditional balance of power strategies, especially alliance formation, to deal with either US primacy or China's rise? Theoretically, why does traditional balance of power theory lose its explanatory power after the Cold War? (He, 2012).

William Wohlforth and Stephen Brooks claim that a military alliance against the hegemon is "inoperative" under American primacy because the world is "out of balance" under unipolarity (Waltz, 2000). Other realists suggest soft balancing to explain the lack of military balancing under unipolarity. Soft balancing that is countervailing US primacy by nonmilitary means is counted by some as a signal of preparation for future military alignments against US hegemony (He, 2012).

In conclusion, the study suggests that while the "Hub and Spokes" system has contributed to regional stability in some respects, it has also generated tensions that undermine broader regional peace and security. These findings underscore the need for a more nuanced understanding of how alliances shaped by BOP dynamics influence the security environment in East Asia.

Future research related to this study could explore the evolving dynamics of the "Hub and Spokes" alliance system in East Asia as the geopolitical landscape continues to shift, particularly with the growing influence of China and potential changes in U.S. foreign policy. A comparative study could be conducted to assess how other regions with similar alliance structures, such as NATO in Europe or the Middle East, experience the effects of BOP dynamics on regional security. Additionally, future studies could delve deeper into the perspectives of non-aligned states in East Asia, examining how countries like Indonesia or Malaysia perceive the U.S.-led alliances and how they balance relations with both China and the U.S. These studies would help further understand the long-term implications of BOP theory in a multipolar world order and provide more nuanced insights into the impact of foreseeable alliances on international peace and security in the 21st century.

References

Bergsmann, S. (2001). The concept of military alliance. In E. Reiter & H. Gärtner (Eds.), *Small states and alliances* (pp. 123-139). Physica-Verlag.

Brooks, S. G., & Wohlforth, W. C. (2008). *World out of balance: International relations and the challenge of American primacy*. Princeton University Press.

Bull, H. (1995). *The anarchical society* (2nd ed.). Macmillan.

Burgess, P. (2020). The impact of U.S. alliances on East Asian security dynamics: Autonomy and dependence in the hub-and-spokes system. *Asian Security*, 16(2), 101-120. https://doi.org/10.1080/14799855.2020.1740854

Callahan, D. (2017). *China's rise and the shifting balance of power in East Asia*. Cambridge University Press.

Carbonniera, G., & Wagner, N. (2015). Resource Dependence and Armed Violence: Impact on Sustainability in Developing Countries. *Defence and Peace Economics 26*(1), 115-132. https://doi.org/10.1080/10242694.2013.848580

Cha, V. D. (2018). *Powerplay: The origins of the U.S.-South Korea alliance*. The University of North Carolina Press.

Clowes, D. and Choros-Mrozowska, D. (2015) Aspects of Global Security—The Measurement of Power & Its Projection. Results from Twenty Selected Countries (2000-2013). *Journal of International Studies, 8,* 53-66. https://doi.org/10.14254/2071-8330.2015/8-1/5

Dwivedi, S. S. (2012). Alliances in international relations theory. *International Journal of Social Science & Interdisciplinary Research, 1*(8), 1–16. https://docslib.org/doc/8340063/alliances-in-international-relations-theory

Elman, C. (2008). Realism. In *Security Studies: An Introduction.* Routledge.

Fedder, E. H. (1968). The concept of alliance. *International Studies Quarterly*, 12(1), 68.

Fox, W., & Fox, A. B. (1967). *NATO and the range of American choice*. Columbia University Press.

Gilpin, R. (2011) *Global Political Economy: Understanding the International Economic Order.* Princeton University Press, Princeton.

Hart, C. (2018). *Doing a literature review: Releasing the research imagination* (2nd ed.). Sage Publications.

He, Y. (2012). *The debate on China's rise: A critical assessment* (1st ed.). *Palgrave Macmillan*.

Holsti, O. R., Hopmann, T. P., & Sullivan, J. D. (1973). *Unity and disintegration in international alliances.* New York, NY: John Wiley & Sons.

Ikenberry, G. J. (2011). *Liberal order and imperial ambitions: The theory and practice of the American world order.* Cambridge University Press.

Ivancik, R., Necas, P., & Jurcak, V. (2014). Theoretical view of some current global security challenges. *Incas Bulletin*, 6(1), 99–107.

Jackson-Preece, J. (2011). *Security in international Relations.* Undergraduate study in Economics, Management, Finance and the Social Sciences. University of London.

Krippendorff, K. (2018). *Content analysis: An introduction to its methodology* (4th ed.). Sage Publications.

Kurtz, L. R. (1999). *Encyclopedia of Violence, Peace, & Conflict.* San Diego: Academic Press.

Lagon, M. P., & Lind, M. (1991). American way: The enduring interests of U.S. foreign policy. *Policy Review*, 57, 38-44. http://www.unz.org/Pub/PolicyRev-1991q3-00038.

Liska, G. (1962). *Nations in alliance: The limits of interdependence*. Johns Hopkins University Press.

Livius, T. (2016). Discourses of Titus Livius by Niccolo Machiavelli (New Ed.). International Kindle Paperwhite.

Mearsheimer, J. J. (2014). *The tragedy of great power politics* (Updated ed.). W.W. Norton & Company.

Miller, C. A. (2005). *A Glossary of terms and Concepts in Peace and Conflict Studies*. Ciudad Colón: University for Peace.

Moore, M. H. (1999). *Securing Community Development. In Urban Problems and Community Developme*nt*. Washing, D.C.: Brookings Institution Press.

Osgood, R. E. (1968). *Alliances and American foreign policy*. Johns Hopkins University Press.

Perlo-Freeman, S., Solmirano, C., Wilandh, H., Kelly, N., Wezeman, P. D., & Ferguson, N. (2014). Military expenditure and arms production. *SIPRI Yearbook 2014 In SIPRI Yearbook 2014: Armaments, disarmament and international security*. Stockholm International Peace Research Institute. https://www.sipri.org/yearbook/2014/04

Ratcliffe, S. (Ed.). (2016). *Lord Palmerston*. In *Oxford essential quotations* (4th ed.). Oxford University Press. https://www.oxfordreference.com/display/10.1093/acref/9780191826719.001.0001/q-oro-ed4-00008130

Schroeder, Paul (1994). Historical Reality vs. Neo-Realist Theory. International Security. Vol. 19, No. 1; pp. 108-148. The MIT Press.

Shah, A. (2013). World Military Spending. Global Issues. https://www.globalissues.org/article/75.

Shambaugh, D. (2004). China Engages Asia: Reshaping the Regional Order. *International Security*, *29*(3), 64–99. http://www.jstor.org/stable/4137556

Shelton, M. (2016). Security Compromises in Journalism. The New York Times.

Snyder, G. H. (1990). Alliance theory: A neorealist first cut. *Journal of International Affairs*, 44(1), 105-119.

Spalding, M, and Garrity, P. J. (1996). *A Sacred Union of Citizens: George. Washington's Farewell Address and the American Character.* Rowman & Littlefield.

Svärd, T. (2023). *Navigating Security Challenges: Exploring Japan and South Korea's Strategic Cultures vis-à-vis North Korea – A comparative case study on Japan and South Korea's strategic cultures and theory testing on the security challenge imposed by North Korea*. (Master's thesis - Linköping University.

Vankovska, B., & Wiberg, H. (2002). *Between Past and Future: Civil-Military Relations in Post-Communist Balkan States* (p. 17). I.B. Tauris.

Walt, S. M. (1987). *The origins of alliances*. Cornell University Press.

Walt, S. M. (1993). Alliance. In J. Krieger et al. (Eds.), *The Oxford companion to politics of the world* (p. 20). Oxford University Press.

Waltz, K. (1979). *Theory of international politics*. Addison-Wesley.

Waltz, K. (2000). Structural realism after the Cold War. *International Security*, 25(1), 5–41.

Waltz, K. N. (2010). *Theory of international politics*. Long Grove, IL: Waveland Press.

Zhang, Y. (2021). China's foreign policy and the U.S.-led alliance system in East Asia. *China Quarterly*, 247, 389-406. https://doi.org/10.1017/S0305741020001671

Zhao, S. (2019). China's rise and its implications for East Asian security. *Asian Journal of Comparative Politics*, 5(3), 189-204. https://doi.org/10.1177/2057891119880156

Exploring Digital Diplomacy Practices amid Covid-19 Pandemic and its Challenges: Perspectives from Sri Lankan Diplomats

M. G. H. Madusha
University of Colombo, Sri Lanka
mghmadusha@gmail.com

Abstract

The sudden outbreak of Covid-19 pandemic forced states to shift their diplomacy practices into digital platforms to stay connected with the outside world while serving their citizens abroad. Consequently, Sri Lanka also enhanced the level of Digital Diplomacy practices to adapt to the 'new-normality' brought by Covid-19. This paper focused on examining the shifts in Digital Diplomacy as a response to the pandemic while exploring the challenges faced by diplomats in adapting to this new form of diplomacy. A snowball sample of eight diplomatic officers attached to the Ministry of Foreign Affairs of Sri Lanka were selected for the study. In-depth interviews were conducted for data collection and thematic analysis was used for data analysis. The study found digital diplomacy practices prior to Covid-19 under three main themes namely, traditional digital communication tools, limited digital public engagement and initial steps toward digital services. Digital Diplomacy practices after Covid-19 are presented under five themes as; expanded digital communication social media for public engagement, enhanced online services, adoption of virtual platforms and online portals and data management. This study further found that when practicing Digital Diplomacy, officers face challenges as, absence of legal or policy frameworks, inefficiencies in virtual meetings, officers' reluctance, limitations in capacity, lack of citizens' adaptability, data security issues, inadequate digital platforms and repository systems and, issues due to other state conditions. This study provides useful implications for policy makers on the effective use of Digital Diplomacy practices for national interest.

Keywords: Challenges, Covid-19, Digital Diplomacy, Ministry of Foreign Affairs (MFA), Sri Lanka

1. Introduction

With the impact of globalization and the massive improvement of Information and Communication Technology, internet and social media, diplomatic missions were moved to digital with the purpose of reaching a greater audience while overcoming

the limitations of traditional diplomacy. As per Verrekia (2017) the origins of Digital Diplomacy can be traced back to the United States of America (USA) and after USA, several other countries in Europe have been noted for their attempts to incorporate digital tools into their statecraft. In Asia, India took a leading role in Digital Diplomacy and certain other regions in the world did not have much progress in Digital Diplomacy (Verrekia, 2017).

Particularly, the spread of Covid-19 global pandemic impacted diplomacy in an unprecedented way as the wheels of international diplomacy came to a grinding halt with the physical diplomacy being suspended by restrictions and lockdowns (Manor, 2021). The pandemic forced countries all over the world to accelerate and enhance the use of ICTs across many societal spheres, including diplomacy (Wekesaa et al., 2021). As per Rashica (2020) it was very hard to believe that Digital Diplomacy could replace traditional diplomacy, however, the outbreak of Covid-19 pandemic proved the opposite. In the spring of 2020, a number of high-level meetings were held by the leaders of the G7, the G20, the United Nations, and the European Union, using Digital Diplomacy practices and tools (Perrett, 2020, as cited in Hedling & Niklas, 2021).

Sri Lanka, as a part of the international system carried out her public diplomatic missions mainly using conventional methods with fewer involvement of digital platforms, however, with the pandemic, similar to other countries, Sri Lanka was also forced to enhance the 'Digital Diplomacy' practices than before. Yet, the Sri Lankan government still engages in limited digital diplomatic practices in individual and organizational levels without an established Digital Diplomacy strategy, plan, or policy (Jayatilaka, 2020; Ranaweera, 2023). In other words, Sri Lanka's use of Digital Diplomacy is still in its infancy. Nevertheless, even with the limited use, there are success stories of Digital Diplomacy in Sri Lanka such as 'Contact Sri Lanka' portal and the launch of Sri Lanka Online Platform (Ministry of Foreign Affairs, 2020, 2021), which demonstrates the country's potential to achieve foreign policy goals with Digital Diplomacy. Hence, it is evident that Digital Diplomacy needs to be further embraced into the current foreign affairs of Sri Lanka.

As above, even though Digital Diplomacy is still an emerging and relatively new area to Sri Lanka, many countries in Western, Arab and even in African and Asian continents have started practicing Digital Diplomacy for years. As a result, there is an increasing interest in academia in Digital Diplomacy. Yet, as per Nyewusira (2019), the existing literature on Digital Diplomacy mainly focuses on developed regions such as Europe and America even though the practice is worldwide. Similar ideas were presented by Antwi-Boateng & Al Mazrouei (2021) that although Digital Diplomacy blossoms in many regions, studies conducted in Arab and Middle East are very rare. A similar situation can be observed in the Asian region as well. Thus, a

research gap on the concept of Digital Diplomacy was identified especially among developing or non-Western counties, emphasizing the need to conduct more research on Digital Diplomacy in diverse contexts, as the adaptation of Digital Diplomacy practices in developing or non-westers countries could be rather different or unique. In order to bridge this identified gap, a qualitative study was conducted with the objective of examining the shifts in Digital Diplomacy practices of Sri Lanka as a response to the pandemic, while also exploring the challenges faced by diplomats in adapting to this new form of diplomacy. With this research it is expected to answer the question 'how is Digital Diplomacy practiced in Sri Lanka?'

This research was intended to focus on the experiences and perspectives of diplomatic officers attached to the Ministry of Foreign Affairs (MFA) of Sri Lanka, using in-depth interviews and generating common themes on practices and challenges relating to Digital Diplomacy. The study provided significant research implications on various Digital Diplomacy practices by Sri Lankan diplomats with a comparative analysis between pre and post Covid-19, reflecting Sri Lanka's journey towards digitalization of public diplomacy. Further, challenges faced by diplomatic officers provide various policy implications regarding the way forward with Digital Diplomacy. Findings of this study provide readers with a context-specific understanding of Sri Lanka's experience with Digital Diplomacy.

2. Theories of Diplomacy and Digital Diplomacy

2.1. Diplomacy

The concepts 'diplomacy' and 'public diplomacy' have been used as synonyms which center on diplomatic communication between political entities and people usually in foreign countries but, in some accounts, also domestic publics (Huijgh, 2016). It was observed that there are traditional and modern views of public diplomacy. Traditional or the 20th century public diplomacy is conceptualized in the literature as state-to-state diplomacy with information-messaging, cultural projection and international reputation management (Huijgh, 2016). Bull's view of diplomacy and Watson's characterization of diplomacy – two of the most commonly used definitions for diplomacy as per Bjola (2015), cater for the traditional view of public diplomacy. Bull defined diplomacy as "the conduct of relations between states and other entities with standing in world politics by official agents and by peaceful means" (Bull, 1997 as cited in Bjola, 2015). Watson defined diplomacy as "the process of negotiation between political entities which acknowledge each other's independence" (Watson, 1984 as cited in Bjola, 2015). Where both definitions are concerned, it is clear that the most prominent characteristic of diplomacy is conducting negotiations via peaceful means to achieve the interests of states. As per Bjola (2015), both definitions captured the fundamental feature of diplomacy as a nonviolent approach to reconciling interests among international actors, especially states.

The 21st century public diplomacy or the new public diplomacy is built upon the idea of the formation of relations through dialogue and networking activities by many actors above and below the level of national government and different types of nongovernmental actors at home and abroad (Huijgh, 2016). Going with the modern view, many scholars have identified diplomacy as the relationship of various actors in international relations (Purwasito & Kartinawati, 2020), conducted under the guidance of presidents and prime ministers as well as lawyers, scientists, economists, aid workers, and of course, ambassadors (Pop, 2021). Literature reveals that there are several forms of diplomacy based on diplomatic relations, diplomacy engagements and core functions (Constantinou et al., 2016), which cover different aspects of diplomacy, including but not limited to; great power diplomacy (Navari, 2016), developing states diplomacy (Calleya, 2016), crisis diplomacy (Avenell & Dunn, 2016), coercive diplomacy (Jakobsen, 2016), citizen diplomacy (Tyler & Beyerinck, 2016), Digital Diplomacy (Gilboa, 2016) and, consulates and consular diplomacy (Pasarín, 2016).

2.2. Digital Diplomacy

Digital Diplomacy has been interpreted, defined and understood in different yet similar ways by researchers and practitioners alike (Olubukola, 2017). Many terms with different aspects have been used to expalain Digital Diplomacy (Manor, 2018) such as 'e-diplomacy' (Rashica, 2018; Ranaweera, 2023; Verrekia, 2017; Wekesaa et al., 2021; Pop, 2021), 'internet diplomacy', 'network or net diplomacy' (Manor, 2018; Wekesaa et al., 2021), 'cyber diplomacy' (Manor, 2018; Ranaweera, 2023; Wekesaa et al., 2021; Pop, 2021), 'diplomacy 2.0' (Wu & Sevin, 2022; Huxley, 2014; Manor, 2018), and 'virtual diplomacy' (Ranaweera, 2023; Wekesaa et al., 2021).

Due to different viewpoints and terminologies, Digital Diplomacy lacks an official or commonly agreed clear definition (Verrekia, 2017; Manor, 2018). There are different definitions of scholars addressing different arenas of Digital Diplomacy. For instance, Pop (2021) and Wekesaa et al. (2021) defined Digital Diplomacy as the use of internet and ICT with diplomacy. Kurbalija & Höne (2021) defined Digital Diplomacy as use of social media in diplomacy. Huxley (2014) defined Digital Diplomacy as state leaders' activity on social media sites such as Twitter or Facebook. Richard H. Solomon (1997, as cited in Ranaweera, 2023) has comprehensively defined 'virtual diplomacy' as "interactions of an economic, political, and social nature that are conducted through electronics as opposed to traditionally communicating face-to-face." This definition focused on different areas that a diplomat has to focus with the shift of traditional diplomacy towards digital or 'virtual diplomacy'. And Manor (2016) defined Digital Diplomacy as the overall impact ICTs have had on the conduct of diplomacy; ranging from the email to smartphone applications at both the institutional and personal level. Manor has also defined the term very

comprehensively, focusing on the technology, impact, tools and the levels of practicing Digital Diplomacy.

As the theories that can explain the rational of usage and application of digital tools in diplomacy in a sensible manner, two theories were identified, namely; 'practice theory' and 'change management theory'. According to Holmes (2015a) 'practice theory', which emerged out of the "practice turn in social theory" seeks to bridge many of the dualist positions that were obtained from constructivist approaches. There, diplomacy is understood as a discrete practice rather than understanding it though structured theories. Digital Diplomacy professionals are ultimately engaged in the 'practice of politics' through engagement with other foreign and domestic parties using multiple ICT and social media tools and can be understood as a form of 'practice theory in public diplomacy' (Holmes, 2015a). Digital Diplomacy as a form of 'international change management' has been presented in the book "Digital Diplomacy: Theory and Practice" edited by Bjola and Holmes (2015). Adoption of Digital Diplomacy is an implication of change of practices of how diplomats engage in information management, public diplomacy, strategy planning, international negotiations or even crisis management. According to the authors, there are two dimensions where Digital Diplomacy facilitates change management; namely policy level and institutional level (Holmes, 2015b). Altogether, the above theories try to understand Digital Diplomacy as a practice and as a form of change management. In this study also, it is expected to explore the practice of Digital Diplomacy pursuant to a change in the global phenomena due to the outbreak of a global pandemic, both in policy level and institutional level.

2.3. Conceptual Framework for Digital Diplomacy

Manor (2019) has provided a conceptual framework rooted in the term 'the digitalization of public diplomacy'. He has identified digitalization of public diplomacy as a long-term process in which digital technologies impact the norms, values, and working routines of MFAs, as well as the metaphors or self-narratives that diplomats employ to conceptualize their craft. Hence digitalization of public diplomacy has three dimensions; normative, procedural and conceptual. Manor's framework has also identified three factors; organizational, national and global, which influence the digitalization process of public diplomacy by diplomats (Manor, 2019). Based on the inspirations received from Manor's framework, the following model (Figure 01) has been designed as the conceptual framework of the study.

Figure 01: Conceptual Framework for Digital Diplomacy
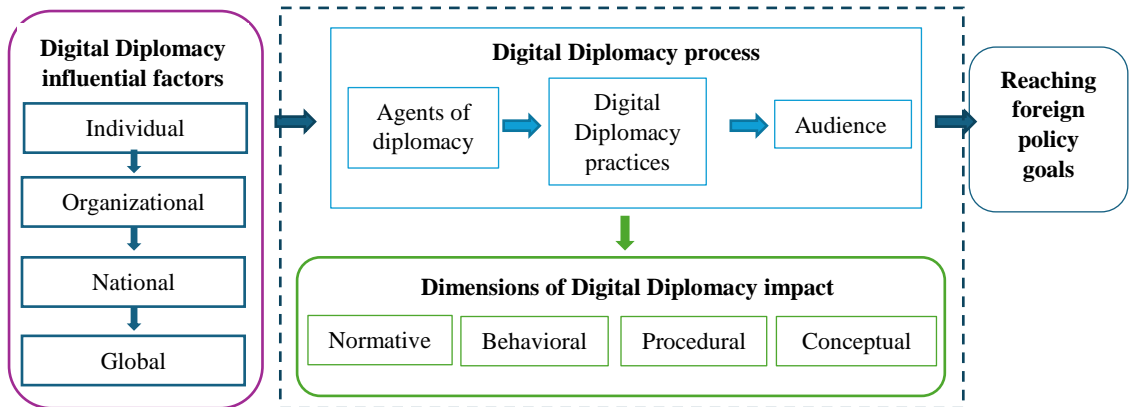
S*ource: Based on the literature revie**w***

2.4. Digital Diplomacy Practices

According to Hedling & Niklas (2021) the 'practice' idiom in Digital Diplomacy can be used to describe a range of concrete phenomena from mundane aspects of local e-mail protocol to ceremonial use of social media in state representation or increasingly structured activities of teleconferenced negotiations in international organizations. Hence it is clear that 'practice' is the established use of a tool. Digital Diplomacy inlcudes the use of social media and several other tools that are being used including messaging applications, email, video conferencing, official websites with digital platforms (Manor, 2016; Antwi-Boateng & Al Mazrouei, 2021; Jayatilaka, 2020; Ariyawardana, 2021) by several countries, which had led established practices all over ther world. As per Madu (2018) official websites were initially utilised solely for providing information however, as of today, these MFA websites facilitate the contact of citizens with diplomatic staff abroad (Abduazimov, 2021), practicing consular diplomacy. Among social media platforms, Twitter and Facebook were popular (Rashica, 2018; Wu & Sevin, 2022; Manor, 2018; Verrekia, 2017), but several other social media including Instagram, WhatsApp, Telegram were also in use (Huxley, 2014; Ranaweera, 2023; Bilate & Zou, 2022). Online meetings and conferences were popular with the Covid-19 outbreak and are still in use. Zoom, MS Teams, Google and Tencent platforms were used in such practices (Verrekia, 2017; Ranaweera, 2023; Bilate & Zou, 2022). Chat bots (Manor, 2021) big data modelling (Manor, 2021; Kurbalija & Höne, 2021) smartphone applications (Manor, 2016; Huxley, 2014), Artificial Intelligence (Kurbalija & Höne, 2021) and virtual embassies (Manor, 2018) were among the Digital Diplomacy practices presented in referred literature.

2.5. Challenges of Digital Diplomacy

As Abduazimov (2021) mentioned, Digital Diplomacy has its pitfalls and cannot represent all the benefits of face-to-face diplomacy because it minimizes the non-verbal part of communication in negotiations. European diplomats were speaking out about the constraints of operating online, such as the inability to "read a room" or engage in corridor diplomacy in order to reach consensus on sensitive issues (Barigazzi et al., 2020; Heath, 2020, as cited in Hedling & Niklas, 2021). Many scholars pointed out that cyber security and defense concerns are a challege to Digital Diplomacy due to information leakage and hacking (Pop, 2021; Gunawardane & Jone, 2022). Misleading information (Pop, 2021; Gunarathne, 2019; Abduazimov, 2021), anonymity (Olubukola, 2017; Jayatilaka, 2020), verbal attacks and hate speech (Manor, 2016; Ranaweera, 2023), lack of knowledge about the usage (Rashica, 2018; Verrekia, 2017) and technical barries (Manor, 2016; Purwasito & Kartinawati, 2020) were also identified as common challenges to Digital Diplomacy.

3. Methodology

This study focused on exploring Digital Diplomacy practices by Sri Lanka prior to and after the Covid-19 outbreak and, to identify challenges faced by diplomatic officers when practicing Digital Diplomacy. This is a qualitative study, conducted during the year 2023. Sample of 08 foreign service officers attached to MFA of Sri Lanka were selected using snowball sampling technique. The primacy contact was made through personal contacts and snowball sampling technique was used thereafter. Sample profile of respondents is provided in Table 01. Prior to data collection, respondents were informed of the purpose of the study, anonymity and the confidentiality of the collected data. Sample profile was created upon receiving respondent's consent to publish the same. Data collection was conducted through semi-structured, in-depth interviews. Both pre-determined and spontaneous questions were raised based on the answers provided by the interviews and further clarifications were sought where necessary. Pre-determined questions were raised using an interview guide. Data was collected from 30th July 2023 to 25th August 2023. Out of the eight interviews, five were conducted as face-to-face interviews and three were telephone interviews. Telephone interviews were conducted with the respondents who were assigned to foreign missions. Data analysis was done using thematic analysis, with the purpose of identifying main Digital Diplomacy practices in Sri Lanka prior to and after Covid-19, and challenges faced by Sri Lankan foreign service officers when practicing it.

Table 01: Sample Profile

Respondent No.	Age	Educational Attainment		Missions assigned by region (Not in order)	Total Experience in Foreign Service (Years)	Grade
		Bachelor's Degree (whether a related discipline or not)	Other qualifications			
01	54	Bachelor's degree in other discipline	Masters's degree in related discipline	South-East Asia, Europe, Middle East	18	Grade I
02	53	Bachelor's degree in other discipline	Professional Qualification and a Postgraduate Diploma in related discipline	Europe, South-East Asia, EU, East Asia	25	Grade I
03	*	Bachelor's degree in related discipline	Masters's degree in related discipline	Europe	*	Grade III
04	55	Bachelor's degree in other discipline	Foreign Diplomatic Trainings	East Asia, Europe. UN	25	Grade I
05	38	Bachelor's degree in related discipline	Masters's degree in related discipline	Europe	08	Grade III
06	56	Bachelor's degree in other discipline	Masters's degree in related discipline	Western & Eastern Europe, South Asia	23	Grade I
07	35	Bachelor's degree in other discipline	-	CHOGM, SAARC	10	Grade II
08	54	Bachelor's degree in other discipline	Reading for a master's degree in a related field	East Asia, South-East Asia, Europe, South Asia, Australia	25	Grade I

*Limited personal information was given by the respondent

**Specific missions assigned were not disclosed based on the request by the respondents.

Source: Field Data, 2023

4. Analysis and Discussion

Analysis of data gathered from interviews has provided different perspectives about Digital Diplomacy practices of Sri Lanka prior to and after the Covid-19 outbreak, and different challenges encountered by respondents when practicing Digital Diplomacy. Based on their responses, themes were identified, and explanations are presented with excerpts in this section.

4.1. Digital Diplomacy Practices Prior to Covid-19 Outbreak

Ministry of Foreign Affairs (MFA) in Sri Lanka started adopting ICT and digital tools in diplomacy since 1990's. MFA has an IT division named 'Cypher Division' which is responsible for handling and introducing ICT tools and practices in the ministry. Several practices were identified as the practices that existed prior to Covid-19. Some of such practices are not in use anymore, while most of these practices were used at a minimum level prior to Covid-19. These practices were categorized under three themes namely; traditional digital communication tools, limited digital public engagement and initial steps towards digitalization and under each theme, several Digital Diplomacy practices that existed prior to Covid-19 are discussed as sub themes.

4.1.1. Traditional Digital Communication Tools

Fax Communication

The use of fax as one of the oldest practices of Digital Diplomacy which was there since 1990's. However, fax was eventually replaced by email. Today, according to respondents, the scanned copy of a fax is being emailed as the formal practice of communication among the ministry and its divisions. However, by the time Covid-19 broke out, respondents implied that the use of fax was no longer there.

> *"The mode of communication when we joined was the Fax. Now we mostly use the fax format. But we transmit the fax messaged via email" (Respondent 06).*

Email Usage

Email has become the main formal mode of communication at MFA and all the respondents have used email since they joined as diplomatic officers. Initially, MFA had used an in-built email system which was later replaced by 'Gmail' with ministry domain (*mfa.gov.lk*). Emails were mainly used to send a formal information faster, till the officers get the hard copy of the same. Rather than including message in email body, emails were used to send with the scanned copies of the official documents attached. Sometimes this attachment is a memo or a 'fax' massage.

> *"We mainly used memos. We emailed the memo. Even in Europe when I wake up in the morning there may be 50 emails in my inbox, from our government and from the UN"* (Respondent 03).

4.1.2. Limited Digital Public Engagement
Official Websites

As a practice of Digital Diplomacy, MFA and individual missions overseas had maintained official websites to provide information to interested stakeholders about Sri Lanka. Prior to Covid-19, websites were merely used to provide basic information about the country and the scope of MFA or the relevant missions. It was clear that prior to Covid-19, official websites were there only to serve the requirement of having a website rather than to serve diplomatic goals through the website. Citizens or foreigners were unable to reach MFA or missions directly through websites.

Social Media Presence

Prior to Covid-19 Twitter, Facebook and WhatsApp were the main forms of social media platforms used by MFA for official purposes. Twitter was the recommended form of social media by the MFA to have in every embassy. In the MFA, the ministry, minister and the state minister had twitter accounts. In addition, each embassy and ambassadors also had separate twitter accounts. Ministry also had an official Facebook page which was not active as of now.

> *"By 2017, all departments had twitter. Even the Minister… (purposefully removed the name) …. was also very active on twitter"* (Respondent 03).

WhatsApp for internal communication

WhatsApp was only used for internal communication among the Ministry staff and Missions' staff. When there were special projects, officers planned and communicated such projects through WhatsApp groups. WhatsApp was not used as a mode of communication between citizens and officers prior to Covid-19. Refer to some excerpts from the respondents below.

> *"WhatsApp was there since 2015. We used WhatsApp chats and groups to discuss many matters. Prior to discuss policy matters, we created WhatsApp groups to get inputs"* (Respondent 03).

4.1.3. Initial Steps Toward Digital Services
e-DAS

In 2018, MFA introduced an 'Electronic Data Authentication System' commonly known as e-DAS, to provide consular services to the public, online. e-DAS was developed with the purpose of granting authentication for documents online, providing overseas embassies the ability to check authenticity of documents by scanning a QR code. However, the system was not customer friendly and after the introduction in 2018, there was no further development to the system, until very recently.

"We introduced e-DAS in 2018. When people came with certificates, we verify them, upload a scan copy to the e-DAS and issued a document with a numeric code and a QR code. When the customer goes to the embassy and presents the QR code, embassy can check the uploaded documents in our system. But it was not very customer friendly back then" (Respondent 07).

Online Appointment System

In addition, there was an online appointment system for those who come for consular services even prior to Covid-19. However, the system was a very primary token system and was not user friendly and resulted in many delays.

4.2. Digital Diplomacy Practices After Covid-19 Outbreak

With the sudden outbreak of Covid-19 global pandemic, existing Digital Diplomacy practices were enhanced with new features. In addition, several new practices were introduced to diplomatic officers in Sri Lanka. Such enhanced practices and newly initiated practices are presented below under five themes and several sub themes as; expanded digital communication, social media for public engagement, enhanced online services, adoption of virtual platforms and online portals and data management.

4.2.1. Expanded Digital Communication

Extensive use of email

After Covid-19 outbreak, to prevent the spread of the virus MFA switched from paper-based documents to e-documents. MFA sent emails attaching softcopies of such e-documents. Email was used extensively, reducing the use of paperwork. As a new initiative, email was used as a mode of communication with citizens. Citizens sent emails to the embassy with their requests and responses. Certain consular services were also provided via email. Documents that were submitted physically were sent via email to the consular affairs division for further proceedings. Some documents were sent directly to the consular affairs division by the divisional secretariat offices. Further, embassies also communicated certain information with citizens via email, including community awareness, news and updates regarding the events organized by the embassy for citizens.

"Before Covid when there's a death the people had to physically come to us with documents. But now they email those through the divisional secretariat. Covid-19 was the main reason for that" (Respondent 07).

Revamped Official Websites

During and after Covid-19, major changes were done to MFA and embassy websites. Both MFA and missions frequently published larger amounts of updated information. Also, there were contact portals published in MFA official website for citizens to

contact the MFA. In addition, MFA official website provided links to social media pages handled by the ministry.

"We have 'Contact Sri Lanka portal' and invest Sri Lanka information for foreign investors published on our ministry website" (Respondent 02).

4.2.2. Social Media for Public Engagement
Mandatory Social Media Presence

As per the respondents, after Covid-19 outbreak, embassies were advised to maintain active twitter and Facebook accounts as a mandatory practice. Missions started to use Facebook and Twitter for community interactions with the citizens abroad. Further, the MFA and embassies started official Instagram pages and YouTube channels. They organized certain events online and live streamed via YouTube and Facebook. Information and invitation links for certain events were published in Twitter and Facebook pages. In addition, missions have used their official Facebook pages for economic diplomacy, promoting tourism and national image.

".... for economic diplomacy also we used Facebook a lot. To promote tourism, to promote the image of the country. This happened though the official social media platform of the embassy" (Respondent 05).

Use of WhatsApp and Telegram for Crisis Communication

It was found that diplomatic officers used WhatsApp to communicate with citizens during Covid-19. According to respondents, WhatsApp is still being used to communicate with citizens in conflicting areas. 'Telegram' was also used by the MFA to communicate among diplomatic officers regarding official matters. There were Telegram groups among Ministry officials. In addition to mandatory social media platforms, the MFA and missions adopted different social media platforms such as Viber, Facebook Messenger, LinkedIn and WeChat, based on the available technologies in the host country.

"Recently there was a civil conflict in Sudan. And we brought around 60 Sri Lankans home. We only used social media to because the telephone communications were broken. We exchanged information through WhatsApp and Facebook Messenger" (Respondent 07).

4.2.3. Enhanced online services
Development of e-DAS

e-DAS system, which was a system that existed prior to the Covid-19 outbreak, was rapidly developed after the outbreak. The service has integrated with the Examination Department and Registrar General Department (RDG). Apart from the Sri Lankan missions abroad, e-DAS facility was extended to several other countries as well.

"...we have developed e-DAS. Now examination certificates go live. We were given view-only facility by RGD. We're planning to fully integrate so that any citizen abroad can get original birth/ death/ marriage certificates, translated and attested though our missions overseas. We have extended the facility to India, UAE, China, Thailand, Bangladesh also. Through that they can check if a particular document is authenticated or not" (Respondent 07).

Streamline online appointments

Consular division of the MFA obtained a version of 'Mobitel e-channeling' system as the 24/7 operating call center for online appointments. Once the request was placed, appointment was scheduled 1.5 days after the request with a specific time. With that, waiting time of the individuals were minimized.

Prior to Covid, the MFA delivered a service of issuing a 'Life Certificate' where the relevant citizen was required to be physically present to get the certificate. It was a certification issued annually, to Sri Lankan pensioners who live abroad, certifying that they are among the living. During Covid-19, senior citizens were unable to physically be present at the embassy, therefore, missions introduced a 'Zoom' based practice to contact the pensioner via a video conference and issued life certificates, which is still in use.

"Each year, pensioners have to send a life certificate to prove that they are still living. General requirement is that they have to come to us. ...during the pandemic we have introduced a system to interview them via zoom video conferencing to ensure that they are living. Now we're continuing the practice" (Respondent 06).

4.2.4. Adoption of Virtual Platforms
Virtual Meetings

All the respondents stated that introduction of virtual meetings was one of the main practices newly introduced to Sri Lanka, with the Covid-19 outbreak. Previously, there were tele-conferences on rare occasions, however, in most cases, when the minister wanted to consult diplomats, such meetings were held physically in Colombo. With the overnight lockdowns due to the spreading of Covid-19, the entire world had to find solutions to meet and work remotely. Sri Lanka was on par with the other states when adapting to online meetings. In multi-lateral sessions Sri Lanka adopted the technology used by that organization. Sri Lanka joined both bi-lateral and multi-lateral meetings including SAARC ministerial meeting, UNHRC sessions and several other inter-governmental sessions online using 'Zoom'.

While using Zoom for bi-lateral and community meetings, the Cypher division (IT division of MFA) had introduced 'Web X' platform for meetings within the MFA

and its departments (missions) abroad. It was a more sophisticated platform than Zoom and with more features. MS Teams was also used to conduct online meetings and respondents stated that after Zoom, it was the mostly used meeting platform with external parties.

> *"Ministry has a separate platform for virtual meetings – Web X. I think compared to zoom, that had more facilities. We used it for both official meetings and negotiations. Once I arranged a meeting on exports in Berlin, and we shared our link with Sri Lanka Export Development Authority"* (Respondent 05).

Digital Diplomatic Events

In addition, with the support of digital tools, it was found that Sri Lanka hosted several virtual sessions and events. For the first time, Sri Lanka held a credential ceremony online using Zoom platform. Moreover, several community and cultural engagements were held virtually by individual missions.

> *"Sri Lanka held a credentials ceremony online, via zoom for the Indian HC, Brazil and Iran Ambassadors to Sri Lanka. We designed our own concept allowing the delegates to show and award credentials by showing it to the camera after a brief introduction. It was 1st time in the world. Then UAE did a similar thing"* (Respondent 07).

4.2.5. Online Portals and Data Management
Introduction of 'Contact Sri Lanka' Portal

After Covid-19 outbreak, Sri Lanka introduced several online portals to contact citizens abroad. The MFA introduced a common portal for every citizen outside who wanted to return to Sri Lanka to register with the Ministry. The portal was named as 'Contact Sri Lanka' portal. Other than that, individual missions separately initiated their own portals by way of Google forms, World press portal and other means to gather information of citizens relating to the missions. All the respondents mentioned 'online portals' as a very useful practice to gather information when required.

> *"Contact Sri Lanka portal was initiated by Dr. Ravinath Ariyasinghe, then foreign Secretary of Sri Lanka. It was a portal opened for Sri Lankans outside, aiming to bring Sri Lankans back to motherland. It worked very well and it really helped lot of people. I think there we have a success story"* (Respondent 03).

> *"In Vietnam during Covid, we created a Google form and shared it among citizens through the embassy Facebook page to create a database"* (Respondent 08).

Transition to E-Documents

Covid-19 replaced many hard copies with soft copies. The MFA reduced many paperwork and started to email the soft copies of the documents. Other than in highly important cases, all the official work was done using e-papers. Further, with the introduction of e-newspapers the MFA stopped its old practice of sending a huge parcel of newspapers to each embassy weekly.

Based on the responses it was found that, recently, the Cypher division has started a project to store the scanned copies of documents, instead of maintaining it physically. Documents were scanned and stored in Hard Disks. In addition, the Consular affairs division is using a cloud storage to store their data to which officers can access from anywhere facilitating remote working.

> *"...we started scanning of documents. Cypher division stored the data in hard disks. But in the consular affairs division we store everything in the 'telecom' cloud. For that we can access anytime anywhere"* (Respondent 07).

4.3. Challenges of practicing Digital Diplomacy

Several challenges have been faced by the officials when practicing Digital Diplomacy due to various internal and external reasons. Following paragraphs explain such challenges in detail.

Absence of legal or policy frameworks

There was no consistent national policy on Digital Diplomacy in Sri Lanka. As a result, there are many duplications and confusions among the staff of the MFA and between the ministry and other Government organizations. On the other hand, there are no clear legal frameworks to govern the practice of Digital Diplomacy in Sri Lanka. The existing laws do not provide a legal framework regarding the relationship with citizens in a digital age. Also, there are gaps in data security laws all over the world.

> *"There's no national policy or consensus or agreed position with all stakeholders on this matter"* (Respondent 04).

> *"....there is an issue with data security. There are ongoing court cases regarding that. Still there is no law to cover this, not anywhere in the world"* (Respondent 07).

Inefficiencies in virtual meetings

The use of digital technology to have virtual meetings was not always effective. In bi-lateral meetings there are many aspects than verbal communication to reach is best interests for Sri Lanka. It may be a handshake, a friendly chat, or even a conversation during a meal. Based on the country dynamics diplomats had to decide what to tell

and what not to tell. And even during a multi-lateral setting, there are many bi-lateral discussions involved during a walk to the conference hall. But in a virtual meeting none of these were present. Virtual meetings were not effective to discuss sensitive matters in multi-lateral meetings. When voting is scheduled to take place for a resolution or proposal, meeting virtually does not support to hold effective negotiations among states.

> *"Virtual meetings are good, but diplomacy is something which is conducted in person. There is a personal dimension of diplomacy. You meet a person, shake hands, have a meal. That aspect is not there in online communication"* (Respondent 06).

> *"Voting taken via online was a disadvantage to the country against whom a resolution is to be brought. When there were UNHRC resolutions passed online regarding Sri Lanka, Iran and Venezuela, all 3 countries were against it"* (Respondent 03).

Officers' reluctance

It was found that reluctance of diplomatic officers to use Digital Diplomacy practices was a challenge to practice Digital Diplomacy. Due to the absence of proper policy or legal framework to back up the officers towards paper-less diplomacy, officers continued to rely on paper-based communication without adapting to digital technologies. Another reason for this reluctance was the challenge faced by officers when handling social media platforms. Diplomatic officers were reluctant to share information on social media due to the secrecy of the assignments. Some do not intensively use social media due to the fear of getting backfired or gaining a negative image. Also, there may be invasions to privacy.

> *"Officers worried abot using social media. Sometimes there may be backlashes, they are being monitored. Government might find that certain content is not appropriate, communities might give negative comments etc."* (Respondent 06).

Other reasons for reluctance of the officers were individual traits or personalities. Some did not support because they did not like to practice it. Respondents admitted that it is easy to deal with technology if the staff is relatively young. Some seniors were not very much supportive towards digitalization. Some did not fully support Digital Diplomacy because of the fear that their jobs would be replaced by virtual platforms. Already there are virtual embassies with lesser amount of human involvement, so they were worried for their job.

Some officers did not like digitalization because they gained benefits from exploiting the conventional practices of diplomacy. With the introduction of digital practices,

they were unable to gain benefits or to exploit people. Hence, they were not supportive towards Digital Diplomacy.

> *"Even with this e-system for new passport – many were reluctant. It reduced the time to issue a new passport from 3 months to 3-4 weeks. People don't like it because you can't malpractice when the technology is presented"* (Respondent 01).

Limitations in capacity

The lack of human, technical and financial capacities are other challenges. Human capacity issues occurred due to inadequate number of officers and lack of competencies of existing officers. When practicing Digital Diplomacy, IT literacy and training is required but officers had to use ICT tools without proper training. Tech savvy younger generations managed but others lagged behind. Further, missions in general dealt with lack of human resources. Therefore, once the ICT practices came it was an additional burden because there were no adequate staff to handle new practices. Officers, while conducting all the other duties managed databases, maintained contact with citizens online and arranged online meetings.

Practice of Digital Diplomacy in Sri Lanka was challenging due to poor technological capacity. When Covid-19 pandemic resulted in locked downs, the MFA converted their conventional practices to digital and introduced virtual meetings. But officers faced many technological issues due to poor connectivity. Further, officers assigned to outside missions did not have infrastructure such as video camera, conference rooms for online meetings or other essential equipment to practice Digital Diplomacy. Even though the requests were made, those were not provided overnight. Officers had to find their own solutions to practice Digital Diplomacy.

> *"Even with UN system Infrastructure was not in place. Global South didn't have any infrastructure. Still not. It's the digital divide. West and developed were far ahead than us"* (Respondent 03).

Lack of financial capacity was also a huge challenge for Sri Lanka to practice Digital Diplomacy. Going for ICT always included an initial investment and both software and hardware for ICT were very costly. However, Sri Lanka's economy was not doing well and funding was always a problem. Although the Government of Sri Lanka was very supportive towards adaptation of Digital Diplomacy practices, Government was helpless in some situations.

> *"….the Government was very supportive. But Government also did not have money. So, when we requested all these equipment, government was not in a position to give approval overnight. It took some time"* (Respondent 05).

Lack of citizens' adaptability

Diplomats faced many challenges due to lack of adaptability towards the digital technologies by the citizens. Citizens still relied on paperwork. When the MFA introduced e-DAS system although it fulfilled the need very easily, people were still asking for a printed certification instead of QR code. They were reluctant to trust that a QR code will provide access to authenticated documents.

> *"Even with fully online system, people still want physical documents. Our customers when we only issue a QR code come and ask whether this is all they got and why they were not given any real certificate. Even people in younger generations and even graduates do that. That attitude is there"* (Respondent 07).

Some citizens were reluctant to adapt Digital Diplomacy practices due to poor ICT literacy. Many of the Sri Lankan citizens are not familiar with ICT. When analyzing the mode people used to make online appointments, nearly 40% needed support from a third party to make an appointment using a simple process. Therefore, they are very reluctant to adapt to these new systems. In addition, some citizens are reluctant to adapt to Digital Diplomacy because they did not like it. Some are reluctant due to privacy concerns and some due to their negative attitude towards change. There were citizens who came without appointments and expected the officers to serve them without appointments, which has been a very challenging situation to deal with.

Data security issues

Another major challenge of Digital Diplomacy is security issues. One of the most important features of diplomacy is secrecy. And with the use of ICT tools, there are vulnerabilities to secret information. Certain technologically advanced countries do not use ICT to send and receive confidential information due to the possibility of leakage by hacking.

> *"... confidential emails are sent directly to the personal email of the high commissioner or the ambassador. But I don't think they are secure. Some countries such as Russia do not send their secure communications via electronic means. They dispatch human couriers (people). They don't trust technology"* (Respondent 06).

Also, there were instances where the service providers exploited user data.

> *"Since the online service providers of MFA such as email and social media are companies incorporated in other states, therefore, sensitive information transmitted through their servers may be provided to another party by the company itself for business purposes"* (Respondent 07).

Inadequate digital platforms and repository systems

"The absence of a common network platform (intranet) between the ministry and missions outside, as a challenge. Whenever they wanted to share or find information, they were unable to share it by way of a common folder or platform. Rather, they had to pick one by one separately and email or do it through another social media platform such as WhatsApp. Although the MFA practiced remote working, still all the work was done via email" (Respondents 06 & 07).

"Our computers are not connected. We don't have intranet which I see as a challenge" (Respondent 06).

Except in the consular affairs division, the MFA did not have a data repository system with remote access. There was a data archiving system in place, but data was stored in hard drives instead of a cloud storage. If officers want to refer archived documents, they have to physically come to Cypher division to find it. That was not suitable for a ministry that has its departments outside the country.

Issues due to other state conditions

Practice of diplomacy was challenging due to the conditions and practices of other states in the world. Some countries did not have access to technologies due to sanctions etc., and some countries did not prefer to use certain technologies. In some states digital connections were destroyed due to conflicting situations and practice of Digital Diplomacy was challenging in such situations. Apart from that there were some legal restrictions of other countries that affected the Digital Diplomacy practices in Sri Lanka.

"There were issues with some countries who did not have e-commerce platforms. With them it was hard to manage contacts during Covid" (Respondent 02).

"...we're conducting that (Digital Diplomacy) through modern technology based on availability of facilities in the host countries. In some countries there is no access to ICT. One example is Myanmar. ITC is totally unavailable. May be in Iran as well" (Respondent 04).

It is apparent that both internal and external factors created challenges for the diplomatic officers when practicing Digital Diplomacy.

4.4. Discussion

When comparing Digital Diplomacy practices of Sri Lanka it was found with the empirical literature that certain similar practices have been identified. Manor (2016) mentioned the gradual shift from letters to email as an initial practice of Digital Diplomacy. Similarly, respondents in this study explained that they have transformed

to sending scanned copies of letters through email. Use of fax was identified as a Digital Diplomacy practice in Sri Lanka (Ariyapperuma, 2020, as cited in Ranaweera, 2023). However, this study identified fax as an outdated practice in Sri Lanka. Kurbalija & Höne (2021) and Madu (2018) stated that, states maintained official websites for information purposes even prior to starting of interactions under Digital Diplomacy. Abduazimov (2021) confirms that later, the MFA websites facilitated contact of citizens. Similar findings were revealed by this study.

Twitter and Facebook were the most popular social media platforms in Sri Lankan Digital Diplomacy. Manor (2018), Rashica (2018), Madu (2018) and Ranaweera (2023) also revealed Twitter as the most popular social media platform, followed by Facebook, Instagram and Telegram. Jayatilaka (2020) stated that missions were given the discretion to select social media platforms. According to literature, messaging platforms became popular after the outbreak of Covid-19, and the findings of this study confirm the same. As per literature, conduct of online meetings were standardized only after Covid-19. This study also revealed that Sri Lanka started practicing online meetings only after the outbreak of Covid-19. Abduazimov (2021), Bilate & Zou (2022), Ariyawardana (2021) and Hedling & Niklas (2021) stated that Zoom and MS Teams are popular platforms for video conferencing. Findings of this study have revealed certain practices that were not found in literature. Although there are practices as electronic data authentication system (e-DAS), online appointment system, call center facility and issuing of life certificates via email those were not found in referred literature. The reason for this difference may be due to the fact of leaving consular services out of the traditional definition of diplomacy. As per Pasarín (2016), even though the 20th century disdained consular diplomacy as the *'Cinderella service'* within the MFA, the 21st century has restored the role of the consular affairs segment of diplomacy as an agent of securitization both in civil protection operations and border security policy, because serving citizens abroad can be considered as one of the primacy reasons for the very existence of diplomacy. Pasarín (2016) further states that developments of IT solutions have deeply transformed the management of consular affairs. Similarly, the findings of this study also provide insights on the use of Digital Diplomacy tools towards enhanced 'consular diplomacy'. Additionally, it is being found that use of e-newspapers, hard drive and cloud storage were also unique to this study. Altogether, it has been found that compared to past, the use of enhanced Digital Diplomacy practices after Covid-19 has given Sri Lanka the ability to maintain a proper balance between the interactions between citizens and the MFA, and in state-to-state relations.

When it comes to the challenges, absence of national policies and strategies were identified by Madu (2018) and Bilate and Zou (2022). Similar findings were made under this study. Respondents mentioned inefficiencies in virtual meetings as a

challenge. Abduazimov (2021), Hedling & Niklas (2021) and Rashica (2018) also identified absence of non-verbal communication as a challenge to Digital Diplomacy. Similar to the study, Bilate & Zou (2022) identified personal traits as a reason for reluctance among officers. Further, issues faced by diplomatic officers when handling social media were also identified in studies conducted by Manor (2016) and Ranaweera (2023). Bilate & Zou (2022) have identified 'capacity issue' as a common challenge, especially in third world states. Lack of knowledge about the usage (Rashica, 2018; Verrekia, 2017) and lack of skilled human resources (Bilate & Zou, 2022; Madu, 2018) were identified as human capacity issues of Digital Diplomacy. Bilate and Zou (2022) also found financial issues as a common challenge. Similar to this study, adaptability issues of the citizens due to lack of ICT literacy and poor attitudes were identified as challenges to Digital Diplomacy by Antwi-Boateng & Al Mazrouei (2021) and Bilate and Zou (2022). Further, Manor (2016), Antwi-Boateng & Al Mazrouei (2021), Rashica (2018) and Jayatilaka (2020) identified security issues as a challenge to Digital Diplomacy. However, inadequate digital platforms and repository systems' reliance of paper-based practices and reluctancy of officers due to fear of losing jobs were not identified in referred literature as challenges under Digital Diplomacy practices.

5. Conclusion and Recommendations

This study explores the Digital Diplomacy practices in Sri Lanka and challenges faced by the diplomatic officers. The study found a wide range of Digital Diplomacy practices, and challenges in relation to Digital Diplomacy in Sri Lanka. Five main practices were identified as Digital Diplomacy practices prior to Covid-19 outbreak. After Covid-19 outbreak, existing practices were enhanced with novelties. In addition, certain practices were identified as new practices introduced after the Covid-19 outbreak. Practices such as e-DAS system, online appointment system, issue of life certificates via email, use of e-newspapers and use of paper-less storages in Hard Drives and in SLT Cloud were unique findings of this study. As challenges, the study derived eight major themes with several sub themes. Among those, inadequate digital platforms and repository systems, relying on paper-based practices by the officers and citizens and reluctancy of officers due to fear of losing jobs were challenges unique to this study. This study proposed several policy implications to policy makers of Sri Lanka to enhance public diplomacy through digital means. Sri Lanka has widened Digital Diplomacy practices after Covid-19, but there is room for more. Sri Lanka should develop the Digital Diplomacy practices more to promote nation branding, community engagement and favorable negotiations among state and non-state actors to achieve Sri Lanka's national interests. However, enhancing such practices alone, without addressing the challenges will not provide the expected outcomes. It is recommended to start with setting a consistent national policy that

facilitates Digital Diplomacy, with a sound legal framework which will promote officers and citizens to practice Digital Diplomacy. With that, officers will be motivated to enhance the existing practices towards different dimensions of diplomacy. Simultaneously, the Government should set strategies to gradually mitigate capacity issues and security concerns of Digital Diplomacy. With the above, Sri Lanka will be able to maintain an ideal level of Digital Diplomacy practices that assist the maximization of national interest of Sri Lanka.

6. Limitations and Further Research

The main limitation of this study was the limited sample size and the context-specific nature of the study. Although the study provides valuable policy implications, the findings of the study will be difficult to generalize due to the aforesaid limitations. Scope of this study is also a limitation of this study as it focused mainly on the practices and challenges of Digital Diplomacy in Sri Lanka. The possibility of observation and data triangulation was limited in zoom and telephone interviews. Future research may focus on conducting more generalizable research beyond the aforementioned limitations. Further research may be conducted to further investigate the findings of this study or on several other areas of Digital Diplomacy with a wider scope.

References

Abduazimov, M. S. (2021). Inside Diplomacy during the Pandemic: Change in the Means and Ways of Practice. *Indonesian Quarterly, 49*(1), 50-66.

Antwi-Boateng, O., & Al Mazrouei, K. A. (2021). The Challenges of Digital Diplomacy in the Era of Globalization: The Case of the United Arab Emirates. *International Journal of Communication, 15*, 4577–4595.

Ariyawardana, S. (2021). The Application of Digital Diplomacy to Sustain the Public Diplomatic Missions in Sri Lanka During the Post Covid-19. *Vistas Journal, 14*(2), 96-118.

Avenell, E., & Dunn, D. H. (2016). Crisis diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *The SAGE Handbook of Diplomacy* (pp. 462-475). London: Sage Publications Inc.

Bilate, G. T., & Zou, X. (2022, August). Digital Diplomacy and Implementation Challenges in Africa: Case Study of Ethiopia. *Journal of African Foreign Affairs (JoAFA), 9*(2), 85-106. https://doi.org/10.31920/2056-5658/2022/v9n2a5

Bjola, C. (2015). Making sense of digital diplomacy. In C. Bjola, & H. M. Kornprobst (Eds.), *Digital Diplomacy: Theory and practice* (pp. 1-11). New York: Routledge.

Bjola, C., & Holmes, M. (Eds.). (2015). *Digital Diplomacy: Theory and practice* . London & New York: Routledge.

Calleya, S. (2016). Developing states diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *The SAGE Handbook of Diplomacy* (pp. 423-434). London: Saga publications Inc.

Constantinou, C. M., Kerr, P., & Sharp, P. (Eds.). (2016). *The Sage Handbook of Diplomacy.* London: Sage Publications Inc.

Gilboa, E. (2016). Digital diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *The SAGE Handbook of Diplomacy* (pp. 540-551). London: Sage Publications Inc.

Gunarathne, M. A. (2019). Challenges and Opportunities of Digital Diplomacy: A Comparative Study of India and Sri Lanka. *BCIS Emerging Scholars Symposium 2019*, (pp. 36-38).

Gunawardane, G., & Jone, K. (2022). Relevance and Importance of Cyber Diplomacy for Developing Countries. *International Research Conference of the SLTC Research University, Sri Lanka* (pp. 66-67). Colombo: SLTC Research University.

Hedling, E., & Niklas, B. (2021). Practice Approaches to the Digital Transformations of Diplomacy: Toward a New Research Agenda. *International Studies Review, 23*, 1595–1618. https://doi.org/10.1093/isr/viab027

Holmes, M. (2015a). Conclusion: the future of digital diplomacy. In C. Bjola, & M. Holmes (Eds.), *Digital Diplomacy: theory and practice* (pp. 199-206). London & New York: Routledge.

Holmes, M. (2015b). Digital diplomacy and international change management. In C. Bjola, & M. Holmes (Eds.), *Digital Diplomacy: Theory and practice* (pp. 13-32). London & New York: Routledge.

Huijgh, E. (2016). Public diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *the SAGE Handbook of Diplomacy* (pp. 437-450). London: SAGE Publications Ltd.

Huxley, A. (2014). *Discovering Digital Diplomacy The Case of Mediatization in the Ministry for Foreign Affairs of Finland.* Masters Thesis, Uppsala Universitet, Department of Informatics and Media.

Jakobsen, P. V. (2016). Coercive diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *The SAGE Handbook of Diplomacy* (pp. 476-486). London: Sage Publications Inc.

Jayatilaka, C. (2020, May). The Effects of Digital Diplomacy on International Relations: Lessons for Sri Lanka. *LKI Policy Briefs, 23*. https://lki.lk/publication/the-effects-of-digital-diplomacy-on-international-relations-a-lesson-for-sri-lanka/

Kurbalija, J., & Höne, K. (2021). The Era of Digital Foreign Policy: Comprehensive Approaches to Digitalisation. *Revista Política Internacional (International Political Review)*, 7-20.

Madu, L. (2018, September 20). Indonesia's Digital Diplomacy: Problems and Challenges. *Journal Hubangan International, 7*(1), 11-18. https://doi.org/10.18196/hi.71121

Manor, I. (2016). What is Digital Diplomacy, and how is it Practiced around the World? A brief introduction. *Annual Review of the Diplomatist Magazine*.

Manor, I. (2018, Jan). *The Digitalization of Diplomacy: Toward Clarification of a Fractured Terminology.* Oxford Digital Diplomacy Research Group. http://www.qeh.ox.ac.uk/sites/www.odid.ox.ac.uk/files/DigDiploROxWP2.pdf

Manor, I. (2019). *The Digitalization of Public Diplomacy.* Switzerland: Palgrave Macmillan.

Manor, I. (2021, April 2). *The Digital Legacy of Covid-19*. Retrieved from e-international Relations. https://www.e-ir.info/2021/04/02/the-digital-legacy-of-covid-19/

Ministry of Foreign Affairs. (2020). *Sri Lanka Missions*. Retrieved from: Ministry of Foreign Affairs. https://mfa.gov.lk/sri-lanka-missions/

Ministry of Foreign Affairs. (2021). *Embassy of Sri Lanka Launches Sri Lanka Online Platform, "Sri Lanka Platform" along with an Investment Promotion Seminar.* https://mfa.gov.lk/embassy-of-sri-lanka-launches-sri-lanka-online-platform-sri-lanka-platform-along-with-an-investment-promotion-seminar/

Navari, C. (2016). Great power diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *The SAGE Handbook of Diplomacy* (pp. 268-280). London: Sage Publications Inc.

Nyewusira, C. (2019). Digital Diplomacy: Opportunities for Nigeria's Foreign Policy. *Icheke Journal of the Faculty of Humanities, 17*(4), 163-179.

Olubukola, S. A. (2017). Foreign policy in an era of digital diplomacy. *Cogent Social Sciences, 3*(1), 1297175. https://doi.org/10.1080/23311886.2017.1297175

Pasarín, A. M. (2016). Consulates and consular diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *The SAGE Handbook of Diplomacy* (pp. 161-170). London: Sage Publications Inc.

Pop, A.-M. (2021). Digital Diplomacy as a Sub-type of Public Diplomacy. *International Scientific Conference "Strategies XXI", suppl. Strategic Changes in Security and International Relations. 17*, pp. 251-257. Bucharest: "Carol I" National Defence University.

Purwasito, A., & Kartinawati, E. (2020). Hybrid Space and Digital Diplomacy in Global Pandemic Covid-19. *Advances in Social Science, Education and Humanities Research, 510*, 662-666.

Ranaweera, K. J. (2023). Effect of Digital Diplomacy to Enhance Public and Defence Diplomacy in Sri Lanka. *Jurnal Diplomasi Pertahanan, 9*(1), 94-125.

Rashica, V. (2018). The Benefits and Risks of Digital Diplomacy. *SEEU Review, 13*(1), 75-89. https://doi.org/10.2478/seeur-2018-0008

Rashica, V. (2020). Impact of the Corona Virus Pandemic in the Realization of Bilateral   and   Multilateral   Diplomatic   Meetings. https://www.nispa.org/files/conferences/2020phd/e-proceedings/system_files/papers/RashicaPaper.pdf

Tyler, M. C., & Beyerinck, C. (2016). Citizen diplomacy. In C. M. Constantinou, P. Kerr, & P. Sharp (Eds.), *The SAGE Handbook of Diplomacy* (pp. 521-529). London: Sage Publications Inc.

Verrekia, B. (2017). *Digital Diplomacy and Its Effect on International Relations.* SIT Graduate Institute. https://digitalcollections.sit.edu/isp_collection/2596

Wekesaa, B., Turianskyib, Y., & Ayodele, O. (2021). Introduction to the special issue: Digital diplomacy in Africa. *South African Journal of International Affair, 28*(3), 335-339. https://doi.org/10.1080/10220461.2021.1961606

Wu, D., & Sevin, E. (2022, July). Neither External nor Multilateral: States' Digital Diplomacy During Covid-19. *Journal of Public Diplomacy, 2*(1), 69-96. https://doi.org/10.23045/jpd.2022.2.1.1

Citizen Journalism through Social Media during 2013 and 2018 Mass Movements in Bangladesh and Its Impact on the Mass Revolution of 2024

MD Shiyan Sadik
North South University
shiyan.sadik@northsouth.edu

Sumaiya Akter
Jahangirnagar University
sumaiya.anthro@gmail.com

Sakif Al Ehsan Khan
University of Edinburgh
S.A.E.Khan@sms.ed.ac.uk

Sunzana Salim Borsha
Bangladesh University of Professionals (BUP)
sunzana.barsha@gmail.com

Abstract

Protests have been a potent instrument for attaining justice for the marginalized since human civilization's inception. The proliferation of digital technology largely triggers contemporary manifestations of protest. The phenomenon of citizen journalism, facilitated by diverse social media platforms, has played a pivotal role in recent transformative changes. From the Arab Spring to the more recent anti-discrimination student movement in Bangladesh, social media has significantly shaped a new historical narrative for the demonstrators. This study provides a comprehensive analysis of the rise of citizen journalism in Bangladesh, specifically focusing on the protests that took place in 2013 and 2018. The mass uprising that took place in July-August 2024 also witnessed stern influence of citizen journalism, which eventually brought about a revolutionary change in Bangladesh. This study assesses the beneficial influence of citizen journalism achieved through social media platforms in the anti-discrimination student-led movement in Bangladesh, which marked a notable change in the political landscape of the country. An authoritarian dictatorship lasting 15 years had been replaced by a new temporary administration. Consequently, the movement was hastened by the influence of many activities, including hashtags, red-colored profile pictures, and Facebook groups. In the social milieu of Bangladesh, the story of social media has garnered a notably favorable response, mostly driven by Generation Z. Furthermore, this study describes the effects of social media on various

aspects of public affairs in Bangladesh and emphasizes the need to conduct further research to assess the influence of citizen journalism on social media in other areas of governance and policy. Through the eclectic method, literature has been reviewed to analyze the current uprising in the light of citizen journalism. The political landscape in Bangladesh has changed, which will create more opportunities for citizen journalism in the days ahead. In actuality, this represents a paradigm shift in both the communication and journalism domains.

Keywords: Bangladeshi Political Movements and Protest, Citizen Journalism, Hashtag, Social Media, Student Movement

1. Introduction

Citizen journalism has redefined the definition of mainstream journalism by enabling every citizen to disseminate information through several digital websites, blogs, and social media platforms. This had been considered an alternative to mainstream print and electronic media due to its popularity among the masses. Citizen journalism refers to the journalistic activity of regular people. It means that citizens report on the issues that affect them. Citizen journalism has enabled people to raise their voices on issues that they believe need attention (Noor, 2017). Democratic and participatory journalism are other names for citizen journalism (Baase, 2008). With the introduction of digital platforms, citizen journalism, the activity of regular people obtaining, reporting, and sharing news and information has become more popular (Allan, 2013). Citizen journalism is the production, analysis, and dissemination of news and information by non-professionals for the public's benefit. Individual citizens posting information on blogs, social networks, and online forums; professional news organizations or civic groups planning and overseeing participatory media projects; and social media users commenting, tagging, "liking," and sharing news articles and other content are just a few of the contexts in which it has been used. Supporters highlight how citizen participation in these processes has the potential to democratize, while detractors raise concerns about the accuracy of the data generated, the equity of participation, and the impact on the financial sustainability of professional media. It is one of the newest and most talked-about trends in journalism right now.

It is distinct since it is carried out by ordinary individuals without any prior journalism expertise, as opposed to a journalist with official training. Anyone can now become a citizen journalist because of the Internet and new media technologies, which offer countless opportunities to generate and distribute content for public consumption. There is now an abundance of space on citizen journalism websites, especially blogs and news portals, for topics that were previously inappropriate for traditional media.

Regular users of citizen journalism content therefore believe that it is less biased than news from mainstream media (Noor, 2017). Most significantly, because so many people connect on social media, it serves as a universal platform for these blogs, portals, and websites.

Social media platforms have made it possible for common people to report, record, and disseminate news without the assistance of a professional journalist. This practice is known as citizen journalism. Early in the twenty-first century, it became popular as digital tools made it possible for information to be widely disseminated. Social media platforms like Facebook, Instagram, YouTube, Twitter, and others have developed into essential tools for political action and mobilization. This had been observed during several protests all over the world. This article primarily examines the utilization of citizen journalism via social media platforms. Within the broader framework of the South Asian region, particularly in Bangladesh, it has been observed that citizen journalism has gained significant importance, especially on social media platforms rather than in individual blogs. Undoubtedly, this connotation has resulted in the emergence of public demonstrations linked to citizen journalism, as observed in 2018 and 2024.

In the context of the unstable political landscape in Bangladesh, which is characterized by violence, people's movements, and the complicated interplay between civil and military administrations, the major purpose of this research is to investigate the development and influence of citizen journalism in Bangladesh during its history. A particular emphasis will be placed on the impact that citizen journalism had during the "July Uprising 2024." The purpose of this study is to investigate how social media platforms have enabled citizen journalism to play a significant part in changing recent political outcomes during 2024. A further objective of this study is to evaluate the shift in the political paradigm and its implications for the future of journalism and communication in Bangladesh. In particular, the study will focus on the potential for citizen journalism to further democratize the distribution of information in the region. The subsequent chapters will concentrate on the dynamics of citizen journalism, its influence on the formulation of mass narratives, the use of social media in this context, and the transformative change in communication, politics, mass solidarity, the fundamental aspect of the united factor of the Bangladeshi people, and the possible opportunities for further involvement in the realm of citizen journalism. This study contributes to the understanding of how digital tools and citizen journalism transform political participation in developing nations. It offers insights for academics, policymakers, and media practitioners on leveraging citizen journalism for democratic engagement in volatile political contexts.

1.1. The political reality of Bangladesh: Contemporary history

After serving three complete terms, the Awami League government commenced its fourth term in ruling Bangladesh. This fourth term witnessed the emergence of the second phase of the quota reform movement during its first year. Based on prior conversations, it is evident that the first phase of the quota reform movement took place in 2018. Hence, the quota reform movement of 2024 might be considered as the subsequent stage of that ongoing struggle. Ultimately, this developed into a movement to overthrow the government. It asserts that while first the movement aimed to change a policy, it eventually evolved into a demonstration to overhaul the entire administrative structure. Therefore, the event is crucial to investigate and highly significant.

Throughout 2018, the movement experienced a temporary decline as a result of certain favorable declarations. Nevertheless, in 2024, the movement resurged when a conflicting instruction was given in contradiction to the desires of the students. The media alone was inadequate for a comprehensive understanding of the wider context of Bangladesh throughout this historical period. It is evident that the media in Bangladesh has experienced an extended period of regulation, or there was a prevalent phenomenon where journalists resorted to self-censorship. This phenomenon arose because any news that presented a credible danger to the governing party frequently resulted in diverse manifestations of harassment for the individuals concerned (Riaz, 2023).

Nevertheless, a notable problem throughout this prolonged era was the inadequate documentation regarding the rigorous supervision exercised over the nation's fourth estate.

Although not always visibly obvious, a thorough examination of several occurrences uncovers a consistent trend of harassment. For example, in the event of the homicide of journalist couple Sagar and Runi, the then judicial system failed to reach a verdict for 12 years. Nevertheless, with the assumption of power by the interim government in Bangladesh, several discrepancies in the management of the murder case by the preceding administration became apparent (Saad, 2024). This indicates the degree to which the government exercised influence over the media. Furthermore, this control was formalized by legal methods, namely through the implementation of the Digital Security Act (DSA), which acted as a mechanism to mandate self-censorship, specifically aimed at online and citizen media (Riaz, 2023).

The essence of the aforementioned debate is that the mainstream media in Bangladesh was subject to a substantial level of control. Furthermore, apart from sheer control, another aim of the administration was to establish its mandate. This required the

strategic use of the media to establish its agenda and mold public opinion appropriately. The Agenda-Setting Theory, initially proposed in 1922, is highly pertinent for comprehending this notion. Walter Lippmann proposed that individuals' perceptions are influenced not by the underlying reality, but by the visual representations provided by the media (Luo & Harrison, 2019). The term "agenda-setting" was initially used by McCombs and Shaw (1972) to assert that the media exerts influence on public perception by choosing which realities to showcase and for what duration. Fundamentally, the media establishes the agenda. Nevertheless, as the internet and social media have become commonly used, the responsibility of determining the agenda has progressively moved towards the individuals themselves (Miller, 2010). The objective of this study is to examine the autonomous ability of citizens to establish agendas and exert influence on policy-making.

The Digital Security Act was designed to exert authority over both journalists and the entire population of the nation (Luo & Harrison, 2019). Consequently, the restrictions imposed by the authoritarian Awami League government, including threats of harassment, enforced disappearances, and manufactured charges, reduced the chances for residents to voice their objections. Nevertheless, the 2024 movement successfully dismantled this ingrained control by leveraging citizen journalism. In his study, Wang (2017) discovered that individuals who engage actively online and carry out their investigations can challenge the agendas established by the media and the government. Furthermore, when the government initiated extensive promotion of news regarding the upcoming quota reform, citizens, based on their previous experiences and evaluating the government's authoritarian inclinations, declined this agenda and began advocating for their own.

Despite early efforts to scare individuals, these worries ultimately decreased as this style of journalism promoted a feeling of unity among the viewers. The collaborative nature of this resulted in the successful countering of personal attacks. As an illustration, when several movement coordinators were wrongfully arrested or held in police custody, the extensive use of social media facilitated the formation of a unified position against the autocratic regime. Diverse modes of activism were also utilized to ensure their liberation, including the proliferation of hashtags such domestically and internationally. This coordinated effort, propelled by the widespread use of hashtags, postings, and comments, was essential in questioning the government's prerogative. The following chart depicts the usage of hashtags in social media during the July uprising of 2024.

Table 01: Hashtags Used During the Movement to Mobilize People's Participation

Hashtags	Number of users on Facebook	Number of users on Instagram
Stepdownhasina	2.7M	100,897
JulyMassacre	293,000	312
Quotareformmovement2024	1 M	23,609
SaveBangladeshiStudents	4.6M	222,962
Alleyesonbangladesh	21,000	8142
RedForJustice	334,000	906
RememberingOurHeroes	101,000	22,014
StandAgainstInhumanity	226,000	4,557
StudentDeserveJustice	1000	104
Studentprotestbd	1000	43

Source: Kassem et al., 2023

Citizen journalism often works in a reverse manner, influencing mainstream journalism and shaping media agendas. For instance, Luo and Harrison (2019), in their study on the context of China, demonstrated that over time, even the government began to feel pressured to alter the news patterns of its controlled media. This pressure arose because the widespread presence of citizen journalism and the growing trend of media boycotts threatened the profitability of media houses, creating concerns about significant financial losses (Luo & Harrison, 2019). The impact of such reverse agenda-setting capabilities in Bangladesh's context, particularly in influencing policy changes, will be discussed in the subsequent sections.

Citizen journalism must be understood beyond individual social media posts; it extends to practices such as re-posting, tagging, rating, modifying, linking, and commenting (Goode, 2009). The 2024 movement initially began with the demand for "Reform Quota." During this period, we witnessed the emergence of several Facebook groups, such as the "Baisamya Birodhi Chhatra Andolon." Initially, the social media-based groups seemed to be a usual social media group site with no apparent vision. But as explained in the previous explanations of timeframe, as time went by social media-based citizen journalism turned out to be the cornerstone of successful regime change in Bangladesh. The following section focuses on the paradigmatic shift in the context of Bangladeshi politics which is an outcome of social media-based citizen journalism.

2. Objectives

1. To discuss the development of citizen journalism in Bangladesh. Particularly, focusing on its evaluation in the 2013 and 2018 protests followed by the mass revolution of 2024.

2. To explore the influence of social media platforms and assess the role of citizen journalism in shaping the political discourse and public narratives in mass protests.

3. To analyze how social media platforms contribute to mobilizing the citizens and empower the youth to make solidarity between them to continue the movement.

3. Theoretical Framework

The Italian communist Antonio Gramsci, imprisoned for much of his life by Mussolini, took the idea of hegemony in his Prison Notebooks with his widely influential notions of 'hegemony' and the 'manufacture of consent' (Gramsci, 1971). Gramsci saw the capitalist state as being made up of two overlapping spheres, a 'political society' (which rules through force) and a 'civil society' (which rules through consent). This is a different meaning of civil society from the 'associational' view common today, which defines civil society as a 'sector' of voluntary organizations and NGOs. Gramsci saw civil society as the public sphere where trade unions and political parties gained concessions from the bourgeois state, and the sphere in which ideas and beliefs were shaped, where bourgeois 'hegemony' was reproduced in cultural life through the media, universities and religious institutions to 'manufacture consent' and legitimacy (Heywood, 1994). In the context of Bangladesh, hegemonic structure has been used to manipulate consent of mass people. It is interesting to note that a portion of civil society of the country has been integral part of the manufacturing of consents which apparently allowed the former regime to be in power by force. The notion of Gramsci's (1971) hegemonic landscape has been witnessed to different extents in the context of Bangladesh.

The political and practical implications of Gramsci's ideas were far-reaching because he was warned of the limited possibilities of direct revolutionary struggle for control of the means of production; this 'war of attack' could only succeed with a prior 'war of position' in the form of struggle over ideas and beliefs, to create a new hegemony (Gramsci, 1971). This idea of a 'counter-hegemonic' struggle – advancing alternatives to dominant ideas of what is normal and legitimate – has had broad appeal in social and political movements. It has also contributed to the idea that 'knowledge' is a social construct that serves to legitimate social structures (Heywood, 1994). In the case of Bangladesh's 2024 uprising which is also labelled as 'Monsoon revolution' or 'Student uprising', the same idea of 'counter hegemonic' struggle can be witnessed. The narrative of 'Mujibism' (The political narrative carried out by the former Awami regime, which focuses on the individual charismatic leadership of Sheikh Mujib; one of the founding leaders of Bangladesh) has been verily rejected by

protestors. The counter hegemonic narrative proliferated quite abruptly during the revolution and it was quite astonishing to witness the reach of new knowledge construct in such a short time because anti-Mujibism is something which had been quite unimaginable in Bangladesh even a month ago the protests took place.

In context of Bangladesh, the 'war of attack' succeeded over 'war of position' but in an abrupt manner which the on-field protestors could not even reciprocate while the mass uprising of Bangladesh was taking place in 2024.

4. Methodology

This research article uses the method of qualitative analysis focused on an extensive literature study and description of secondary data to understand how citizen journalist affects various protests, especially those by students. The process is supposed to integrate the most up-to-date information, submit every point of view to scrutiny and result in a comprehensive understanding. We conducted a comprehensive systematic search through academic databases including JSTOR, Google Scholar and Scopus for relevant articles. Research was identified by using keywords like citizen journalism, protests, student-led movements, social media activism and reflections on the media's impact. Time period was not limited in the search to include both past and present perspectives. Relevancy, credibility and quality of publication context were criteria selected for literature selection. Emphasis was placed on peer-reviewed journal papers and books, and reports from reputable organizations. Specific attention was paid to studies that specifically looked at citizen journalism and its role in protests and movements. Exclusion criteria included non-peer-reviewed sources, opinion-based evidence and studies that were unrelated to the study objectives. The paper mostly focused on the social media ventures of different student led protests in Bangladesh. This has limited the broader aspect of citizen journalism which has a scope of further research.

5. Analysis and Discussion

This part attempts to address the research objectives of this research narratively.

5.1. Development of citizen journalism in Bangladesh

Citizen journalism in Bangladesh began its trajectory after 2010, and it gained prominence with the protest of 2013 in Shahbag. This movement exhibited several distinctive characteristics. The movement successfully directed large-scale mobilization by advocating for the imposition of execution punishment for war criminals in 1971. Significantly, the movement did not oppose the political party; instead, it served as a prominent political manifesto of the ruling party Awami League at the time. This movement immediately confronted the prevailing political culture of Bangladesh (Haque, 2013). The aforementioned movement significantly

contributed to the proliferation of 'online activism' across various social media platforms. The campaign was initiated on February 5th of 2013 against Abdul Quader Molla, the Assistant Secretary General of Jamaat-e-Islami Bangladesh (JI), who is currently being tried as a war criminal and has been sentenced to a minor life term by the International War Crime Tribunal (ICT). The verdict caused great shock throughout the entire nation, particularly among the younger generation. Molla faced allegations of committing 344 murders during the independence movement, sexually assaulting minor and assassinating intellectuals.

After being transmitted by the media, this news rapidly disseminated on social media, eliciting a strong and passionate response from the public. The entire nation exploded in indignation, adamantly rejecting the decision. An overwhelming number of statuses on Facebook called for Molla to be executed by hanging. The inaugural demonstration was initiated by the Blogger an Online Activist Network (BOAN). Facebook group Human Chain organized a protest rally at 3.30 pm in front of the National Museum, Shahbag on 6th February 2013. Another Facebook event was organized by Jatiya Sharthe, a blogger and internet activist affiliated with BOAN. The two groups consolidated at about 6.00 pm and obstructed the Shahbag junction, a significant junction in Dhaka (Chowdhury, 2018).

Initially, the human chain comprised 120 individuals, predominantly bloggers, internet activists, journalists, student leaders, online opinion leaders, young intellectuals, and a few pedestrians. Subsequently, when prominent worldwide transmission networks such as NDTV, BBC, and Al Jazeera, as well as local broadcasters including Bangladesh ATN news and Channel I, started reporting on the event, it garnered a remarkable number of participants and sympathizers. The Shahbag movement was transitioning into the largest social media phenomenon in terms of its dissemination among the Bangladeshi grassroots and the Bengali diaspora. Shahbag was evolving into an internet-based platform for mobilization.

Shahbag was one of the pivotal components to draw attention in social media even throughout the international platform. People from all corner of the globe started to learn about the movements and these acts turned the protest as the first digital media protest in Bangladesh.

From February 5th to 8th, 2013, there was no apparent focal point of the movement. Instead, many statuses and comments from individuals were generating significant disturbance on Facebook. On February 8th, 2013, Gonojagoron Mancha was established and subsequently, the leadership saw several changes (Chowdhury, 2018).

While the Shahbag group initiated the protest via social media, the situation deteriorated when the 'Basher Kella', a Facebook group affiliated with JI, disseminated digitally altered images of Saydee's visage on the moon. This propaganda originated as a widespread demonstration held throughout the districts, particularly in areas where JI had a significant presence. The police slew hundreds of demonstrators throughout that period. An ostensibly 'apolitical' and 'non-violent' social media-based campaign transformed into a manifestation of physical and political protest. The Shahbag movement in Bangladesh could be considered as the initial surge of social media activism (Chowdhury, 2018).

Following the establishment of the Digital Security Act, 2018, Amnesty International proclaimed it to be an aggression against freedom of expression unparalleled in severity to any other legislation in existence. The Deputy South Asia Director at Amnesty International stated that the Digital Security Act criminalizes many forms of freedom of expression and imposes heavy fines and prison sentences for legitimate forms of dissent (Khan et al., 2022).

For the past eight years, the Bangladesh Government about the budding ICT ACT, which is a legal precursor to The Digital Security Act, has allegedly detained more than a thousand people. This act has repeatedly faced hammers for basic human rights violations, stifling of freedom of expression, and media liberties as Article 39 of the constitution of the People's Republic of Bangladesh claims to follow democracy and the rule of law. Where the freedom of speech is a fundamental human right and the Act has dented the coherence of the nation's regular practices, which sparked public outrage. Ahmed Kabir Kamal, a prominent cartoonist alongside Mushtaq Ahmed, an author, were arrested in 2020 under the DSA. This incident sparked public fury and calls for justice.

In 2018, the students of the University of Dhaka initiated a large-scale protest against a discriminatory preferred quota system that afforded a specific group of individuals an advantage over all students in the government job recruitment process. This marked the second wave of the social media-based movement known as the Quota Reform Movement. Furthermore, social media has played a significant role in shaping this movement. A survey conducted in Dhaka city reveals that 22 million individuals use Facebook, positioning it as the second most popular user of the platform (Ovi, 2017).

Another case of citizen journalism is the world-renowned Bangladeshi photojournalist turned social activist, Shahidul Alam's arrest back in August 2018, which led to widespread protests, both online and offline. Alam was apprehended for making "inflammatory comments" regarding a student protest that was sparked due

to a road accident in Dhaka and fueled by the rampant political corruption and mismanagement in the country. Later, the protest spread as the Road Safety movement 2018 (Sharmin, 2024). In between the movement, he managed to capture footage of the protests, which he later highlighted on social media, increasing the already high tensions within the country. During this time and due to Alam's arrest, the nation witnessed a massive surge in online activism. Right-wing government proponents took to platforms like Twitter and Facebook to voice their disagreement and demand freedom for the activist, globally FreeShahidulAlam began to circulate gaining traction and garnering support from everyone around the world (Ahmed, 2018).

Many media stations and NGOs turned to Twitter to promote the arrest of Alam and filed requests with the government to remove the unjust detention. Human Rights Watch reported that the active member of the Bangladesh Nationalist Party was denied bail and condemned the government for abusing power and silencing activists. This is a major example of how the practice of citizen journalism plays a pivotal role in making the governments accountable to the citizens (Islam, 2020).

One of the laws the Bangladeshi government passed to address cybercrimes and digital crimes is the Digital Security Act of 2018. The act aimed to address the significance of digital environments and the potential hazards they represent to national security, public order, and individual privacy. The act combines many laws into a single legislation and has particular provisions addressing digital crimes including defamation on digital platforms, hacking, and the dissemination of false information (Hasan, 2021).

The act's main objective is to prevent wreckage from occurring online. Despite this, journalists and other stakeholders have strongly criticized the Act for including clauses that limit the right to free speech and expression. Critics have specifically objected to Sections 25, 29, and 31 because to their vague syntax, which they believe might be misinterpreted and used to evaluate dissent or challenge governmental authority. It is said that some clauses allow law enforcement to arrest and punish individuals based only on their own personal interpretation of what exactly comprises these violations (Rahman & Islam, 2020).

5.2. The influence of social media platforms and the role of citizen journalism in shaping the political discourse and public narratives in mass protests

The DSA's defamation grounds under Section 29 and the ban on "spreading false news" under Section 25 have become the standard means of putting a stop to critics, journalists, and activists, which has caused social media users to self-censor their words and actions, thereby jeopardizing democracy-in-action on the Internet (Ahmed,

2020). The Effects on Grassroots Movements: The DSA most severely targets grassroots movements that rely on social media to act collectively and be seen, so activists who attempt to advocate for worker rights or environmental destruction may be silenced based on the act (Chowdhury & Mahmud, 2022).

The conflict between freedom and security is a key component of DSA. The Act's advocates argue that it is necessary to preserve order in the world of digital media, particularly in an atmosphere where false information has the potential to promote violence or undermine society. Critics draw attention to the Act's abuse as a political control mechanism, which limits the very freedoms that are vital for a democracy (Hasan, 2021).

The DSA reflects larger patterns of digital authoritarianism, in which governments use legal frameworks to control online space and stifle opposition. This is comparable to trends observed in other nations that target internet activity, such as Malaysia's Sedition Act or India's Information Technology (IT) Regulations (Rahman, 2019).

The use of social media as a protest platform in Bangladesh is severely restricted by the Digital Security Act of 2018. Its execution has frequently harmed freedom of expression and democratic participation, despite its declared goals of preventing cybercrime and protecting digital spaces. This dichotomy emphasizes the necessity of a comprehensive plan for digital governance that safeguards against harm without suppressing dissent or violating basic rights (Human Rights Watch, 2019).

Quota Reform Movement 2018: Historical Timeframe

Table 02: The Historical Timeframe of Quota Movement 2018

Dates	Events
31st January 2018	A student and two journalists from the University of Dhaka filed a writ to high court a student and two journalists from the University of Dhaka filed a writ to the high court.
5th February 2018	A bench of the high court turned down the writ and remarked it was wrong.
14th February 2018	Students formed a Facebook group and staged a protest in front of the public library and formed "Bangladesh Sadharon Chhatra Odhikar Songrokkhon Parishad" (Bangladesh General Students" Right Protection Committee) And they started the protest with 5 specific demands

4th March 2018	Students from different colleges and universities staged a human chain and began suspending classes and exams to join the movement
25th March 2018	Staged protest sweeping the street while hanging their certificates on their shoulders to show their nonviolent mechanism of protesting.
8th April 2018	The movement met with police brutality
11th April 2018	Teachers stand against the brutality of police and Prime Minister Sheikh Hasina commented on posts of social media to shed the facts.
16th April	3 leaders were arrested.

Source: Prothom Alo, 2018

On July 29, 2018, following the tragic road accident in Dhaka resulting in the deaths of two students, students from schools and colleges nationwide began protesting the corruption in this sector of Bangladesh using social media. Facebook and YouTube, among other social media tools, effectively mobilized this campaign by coordinating and disseminating their objective through a triumphant demonstration. Initially, the campaign originated on social media and evolved to encompass the streets of Dhaka and the capital, consequently, the entire nation. This is how the 2018 Road Safety Movement emerged as one of the most notable student-led protests in recent Bangladeshi history. Bangladesh is acknowledged as one of the most mortality-prone countries globally for pedestrians. The World Health Organization (WHO) reports that over 21,000 individuals lose their lives in traffic accidents annually. An incident in 2018 resulting in the deaths of two students deeply unsettled the entire nation.

Figure 2: Flowchart Showing the Advancement of July Uprising 2024 in Bangladesh
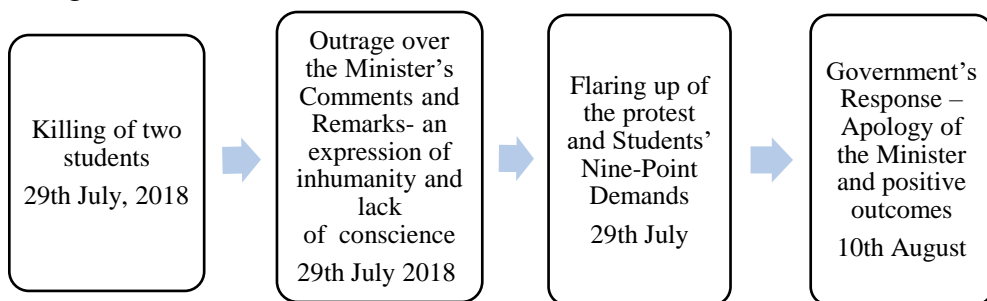
Source: The Daily Star, 2018

Road- Safety Movement 2018: Building Block for the July 2024 Uprising in Bangladesh

Table 03: Development of the Road- Safety Movement 2018

Dates	Events	Factors which proliferated the movements (Social media)	Outcomes of the movement
29th July 2018	Death of 2 students in a horrific road accident	Students across the country started protesting against the roguery of transport sector through social media	People in the capital and the whole country supported the protest
4th August,2018	Protest became robust, student clashed with Law enforcement Agencies and Bangladesh Chatra league (BCL)	School,college students started gaining back from University students	The mainstream media failed to get update and had to rely on Social Media(Facebook, YouTube)
6th August,2018	Prime Minister Sheikh Hasina approved the draft of the Road Transport Act 2018 with the maximum penalty of five years in jail and a TK 500000 fine for fatal road accidents	Factors such as killers of the students must be brought to justice, footbridges must be built on roads adjacent to all educational institutions, speed breakers must be set up on roads in accident-prone areas, and unfit vehicles and driving without a license must be banned (The Daily Star, 2018).	On December 2, 2019, the Dhaka court gave life imprisonment to the drivers on the death of Rajib and Diya (Killed 2 students)

Source: Monamee, 2018

During this movement, the mass realization of using citizen journalism as an effective tool alternative to the mainstream media and the effective usage of social media emerged.

5.2.1.   External factors impacting local, mass, and social media in Bangladesh

The media of Bangladesh has been dominated by the businessmen-politicians for a long period. The mainstream media, TV channels, and newspapers have always been dominated and are being used as shields by their owners. As a result, citizens lost their trust in the media, and they started to become the voice of the public, hence, citizen journalism emerged in Bangladesh. During the July Revolution, the media had been stagnant for this period. At the same time, the media was completely occupied with ensuring the security of their guardian and even after the revolution, they remained silent and refrained from disseminating the truth. In recent years, the lack of regulatory framework in journalism has been noticed tremendously. A regulatory framework that ensures ethical standards, accountability, and professionalism is the demand of the current era for reforming the country as Bangladesh 2.0 (Mishu, 2024).

The media had remained ineffective and passive due to the fear of the ruling party for 15 years but now it is high time they can utilize their full potential with the freedom to continue to work for the voiceless. Nevertheless, change in such a long-dormant system will be time-consuming and slow but this movement taught us anything is possible and true, and accountable media can ensure a post-corruption, post tyranny, post-inequality Bangladesh 2.0. Since, the journey has just begun, the media has a pivotal role to play to shape the country's future (Turzo, 2024).

While the regular broadcast media could not show the unity of youth, digital platforms like Facebook, X (formerly Twitter), and Telegram not only empowered the voices of the mass people but also challenged the legitimacy of the autocratic government, the then Prime Minister Sheikh Hasina, promoted democratic resilience by overthrowing the government on 5th August 2024. This revolution established a landmark moment by illustrating the potential of social platforms by bypassing government-controlled mainstream media. Personal individual narratives in social media particularly when the two students Mir Mugdho and Abu Sayeed were shot during the protests. These emotive stories influenced to intensifying collective empathy in rendering the protests more massive and successful against the government (Nazrul, 2024).

A research program manager titled the revolution "A Double-Edged Sword'' and discovered that social media has both positive and negative consequences. It emphasized the dual nature of social media. In the light of the above, on a positive note, digital media has played a pivotal role for being used to organizing protests, raising voices against the odds, and sidestepping the mainstream traditional media, and they mobilized people from all over the country.It brought the chance for the activists to share information and build the movement. It also helped to build the support of the masses within a very short period. On the negative side, the users can

be manipulated and can share disinformation or false news to undermine the protests (Sigurdsen & Iyer, 2024).

Social media played a pivotal role in overthrowing Hasina's regime during the July revolution of 2024, which is more likely, called the Monsoon Revolution. The former ruling party AL had 1000000 activists in the field to manage the movement but they failed to counter public opposition, which was through memes, logic, and irony to challenge the government's propaganda in cyberspace. Social media effectively countered all propaganda from the Awami League and spread the proper information around the whole country during the July Revolution. However, in the aftermath of the revolution, the Awami League and the other political parties spread numerous misinformation, rumors, and structured propaganda about the Yunus Government over the digital media.

Nahid Islam (now an advisor to the Yunus Government), the chief coordinator of the Monsoon Revolution, announced a one-point demand for Hasina's resignation on August 3 (Time, 2024). On that night, Bangldesh student League, a student wing of Bangladesh Awami League posted different old videos to spread the false news that they had taken control of Dhaka city and all the coordinators of the movement had fled the country. Later, the students, youth activists, and journalists assured that the video was nothing but a rumor, which turned into meme content for the contemporary social media platforms in Bangladesh (Dismislab, 2024).

Since the Yunus Government had taken control in the administration, some of the Indian media falsely claimed the attack on minorities done by the Muslim citizens of the country. After Hasina's departure, a member of parliament during the controversial 2018 and 2024 elections Mashrafe Bin Mortuza's house got burned due to public outrage which was falsely reported as the popular cricketer of Bangladesh men's cricket team, the house of Liton Das,a member of the Hindu community. After that, Durgapuja, the largest festival for the Hindu community of the country has become the real challenge for the Yunus government. Between October 6 and 12, 14 rumors spread by social platforms (CNN, 2024).

On August 28, Sarah Rehnuma, a 32-year-old newsroom editor at Gazi TV, committed suicide due to her complicacy of conjugal life but Sajeeb Wazed, the son of Sheikh Hasina played the key role in spreading structured false news as it was a politically motivated murder claiming that as 'another brutal attack on freedom of expression in Bangladesh' (Dhaka Tribune, 2024).

The political environment has been termed as "rumor night" in social media.

Due to the political incidents, the country's citizens voluntarily took the initiative where one can crossmatch the news and its validity. They felt the necessity of doing this after the murder of a government lawyer during the recent arrest of an ISKCON leader while he was provoking the country's Hindu community (Swadhin, 2024).

5.3. The role of social media platforms contribute to mobilizing the citizens and empower the youth to make solidarity between them to continue the movement

In recent years, social media has been widely employed to effect substantial changes in various phenomena in the surroundings, owing to its immense popularity. Irrespective of whether it is a revolution or a routine event, social media has been instrumental in directly collecting public opinion. Throughout the Arab Spring, a series of pro-democracy demonstrations, and in further contemporary events, we have observed the influential nature of hashtags. Protests were initiated by students from schools and colleges following the tragic deaths of Diya and Rajib in a road accident caused by a consortium of two buses on July 29, 2018. The campaign gained traction via social media and the involvement of university students when the former Shipping Minister and executive president of the Bangladesh Road Transport Worker's Federation made a light-hearted observation, "A road accident has resulted in the loss of 33 lives in Maharashtra, but they fail to address it in the same manner as we do." That was exceedingly abhorrent and a manifestation of cruelty. Following that remark, students, incensed by the occurrence, actively participated in the demonstrations, insisting on adequate punishment for the driver and an apology from the minister.

For over 15 years, the Awami League administration has exerted control over the media, disseminating news in alignment with their agenda. Consequently, public trust in mainstream media has diminished, to the extent that even demonstrators have been unwilling to engage with the media. Consequently, social media platforms such as Facebook and YouTube that have played a very influential role, rendering the media dependent on these channels. The entire campaign is coordinated and executed via social media platforms (Parvez, 2022).

Upon the participation of university students, the protest accelerated on August 4th, 2018. On the same day, the Bangladesh Chatra League (BCL), a student organization supporting the Awami League, and Law Enforcement Agencies engaged in a confrontation with the general students. This incident provoked unrest among school and college students, leading to a widespread movement that spread throughout the entire country through social media (BBC News, 2018).

Subsequently, the demonstrating students have not only obstructed the primary roads in the city but have also been autonomously enforcing traffic rules, including the verification of driving licenses, car registrations, and fitness certifications (Daily Star, 2018).

The movement concluded on August 6, 2018, when the Cabinet Division, under the leadership of Sheikh Hasina, endorsed the draught of the Road Transport Act 2018. The legislation stipulates a maximum prison sentence of 5 years and a fine of TK 500000 for fatal accidents (Mamun, 2018). On December 2, 2019, a Dhaka court imposed a life sentence on the drivers in connection with the fatalities of Rajib and Diya (risingbd.com, 2019).

In the current era of social media, it occasionally eludes the conventional media. In contemporary times, the publications of irate individuals on social media platforms function as catalysts for social movements (Van Dykeet al., 2004). The potential of social media interaction lies in its ability to enhance community cohesion, establish a robust offline movement strategy, and create a collective sense of identity (Harlow, 2012). Leveraging social media to bolster social movements may stem from a distrust of conventional media and its limited availability contemporary times, individuals from many segments of society, including the general public, influential individuals, adversaries of the ruling party, and even various global movements, are using the internet-based media platform known as social media to engage in mutual interaction. The 2018 road safety campaign originated with the Facebook posts by students from Shaheed Ramijuddin Cantonment College in Dhaka. They published photographs of a demonstration to demand justice for their classmates Diya and Rajib, who were killed by a caravan of two buses. The photographs quickly gained widespread popularity and students from different regions of the nation actively participated in the campaign via social media platforms. Thus, the question naturally arises as to why the demonstration was ignited by social media rather than conventional media. The solution resides in a few particular factors. The video clip capturing the peculiarly jocular remark made by the minister gained widespread popularity on both Facebook and YouTube. Despite the absence of legislation to guarantee justice, students from all backgrounds endorsed the movement (Parvez, 2022).

Ultimately, this movement laid the foundation for the most significant and impactful movement in the history of Bangladesh, known as the 'Anti-discrimination Student Movement' of 2024. This movement was driven by the desire to protest against the authoritarian rule of Sheikh Hasina, with a single crucial demand: the resignation of Prime Minister Sheikh Hasina. This movement also demonstrated a successful culmination within the realm of social media-based citizen journalism.

5.3.1. The shift in political discourse

Since the country gained its independence in 1971, at least three significant adjustments in the political paradigm have occurred. The mass revolution that happened in the 1990s, political conflicts and the subsequent political upheavals that occurred in 2007, and the revolution that took place in July 2024 were all movements that took place with the intention that the nation would institutionalize democracy and assist its economy develop while simultaneously serving its people. However, the results of the popular movement in the 1990s and the change in the political dynamic in 2007 did not turn out as anticipated. Furthermore, there is a qualitative difference between the revolutions and movements that occurred in 2010 and 2024, as well as in 1990 and 2007. These political movements, which occurred in the 1990s and 2007 respectively, were organized under the umbrella of mainstream politics. During those years, the most prominent political opposition parties were responsible for serving as the leadership and management of the opposition. On the other hand, the mass rebellion that took place in 2024 was not organized by a political party that is well-known or considered to be mainstream in the country. However, the campaign was organized by ordinary students at the University of Dhaka, who supposedly began to demand a discrimination-free quota system for admittance into government employment. The opposition political parties did not participate in the protests until after a certain period had passed. Since the Hasina regime, which had been in power since 2009, had been accused of corruption, abduction, and the absence of freedom of press and freedom of expression, the protest evolved into a movement that was opposed to the government. It is a paradigmatic shift in the political scene of Bangladesh that the revolt that took place in July 2024 took place. This is because the major opposition political parties in Bangladesh were unable to produce a plan or a roadmap to overthrow the dictatorship, even though they had been working very hard to do so over the previous 15 years.

Without regard to whether it is a democratic or a military government, the administration of the state of Bangladesh has been characterized by anarchy, oppression, and exploitation. Over time, the situation has not improved. As a result of persistent partisan meddling and manipulation by political actors with impunity, the majority of national institutions, including the civil service, the military, and the judiciary, have been systematically deployed to serve the interests of those who have successfully "captured" state power through whatever means possible. As a consequence of this, any unanimity that had arisen among the people of Bangladesh about the idealistic question of the actual or perceived national identity of the people during the struggle against the Pakistani military during the nine-month independence war in 1971 has been eroded over time. At the societal–political level, the weak state of Bangladesh has sustained an identity crisis despite the repeated propaganda in one

form or another by the political elite in the government to create a monolithic identity for the people of Bangladesh (Huque & Akhter, 1987; Murshid, 1995, 1997; Osmany, 1992). In the first place, it is claimed to be the first of its sort because the mass uprising that took place in July 2024 was primarily made possible thanks to the presence of students and members of the generation known as "Generation Z." The government underestimated the power of younger people who are not voters, overestimated the power of opposition political parties, which came as a surprise to the Hasina regime when they witnessed that their 15 years of constant pressing down on political opponents were not enough, and the transcending of the revolution spirit without having any linear political ideology, approach, or banner. This occurred at a time when the country was almost adapting itself to comply with a fascist regime. The government's actions made it possible for the movement to begin with a quota movement and then apparently transform into a steeping down movement. Although it demonstrates the power of the Bangladeshi people's unity, it also presents challenges. This is because the national solidarity of the country was not made possible in its history. This was because the history of the country's liberation war was distorted, there were multiple fragmentations in political mobilization, and there was an existence of completely different political spectrums. During the year 1971, the people of the country joined together to protest the prejudice that was committed by Pakistani offenders. In the year 2024, the people of the country came together to protest the discrimination that was committed by a fascist administration. Because the discrepancies were made apparent within a few days of independence, the outcomes of 1971 were not fruitful in a sense. On the other hand, it is anticipated that the outcomes of the revolt that took place in 2024 will be successful because there appears to be a new essence of social contract among the citizens of the country. Nevertheless, because there are no political forces that are considered to be mainstream, the newly anticipated social compact can be regarded as a source of optimism. The situation may become much more dire if the major political forces begin to impose the "divide and rule" narrative, which has been a simple means of gaining control of the nation ever since the time of the British. However, the dynamic and interconnected ecosystem of 'Generation Z' and the accompanying degree of flexibility, degree of adaptability, and realizing the ground truth of nationally sensitive topics pose a significant question mark to the outcomes that are anticipated to result from the uprising that will take place in July of 2024.

6. Conclusion

The political landscape of Bangladesh is characterized by several factors, including but not limited to violence, revolution, people's movement, hopes for changes in the system, and a volatile relationship with both the civil and military administrations. The concept of citizen journalism is a relatively young phenomenon when viewed

from the perspective of the political history of South Asia. The mainstream media was the primary source of information for South Asia, which is the region that is home to one-quarter of the world's population of people. The mainstream media outlets, on the other hand, were found to be partisan, biased, and ineffective against the backdrop of the turbulent political landscape. It is in this context that the concept of citizen journalism makes its debut. In this regard, the blessing that has been successfully utilized in public demonstrations has only been augmented by the addition of social media content. Throughout this paper, we have demonstrated how the function of citizen journalism has developed over the course of time and how social media has been utilized as a platform. In the context of Bangladesh, it has been observed that the involvement of citizen journalism has been greater than the role of mainstream media outlets. This is the case. In addition, the successful dynamic of citizen journalism through social media led to the successful termination of the "July Uprising 2024," which ultimately ended in the successful transition of the regime. There has been a shift in the political paradigm in Bangladesh, which will open up additional areas of possibility for citizen journalism in the days to come. This is, in fact, a paradigm change in the field of journalism as well as the sphere of communication.

7. Limitations and Further Research

This article primarily examines the favorable accounts of social media engagement during the student-led protests in Bangladesh following 2010. This text explores the consequences of citizen journalism during the era of social movements. However, it fails to emphasize the specific situation of numerous instances of false information and rumors that were spread by various media outlets, therefore compromising the progress of the movements. Critical analysis can be conducted to ascertain the drawbacks of citizen journalism. Furthermore, this research is deficient in significant quantitative data that may be gathered through surveys to assess the particular influence of citizen journalism on the formation of public opinion. Furthermore, this study primarily focuses on the temporal aspect of protest, emphasizing the need for more research to assess the consequences of protest concerning citizen journalism in shaping policy and governance.

References

Ahmed, A. (2018). Social media, social movement: Bangladesh's Shahbagh movement and Hefazat-e-Islam. https://www.researchgate.net/publication/326683051_Social_Media_Social_Movement_Bangladesh's_Shahbag_Movement_and_Hefazat-e-Islam

Ahmed, S. (2020). Freedom of Expression and the Digital Security Act 2018 in Bangladesh: A Critical Analysis. *Dhaka Law Review, 6*(2), 45-67. https://www.researchgate.net/publication/373238943_Analysis_of_the_Digital_Security_Act_2018_Repercussions_impact_on_Free_Speech_and_Recommendations

Allan, S. (2013). *Citizen witnessing: Revisioning journalism in times of crisis*. Wiley.

Baase, S. (2008). *A Gift of Fire social, legal, and ethical issues for computing and the internet* (3rd ed.). Pearson Prentice Hall.

BBC News (2018, August 6). *How a Traffic Accident Stopped a city of 18 million.* https://www.bbc.com/news/world-asia-45080129

Chowdhury, M. Z. (2018). Social media, social movement: Bangladesh's Shahbag movement and Hefazat-e-Islam. *Bangabidya: International Journal of Bengal Studies, 10,* 474–497. https://doi.org/10.53808/BANGABIDYA.2018.10.474

Chowdhury, S. R., & Mahmud, T. (2022). The impact of the Digital Security Act 2018 on digital activism in Bangladesh. *Journal of Law and Policy, 14*(3), 56–74. https://www.researchgate.net/publication/371779377_Decrypting_the_Digital_Security_Act_of_2018_and_Disclosing_Its_Unconstitutionality

CNN. (2024). *Cricketer-turned-politician's home burnt in Bangladesh protests.* https://www.cnn.com/2024/11/01/asia/bangladesh-protests-cricketer-politician-intl/index.html

Dhaka Tribune. (2024, April 21). *Indian media misrepresents Gazi TV journalist.* https://www.dhakatribune.com/bangladesh/dhaka/356724/indian-media-misrepresents-gazi-tv-journalist

Dismislab. (2024, March 17). *How disinformation stoked fear, panic and confusion during Bangladesh's student-led revolution.* Dismislab. https://en.dismislab.com/how-disinformation-stoked-fear-panic-and-confusion-during-bangladeshs-student-led-revolution/

Goode, L. (2009). Social news, citizen journalism and democracy. *New Media & Society,11*(8), 1287-1305.

Gramsci, A. (1971). *Selections from the Prison Notebooks of Antonio Gramsci.* International Publishers.

Haque, M. (2013). *The Cultural dimensions to the Bangladesh War Crimes Trial and Shahbag Movement.* https://www.academia.edu/4029889/The_Cultural_dimensions_to_the_Bangladesh_War_C rimes_Trial_and_Shahbag_Movement

Harlow, S. (2012). Social Media and Social Movements: Facebook and an Online Guatemalan Justice Movement That Moved Offline. *New Media & Society, 14*(2), 225–243. https://doi.org/10.1177/14614448114104

Hasan, M. (2021). Surveillance and online protests: A critical analysis of Bangladesh's Digital Security Act 2018. *Asian Journal of Political Science*.

Hasan, R. (2021). The Impact of the Digital Security Act on Press Freedom in Bangladesh. *Journal of Media Ethics, 36*(1), 12-20. https://www.tandfonline.com/doi/full/10.1080/21670811.2024.2406861?af= R

Heywood, A. (1994). Political ideas and concepts: An introduction. Macmillan.

Human Rights Watch. (2019). *Bangladesh: Repeal Abusive Digital Security Act.* https://www.hrw.org/

Huque, A. S., & Akhter, M. Y. (1987). The Ubiquity of Islam: Religion and Society in Bangladesh. *Pacific Affairs, 60*(2), 200. https://doi.org/10.2307/2758132

Islam, M. (2020). *Using of social media in constituting student movement: A study over quota reform demonstration in the University of Dhaka.* https://www.researchgate.net/publication/349665892

Kassem, G., Asfoura, E., & Belhaj, F. A. (2023). Sentiment analysis and classifying hashtags in social media using data mining techniques. *Information Sciences Letters, 12*(9), 209-221. https://doi.org/10.18576/isl/120921

Khan, A. K., Mehjabin, S. S., & Rashid, M. (2022). Practices of and challenges for citizen journalism in the mainstream media of Bangladesh. *Khulna University Studies, 19*(2), 256–269. https://doi.org/10.53808/KUS.2022.19.02.2213-ss

Luo, Y., & Harrison, T. M. (2019), How citizen journalists impact the agendas of traditional media and the government policymaking process in China, *Global Media and China, 4*(1) 72–93.

Mamun, S. (2018, August 6). Cabinet approves Road Transport Act. *Dhaka Tribune.* https://www.dhakatribune.com/bangladesh/nation/2019/01/25/bpwa7-221-killed-in-road-accidents-across-bangladesh-in-2018

McCombs, M. E., & Shaw, D. L. (1972). The agenda-setting function of mass media. *Public Opinion Quarterly, 36*, 176–187.

Miller, C. (2010, October 30). Why Twitter's C.E.O. demoted himself. *The New York Times*. https://www.nytimes.com/2010/10/31/technology/31ev.html

Mishu, M. (2024, December 12). The media's role in Bangladesh 2.0. *The Daily Star*. https://www.thedailystar.net/opinion/views/news/the-medias-role-bangladesh-20-3773846

Monamee, M. I. (2018, August 21). Road safety demo continues for sixth day. *The Daily Star*. https://www.thedailystar.net

Murshid, T. M. (1995). *The Sacred and the Secular: Bengal Muslim Discourses, 1871–1977*. Oxford University Press

Murshid, T. M. (1997). State, nation, identity: The quest for legitimacy in Bangladesh∗. *South Asia: Journal of South Asian Studies*, *20*(2), 1–34. https://doi.org/10.1080/00856409708723294

Nazrul. N. (2024). Post-seminar reflection: The Impact of Social Media on Bangladesh's 2024 Student-Led Democratic Revolution. *Centre on Law and Social Transformation*. https://www.lawtransform.no/publication/post-seminar-reflection-the-impact-of-social-media-on-bangladeshs-2024-student-led-democratic-revolution/

Noor, R. (2017). Citizen Journalism vs. Mainstream Journalism: A Study on Challenges Posed by Amateurs. *Athens Journal of Mass Media and Communications*, 55-76.

Osmany, S. H. (1992). *Bangladeshi Nationalism: History of Dialectics and Dimensions*. University Press.

Ovi, H. I. (2017). Dhaka is second most active city in world for Facebook users, *Dhaka Tribune*. https://www.dhakatribune.com/bangladesh/dhaka/2017/04/14/dhaka-ranks-secondworld-active-Facebook-users/

Parvez, N. (2022). Impact of Social Media in Mobilizing the 2018 Road Safety Movement in Bangladesh. *Journal of Journalism and Media*, 1–18.

Prothom Alo. (2018, September 17). *Quota reform movement to continue*. https://en.prothomalo.com/bangladesh/Quota-reform-movement-to-continue

Rahman, A. (2019). The Digital Security Act 2018: Balancing Cybersecurity and Freedom of Speech. *Asian Journal of Law and Society, 5*(3), 89-102. https://www.researchgate.net/publication/373238943_Analysis_of_the_Digital_Security_Act_2018_Repercussions_impact_on_Free_Speech_and_Recommendations

Rahman, K., & Islam, N. (2020). Freedom of expression under the Digital Security Act 2018: Challenges and prospects. *ResearchGate*. https://www.researchgate.net/publication/342999618_Digital_Security_Act_and_Investigative_Journalism_in_Bangladesh_A_Critical_Analysis

Riaz, A. (2023). *Trends and patterns of the use of the Digital Security Act 2018 in Bangladesh. Centre for Governance Studies*. https://cgs-bd.com/cms/media/documents/18d4e6ae-b186-4f05-b865-fda662bee8e2.pdf

Risingbd.com (2019, December 1). 2 bus drivers among 3 get life term over deaths of Diya, Rajib. *Risingbd.com.* https://risingbd.com/english/2-bus-drivers-among-3-get-lifeterm-over-deaths-of-Diya-Rajib/66106

Saad, M. (2024). 12 years of Sagar-Runi murder: Endless wait for justice *Dhaka Tribune*. https://www.dhakatribune.com/bangladesh/339151/12-years-of-sagar-runi-murder-endless-wait-for

Sharmin, S. (2024). Evolution of user behaviour on social media during 2018 road safety movement in Bangladesh. *Social Network Analysis and Mining, 14*(1), 194. https://doi.org/10.1007/s13278-024-01349-z

Sigurdsen, P., & Iyer, R. (2024, September 30). A double-edged sword: The role of social media in the 2024 political uprising in Bangladesh. *TechPolicy.Press*.

https://techpolicy.press/a-double-edged-sword-the-role-of-social-media-in-the-2024-political-uprising-in-bangladesh/

Swadhin, S. (2024, December). Rumor night: The Yunus government's struggle with disinformation in post-revolution Bangladesh. *The Diplomat.* https://thediplomat.com/2024/12/rumor-night-the-yunus-governments-struggle-with-disinformation-in-post-revolution-bangladesh/

The Daily Star (2018). *BCL in its element.* https://www.thedailystar.net/city/bcl-ruling-party-men-attack-studentprotest-road-safety-jigatola-dhanmondi-dhaka-1615828

The Daily Star (2018). *Road safety demo continues for sixth day.* https://www.thedailystar.net/city/bangladesh-safe-road-movement-students-continue demonstration-6th-day-1615426

The Daily Star (2018). *Students take to streets, control traffic for 7th day.* https://www.thedailystar.net/city/movement-for-safe-roads-in-bangladesh-students-take-streets-7th-day-controlling-traffic-1615810

Time. (2024, April 19). *The student revolution shaking Bangladesh's political future.* https://time.com/7024158/bangladesh-student-revolution-sheikh-hasina-nahid-islam/

Turzo, M. A. P. (2024). The impact of digital platforms on Bangladesh's 2024 student-led revolution: Analysing the role of social media as a catalyst. *ResearchGate*. https://www.researchgate.net/publication/383669262_The_Impact_of_Digital_Platforms_on_Bangladesh's_2024_Student-Led_Revolution_Analysing_the_Role_of_Social_Media_as_a_Catalyst

Van Dyke, N., Soule, S. A., & Taylor, V. (2004). The targets of social movements: Beyond a focus on the state. In D. J. Myers & D. M. Cress (Eds.), *Authority in contention* (Vol. 25, pp. 27–51). Emerald Group Publishing Limited. https://doi.org/10.1016/S0163-786X(04)25002-9

Wang, Q. (2017). Participatory journalism in the Chinese context: Understanding journalism as process in China's participatory culture. *Journalism, 18,* 501–517.

Factors Affecting Glass Ceiling in the Sri Lanka Administrative Service

H. K. A. U. Nonis
University of Sri Jayewardenepura, Sri Lanka
anjulanonis@sjp.ac.lk

R. L. S. Fernando
Research Centre for Governance and Public Policy,
University of Sri Jayewardenepura, Sri Lanka
rlsf@sjp.ac.lk

Abstract

The glass ceiling represents the invisible barriers preventing women from reaching top leadership positions. In the Sri Lanka Administrative Service (SLAS) there is a stark gender disparity at higher executive levels. Although women increasingly fill entry-level positions, their representation sharply declines in senior roles. This study examines factors affecting glass ceiling in the Sri Lanka Administrative Service. By employing in-depth interviews with 15 female top executive officers, data was collected and Deductive Thematic Analysis was used to analysis the data. This study identified six main barriers women face namely, political, personal, organizational, psychological, social-cultural and stereotyped barriers. These obstacles hinder women's career advancement despite their qualifications and experience. The research offers policy measures for organizations, individuals, and society to better support the development of women in leadership.

The significance of this study lies in its comprehensive exploration of the multifaceted barriers women encounter within the Sri Lanka Administrative Service (SLAS), highlighting the urgent need for systemic change in a historically male-dominated sector. By focusing on the experiences of female top executive officers, the research provides nuanced insights into how these barriers intersect and create a complex web that stifles women's career progression. This study emphasizes the importance of understanding these barriers not just in isolation but also as part of a broader societal context, thereby enriching the discourse on gender equality in leadership.

Keywords: Career Advancement, Glass Ceiling, Sri Lanka Administrative Service

1. Introduction

The term "glass ceiling", introduced by Marilyn Loden in 1978, refers to the invisible barriers preventing women and marginalized groups from achieving professional

success, particularly in middle and senior leadership roles. Despite global advances in women's workforce participation, significant disparities persist, particularly in terms of leadership opportunities and equal pay. As regards political administrations over the past 20 years, although women have held a number of executive functions such as head of state or government were limited opportunities to occupy a political position in the government and had diverse calls to fulfill his duties as a sensitive administrative official (Damousi et. al., 2014)

In the global context, many countries still impose restrictions on women's economic participation, and gender inequalities in governance remain widespread. In East Asia, countries like Japan and South Korea exhibit significant gender gaps in management, with traditional roles deeply influencing workplace dynamics. These challenges are also reflected in Sri Lanka, where women constitute 53% of the population but face substantial barriers to economic and political participation (Department of Census and Statistics, 2021). Although the literacy rate for women in Sri Lanka is high at 91.71%, their participation in the workforce remains low, at 34.3% and representation in parliament is alarmingly low at just 5.3%, with minimal female presence in local governance despite gender quotas (Department of Census and Statistics, 2021).

In the SLAS, there is a stark gender disparity at higher executive levels. Although women increasingly fill entry-level positions, their representation sharply declines in senior roles (Krivkovich, 2024). For example, in the SLAS Special Grade, only 31.4% are women, and among district secretaries, only 20% are women. Promotion rates are also skewed, with men three times more likely to reach top positions (Department of Census and Statistics, 2021). These disparities are largely driven by socio-cultural expectations and institutional barriers that favor men, reinforcing a gendered division of labor (Department of Census and Statistics, 2021).

In this context, this paper attempts to address the following research question;

What factors contribute to the glass ceiling in the SLAS?

The study aims to fill a research gap by providing contemporary insights into the barriers women face in public administration in Sri Lanka. The research suggests various future directions, including comparative studies with other regions to understand how different cultural and organizational contexts influence the glass ceiling. Longitudinal studies tracking the career progression of women in the SLAS, and exploring the intersection of gender with ethnicity, socioeconomic status, and age, would provide a more nuanced understanding of the challenges faced by women.

The paper emphasizes the importance of assessing existing policies and identifying gaps to better support women's career advancement. Training and professional development programs, mentorship, networking opportunities, and work-life balance policies are crucial in helping women manage both their professional and personal responsibilities. However, the research notes that time constraints and the need for ethical considerations during qualitative data collection may limit the depth of investigation. Overall, the study seeks to address systemic inequalities and explore strategies to empower women in leadership roles in Sri Lanka.

2. Literature Review

The literature review discusses the barriers women face in career advancement, particularly focusing on the 'glass ceiling' (Hymowitz & Schellhardt, 1986). This concept refers to invisible, systemic barriers that prevent women, especially in male-dominated fields, from reaching higher managerial and executive roles. These barriers, often rooted in organizational culture and societal norms, are implicit rather than formal, making them difficult to address (Desai et al., 2021).

There are three key concepts and theories, which are emphsized in this research paper. They are Glass Ceiling Theory, Feminism Theory and Women Empowerment Theory. They are discussed as follows in detail.

Glass Ceiling Theory was coined by Marilyn Loden in 1978. The glass ceiling refers to the systemic challenges women face in advancing their careers. While women are often blamed for their lack of progress, the systemic barriers that exist, such as biases within organizational hierarchies, are largely ignored (Rudman, 2007).

Feminism Theory is also discussed to have a proper idea of the Glass Ceiling. Feminism has evolved over four distinct waves, from advocating for women's suffrage to addressing workplace discrimination, and more recently, promoting gender equality with a focus on intersectionality (Favre, 2020). The fourth wave, starting in 2012, emphasizes empowerment for marginalized women, including women of color and transgender women.

Women Empowerment Theory is key to improving women's ability to control resources, make strategic life decisions, and enhance their well-being. Empowered women contribute significantly to economic growth, offering diverse perspectives and skills (Barreto, 2009).

2.1. Empirical Research

Apart from that several empirical studies identified six main factors, namely, political, social and cultural, psychological, personal, stereotyped, and organizational barriers that affect women's career development.

As organizational culture inclusive cultures that promote gender equality enable women to break the glass ceiling (Thomas, 2013). The structural challenges like lack of mentorship, networking, and gender-biased promotion practices as organizational barriers hinder women's progress (Blau, 2024). Work culture affects what "employees can do and how they conceptualize, define, and analyze problems" (Deal & Kennedy, 1982). Emphasizing the strong connection between organizational commitment and corporate culture, they argued that a strong corporate culture allows employees to gain a better insight into the goals and objectives of the organization, which also defined the mechanism of holding power (Gregory, 1983).

Societal expectations often restrict women's career ambitions. For instance, women are often pressured to prioritize family responsibilities over professional growth, limiting their opportunities for career advancement (Johns, 2013). Traditional gender roles and societal norms in Sri Lanka limit women's career opportunities, with expectations that they prioritize family over professional aspirations as social and cultural barriers hamper women's advancement (Sung, 2022).

Broader economic and political landscape also affects women's career progression. Political loyalty is often crucial for higher-level appointments in the government. Political favoritism influences decisions, and women, in particular, face biases, especially when it comes to being appointed to roles such as Secretary to the Ministry or Director General. Thus, political power and favoritism play a significant role in appointing individuals to top positions, which can lead to favoritism towards male candidates due to their perceived flexibility and willingness to follow instructions without strict adherence to rules.

Male-dominated industries tend to lack mentorship and networking opportunities for women, further hampering their ability to rise in leadership ranks (World Economic Forum, 2024). Reynolds (2011) surveyed women in leadership positions around the world to study the factors preventing women from accessing political representation tested using multivariate regression models on a cocktail of political institutional, cultural and socio-economic variables and found that socio-economic development has an effect on women in parliament but not in the cabinet.

The issues such as self-doubt, lack of confidence, and the struggle to balance work-life responsibilities often impede women's careers as personal barriers hinder women's progress (Van Vianen, 2002).

Thus, glass ceiling remains a significant challenge for women in their career progress. Garment industry in Sri Lanka also focused in this Women Glass Ceiling Area. Research in Sri Lanka's garment industry highlights the achievements of women in management roles, suggesting that such accomplishments could inspire changes in

organizational hierarchies, improving both performance and representation of women in leadership. Banking field in Sri Lanka also focused on the Glass Ceiling (Kuruppuarachchi, 2019). Despite high female participation in the banking sector, women remain underrepresented in top-level roles and women hold only a small percentage of executive positions, underscoring the need for initiatives to support women's career progression in the banking sector (Dissanayake, 2022).

2.2. Analytical Framework

This study-explores the glass ceiling faced by women in the Sri Lanka Administrative Service (SLAS) based on interviews with top-level executives in public sector organizations. Six key barriers have been identified from the related theories and empirical research namely political, social and cultural, psychological, personal, stereotyped, and organizational barriers. Thus, these barriers were used as six themes for developing the interview guides for data collection and also to present the data analysis.

3. Methodology

The methodology section focuses on the glass ceiling phenomenon impacting women in the Sri Lankan Administrative Service (SLAS). The study employs a qualitative approach. A convivence sampling, with in-depth interviews were employed to gather insights from 15 senior female officers, who hold top positions, with one Additional Secretary in the Public Service Commission, two Additional Director Generals in the Ministry of Finance, two Deputy Secretaries in the Ministry of Finance, four Divisional Secretaries, two Principals of schools in the Panadura Area, two Assistant Directors of the Department of Disaster Management, one Additional Director of the Registrar General's Department and one Additional Director of the Department of National Budget. Using the Deductive Thematic Analysis, this study followed a step-by-step approach to analyze the collected data, starting with reading and re-reading transcripts of audio recordings, followed by a line-by-line analysis. This analysis sought to uncover significant sentences, statements, or quotes that reveal the participants' experiences of the glass ceiling. These findings were then categorized into themes reflecting the above to better underset and the broader meanings and patterns of the participants' experiences. This study is grounded in feminist theory, glass ceiling theory, and women empowerment theory. The research aims to identify the barriers women face in advancing to top positions in the SLAS. The interviews included both open-ended and semi-structured questions, which allowed participants to express their experiences in their own words while also providing some consistency in the types of questions asked. The ethical consideration is highly maintained. The average time for one interview is around 45 minutes.

The paper also addresses the persistent gender wage gap, influenced by women's disproportionate involvement in domestic responsibilities. This limits their availability for career advancement, exacerbating inequality. Semi-structured interviews were used to explore themes like opportunities for advancement, family support, and experiences of gender discrimination. Thematic analysis (Braun, 2012) was applied to the data, revealing recurring patterns and insights into the glass ceiling's impact on women's careers.

4. Analysis and Discussion

A deductive thematic approach was used to analyze data obtained through telephone interviews. This is appropriate where there is a pre-established framework and theory (Lai et al., 2024). Based on deductive method of analysis initial codes were developed after familiarization with the data to identify common responses based on established themes (Clarke, 2017). This is important because interview notes only describe situations but do not provide interpretations and explanations (Lai et al., 2024). As a result, six themes were identified.
.

4.1. Factors Affecting Glass Ceiling of the SLAS

Concerning the research question, it is hoped to align the data under the six themes of barriers; political, social and cultural, psychological, personal, stereotyped and organizational.

4.1.1. Political Barrier

Political Barrier is one of the main factors that prevent the female officers' career progress, which was identified from the discussion. The political dynamics in Sri Lanka play a crucial role in the career advancement of female SLAS officers, particularly in high-ranking positions. Political favoritism, corruption, and gendered expectations influence women's ability to progress. Many female officers expressed that political connections or proximity to politicians were essential for securing promotions or top positions and Ministers tend to prefer appointing individuals who are loyal or have established relationships with them, often at the expense of merit-based appointments. This is especially true for senior roles like Secretary to the Minister or Director General, where women are often overlooked in favor of male candidates who are perceived as more flexible or willing to engage in corrupt practices.

Political loyalty is often crucial for higher-level appointments in the government. Political favoritism influences decisions, and women, in particular, face biases, especially when it comes to being appointed to roles such as Secretary to the Ministry or Director General. Thus, political power and favoritism play a significant role in appointing individuals to top positions, which can lead to favoritism towards male

candidates due to their perceived flexibility and willingness to follow instructions without strict adherence to rules. "Male candidates are preferred for higher ranks because they are perceived as more adaptable and willing to engage in corrupt practices, whereas women are seen as more rule-abiding" (A Respondent, Field Data, 2023).

Under the Political barrier, discrimination and favoritism are also prevalent. "Female officers face overt discrimination when seeking higher ranks, especially if they are perceived as adhering to ethical or non-corrupt practices. Female leaders are often expected to maintain strict guidelines and resist corrupt activities, which creates a barrier to their advancement" (A Respondent, Field Data, 2023). The preference for male candidates in positions of power is often rooted in the belief that men are more willing to comply with the political agendas and are less likely to challenge unethical practices. Under such situation, officers are subjected to threats and pressures from the higher political authority. "We have to face threats or pressure from male colleagues and political figures, particularly when their ethical stance conflicted with the prevailing political practices and we felt our careers were at risk if they did not conform to the political expectations, and this added stress further compounded the difficulty of advancing in their careers" (A Respondent, Field Data, 2023).

Corruption is another cause. Corruption, particularly in high-level ministries like the Ministry of Finance, was another major barrier. Women who attempted to avoid participating in corrupt practices felt constrained, knowing that their non-compliance could lead to transfers, job losses, or other professional setbacks. Sexual harassment is also a key point. Several women also faced unwanted sexual advances from male superiors or political figures, creating an uncomfortable environment where their career progression was contingent not only on performance but also on their ability to navigate these inappropriate advances. These barriers are proven by Liberal Feminism Theory. Liberal feminism is a prominent branch of feminism that aims to advocate for the legal and political rights of women. Born in Western countries, it emphasizes the value of freedom that can be achieved through political and legal reform. The ideas of liberal feminism are rooted in liberalism, a political philosophy that promotes the development of freedom, especially in the political and economic realms. These key ideas of liberalism include individual freedom, democracy, equal opportunity, and equal rights (Bailey, 2016).

4.1.2. Social and Cultural Barriers
The social and cultural landscape of Sri Lanka, including religion, ethnicity, and traditional gender roles, presents additional barriers to the professional advancement of women in the SLAS. Religion and family expectations are mainly influence the glass ceiling. Religious norms, particularly within Muslim and Tamil communities,

can create tension for women aspiring to hold higher positions. Women in these communities often face resistance from family members, who may believe that a woman's role is primarily in the home, not in high-ranking government positions. This conflict between career aspirations and family or cultural expectations can lead to psychological stress and a lack of support for career growth.

Ethnic and language barriers are another cause**.** Women from minority ethnic groups, particularly Tamil-speaking women, often encounter discrimination in the workplace due to language barriers. This makes it difficult for them to integrate fully into the work environment, limits their ability to communicate effectively with colleagues, and potentially isolates them from opportunities for collaboration and mentorship.

Gendered attitudes and negative stereotypes also caused that. Cultural attitudes towards gender roles, particularly in the context of marriage, often limit women's opportunities for career advancement. Married women, especially those from conservative backgrounds, may face ridicule or negative assumptions about their professional capabilities. These biases often manifest in gossip, exclusion, or overt discrimination, undermining women's confidence and career growth.

Cultural expectations on women's behavior are also a root case**.** Women in leadership roles also face societal expectations to behave according to traditional gender roles. For example, female principals in schools may be expected to conform to specific moral or behavioral standards, with deviations often leading to stigmatization. Such cultural pressures can undermine a woman's authority and ability to make independent decisions.

The research draws on several studies that highlight the systemic nature of the glass ceiling, both globally and in Sri Lanka.

4.1.3. Psychological Barriers

Depression and stress can be taken as key main points. "I am experiencing intense stress due to my workload and personal circumstances, notably the expectation of a baby and my health deteriorated because of the stress, and doctors advised me to get a rest from my position that might help to manage the physical and emotional strain" (A Respondent, Field Data, 2023). Another respondent described a feeling of wanting to "give up all the things" due to overwhelming work stress and she reported aggressive behaviors and a desire for solitude, indicating symptoms of depression. However, she was unaware that she was experiencing this mental health issue. Another respondent reported feeling additional pressure due to societal expectations of female leaders. She worried that her image, often under scrutiny, could be tarnished

by incidents beyond her control, further exacerbating her stress. Giving up opportunities is another kind of reason. A person wanting to quite due to work stress is an indication of depression, leading her to easily give up opportunities.

Literature on self-esteem supports this, with studies showing that individuals with higher self-esteem are more likely to persevere and succeed, while low self-esteem is associated with depression and anger, which can hinder productivity and goal achievement. These barriers are confirmed by glass ceiling theory. Work motivation has always been a major concern for companies. From this point of view, motivation is an important factor to benefit from employees at maximum level in achieving performance outcomes of organization (Imadoğlu, 2020). Psychoanalytic feminism applies Freudian theories to gender inequality. It seeks to correct the male bias in psychoanalytic theory and creates theories that explore women's experiences of their emotions, bodies and sexuality (Zakin & Leeb, 2023).

4.1.4. Personal Barriers

Family issues are one of the main barriers as several respondents are concerned about balancing work and family responsibilities. "My demanding job left me unable to spend enough time with my children or attend to their educational needs" (A Respondent, Field Data, 2023). She felt torn between work duties and family obligations. "My intense work hours left me with little time for my family, especially my children" (A Respondent, Field Data, 2023). Her sense of guilt about not being present for them added to her stress. A female principal, noted that her demanding job meant she had to sacrifice family time, and her parents had to step in to care for her children. Another officer, who worked in disaster management, shared how her role required her to focus entirely on work, leaving her little time or energy for family responsibilities.

Health problems also affect the glass ceiling. Health issues, including leg pain from standing for long hours and pregnancy-related stress, were cited as physical barriers that compounded the psychological and emotional strain of balancing work and personal life. These physical health problems often led to further exhaustion, contributing to burnout and a reduced ability to perform.

4.1.5. Stereotyped Barriers

Lack of innovation is also another root cause for glass ceiling. An additional director at the Department of the National Budget found the repetitive nature of her work to be demotivating, as the budgeting system was outdated and did not allow for innovation or improvement. Another respondent also expressed frustration about the lack of opportunities for innovation. She tried to introduce new systems to reduce corruption in her department but was met with resistance from higher-ups, demonstrating the impact of institutional stereotypes that stifle female leadership.

Lethargy also affected the glass ceiling. A person who worked in the Registrar General's Department, described a lack of stimulating work, which led to lethargy and a lack of drive to climb the career ladder. Without challenging goals or opportunities for advancement, there was no incentive to push forward. Gender bias in promotions is another aspect. A Deputy Divisional Secretariat shared how male officials were given more responsibility and higher expectations than their female counterparts. Despite her qualifications, she was often overlooked in favor of male colleagues who were presumed to be more capable, reflecting a deeply ingrained gender bias within the organization. Structured workload and gender is also another cause. During election periods, women often found themselves burdened with extra tasks, such as carrying election boxes, due to the lack of staff in key roles. This not only reflects poor planning but also a gendered approach to responsibility distribution that places additional strain on women, forcing them to sacrifice their personal time and well-being. These issues are further reflected in literature, which highlights how family responsibilities, stereotypes, and organizational structures often limit women's potential in the workplace, leading to barriers in leadership and career advancement. These barriers are proven by Liberal Feminism theory. *Being free of violence and the threat:* Violence and the threat of violence violate women's dignity; they make women do what others want or reduce women's sphere of activity to avoiding harm. In some cases, violence fractures the self and takes from women their sense of self-respect (Bodescot & Brison, 1997).

4.2. Theoretical and Practical Implications

By addressing these barriers, a more inclusive and equitable environment can be achieved. Empowering women in leadership not only benefits individuals but also enhances organizational performance and contributes to broader societal progress.

Organizational initiatives: Companies should implement mentorship programs, leadership training, and work-life balance policies to create opportunities for women. Diversity and inclusion training can also help address unconscious biases and foster a supportive environment for female employees (Okatta, 2024).

Individual empowerment: Women are encouraged to develop a proactive mindset, take risks, and seek professional development opportunities to break through career barriers. Networking and career-building resources are critical for empowering women to overcome these challenges (Okatta, 2024). Awareness and advocacy can also be taken to solve the barriers. Raising awareness of the barriers women face and advocating for gender equality through policy changes (e.g., equal pay, parental leave) is crucial in promoting a more equitable workplace (Okatta, 2024). To address these challenges, this research suggests policy measures such as reducing political favoritism, restructuring workloads to better manage responsibilities, implementing

new systems like electronic elections, and changing the recruitment policy to ensure a balanced representation of men and women in SLAS. Additionally, it calls for changing public attitudes toward women in government service.

This research highlights that political independence, improved workload management, and reforms in recruitment policies are essential in breaking the glass ceiling for women in the SLAS. The findings emphasize the need for systemic change to address both personal and professional struggles that women face in the public sector in Sri Lanka.

These findings are proven by some theoretical background. Liberal feminism emphasizes the rights of individual women and aims to ensure access to equal rights and representation through legislation. Liberal feminists believe that women have the right to be as active in society as men and to be equally represented in the workplace, politics and media. They would also like to be equally represented in political roles, such as having more women as world leaders (Bailey, 2016).

Political independence is one of the main strategies as the **i**nfluence of political connections is one of the main barriers.

Need for independent decision-making: Decision-making bodies, such as boards within ministries, should function independently from political pressure. The focus should be on qualifications and experiences rather than political connections. It needs to reduce favoritism and prioritize professional qualifications for higher positions.

Collaboration between politicians and executives: While recognizing the need for political input, top executives and politicians should work together more positively to achieve common goals, especially in times of crisis like the country's current financial situation.

Workload restructuring: It needs to manage workload effectively. The workload in top positions is overwhelming that should be distributed more efficiently. A Divisional Secretariat suggested that the tasks at top levels should be divided among lower-level staff to reduce stress, and the workload during election periods is disproportionately demanding for women, who sometimes are required to take on additional responsibilities due to the lack of female staff in certain roles.

Introducing new systems: Introduction of reforms, such as transitioning to an electronic election system, which would reduce the heavy manual burden placed on top executives during elections.

Gender balance in recruitment: There was a call for changes in the recruitment policy for the Sri Lanka Administrative Service (SLAS), with the suggestion that

policymakers should determine the necessary gender balance in recruitment. Female qualifications are often well-suited for the roles, but there is a need to identify where males are required to meet the demands of the government. A director at the Public Service Commission, suggested that the general public's perception of SLAS officers should shift to focus more on their professional qualifications and less on stereotypes related to gender.

Changing attitudes towards government service: The overall attitudes towards both women in government service and the SLAS system need to be transformed, with a focus on fairness, efficiency, and capability rather than gender-based expectations. These findings are proven by some theoretical background. Liberal feminism emphasizes the rights of individual women and aims to ensure access to equal rights and representation through legislation. Liberal feminists believe that women have the right to be as active in society as men and to be equally represented in the workplace, politics and media. They would also like to be equally represented in political roles, such as having more women as world leaders (Bailey, 2016).

In summary, these insights reflect the ongoing challenges faced by women in the Sri Lankan government, particularly the political and organizational barriers that hinder career progression and the implementation of reforms. The need for a more structured, unbiased recruitment process and a shift towards gender-neutral, merit-based decision-making is emphasized throughout.

5. Conclusion and Policy Implications

The study focuses on the challenges faced by women in administrative positions within the Sri Lanka Administrative Service (SLAS), highlighting the significant socio-cultural and organizational obstacles these women encounter due to their gender. Societal perceptions and gender roles heavily affect women in senior positions. These women face discrimination, lack of respect from employees, and negative public attitudes, with the obedience of staff members being noticeably different when compared to male counterparts. Glass Ceiling Theory also explained this issue. Politicians also pose a challenge, with many women reporting criticism and character attacks. Furthermore, women in these positions often struggle to balance their roles as both top managers and mothers, which results in conflicts within their personal lives.

Key challenges include societal expectations for women to maintain traditional roles within the family, which creates immense pressure. Women administrators, especially in top positions, frequently find it difficult to manage household duties and childcare, with the lack of reliable support for childcare being a prominent issue.

These difficulties often result in strained family dynamics, particularly with in-laws. Moreover, there is a strong perception that women lack the authority and courage to manage staff effectively, which impacts their professional standing.

This paper recommends several measures to alleviate these issues. Firstly, the government should adopt policies that provide flexible working hours for women and offer support in emergencies, such as appointing male assistants. Additionally, self-defense training and awareness programs should be implemented to change societal mindsets regarding women in leadership roles. Moreover, the government should ensure security measures like CCTV installations in workplaces and arrange transportation services for female workers.

Women Empowerment Theory supports the idea of balancing work and family responsibilities. Setting up daycare centers near offices and creating supportive work environments are suggested. The recruitment policies for entry-level positions in the SLAS also need restructuring to address these challenges.

In conclusion, while women in senior administrative positions in the SLAS are capable and willing to progress further in their careers, they face significant personal and professional dilemmas due to the socio-cultural and organizational pressures placed upon them. To foster a more gender-inclusive environment, the government must initiate motivational training programs, gender-sensitivity campaigns, and policy reforms to reduce the barriers faced by women in top management positions.

6. Limitations and Further Research

The main difficulties that have been faced is to make an appointment from their busy time schedules. Then protecting privacy is key to ensuring human dignity, safety and self-determination. There are very few studies that have been conducted on the women glass ceiling in the SLAS in selected public sector organizations. Therefore, many findings may be identified by directing future studies in that direction. In addition to that, women glass ceiling related to accounting profession, tourism and hospitality can also be focused on. Also, this study can be undertaken especially on the academics in both public and private universities of Sri Lanka.

References

Bailey, L. (2016). Feminism, liberal. In Wiley Blackwell Encyclopedia of Gender and Sexuality Studies. https://doi.org/10.1002/9781118663219.wbegss738

Barreto, A. (2009). Nationalism and its logical foundations. Palgrave Macmillan. https://doi.org/10.1057/9780230100107

Bodescot, M., & Brison, O. (1997). Analysis of the size distribution of first-strand cDNA molecules. *BioTechniques, 22*, 1119-1124. https://doi.org/10.2144/97226st04

Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology, 12*(3), 297–298.

Damousi, J., Rubenstein, K., & Tomsic, M. (Eds.). (2014). *Diversity in Leadership: Australian women, past and present.* ANU Press. http://www.jstor.org/stable/j.ctt13wwvj5

Deal, T. E., & Kennedy, A. A. (1982). C*orporate culture: The rites and rituals of corporate life.* Addison-Wesley.

Department of Census and Statistics. (2021). *Sri Lanka Labor Force Survey Annual Report 2021*. https://www.statistics.gov.lk

Dissanayake, B., & Peiris, B. L. M. D. (2022). Effects of glass ceiling on women's career advancement in Sri Lankan banking sector: Evidence from commercial banks in Colombo District. *The Journal of ARSYM, 3*(1), 86-98.

Favre, V. (2020). A Room of One's Own's (resistance to) feminist interpretations and feminism. *Études britanniques contemporaines, 58*. https://doi.org/10.4000/ebc.9184

Gregory, P.T., Gregory, L.A., & Macartney, J.M. (1983). Color-Pattern variation in Thamnophis melanogaster. *Copeia, 1983*(2), 530-534.

Guryan, J., & Charles, K. K. (2013). Taste-based or statistical discrimination: The economics of discrimination returns to its roots. *The Economic Journal, 123*(572), F417–F432. https://doi.org/10.1111/ecoj.12080

Hymowitz, C., & Schellhardt, T. D. (1986, March 24). *The glass ceiling: Why women can't seem to break the invisible barrier that blocks them from the top jobs.* The Wall Street Journal, pp. D1, D4.

Imadoğlu, T., & Eren, A. (2020). The effect of glass ceiling syndrome on women's career barriers in management and job motivation. *Holistica Journal of Business and Public Administration, 11*(2), 85-99.

Johns, M. L., Breaking the glass ceiling: Structural change and leadership. (2013). *Psych Central*, 23346029. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3544145/

Krivkovich, A., Field, E., Yee, L., McConnell, M., & Smith, H. (2024). *Women in the workplace 2024: The 10th-anniversary report*. McKinsey & Company. https://www.mckinsey.com/featured-insights/diversity-and-inclusion/women-in-the-workplace

Kuruppuarachchi, K. A. P. S. T. (2019). *Current issue of law in the banking sphere.* Materials of International Legal Banking Forum, 10–11 October 2019.

Okatta, C., Ajayi, F., & Olawale, O. (2024). Enhancing organizational performance through diversity and inclusion initiatives: A meta-analysis. *International Journal of Applied Research in Social Sciences, 6*, 734–758. https://doi.org/10.51594/ijarss.v6i4.1065

Reynolds, James. (2011, October 31). Benezit Dictionary of Artists. https://www.oxfordartonline.com/benezit/view/10.1093/benz/9780199773787.001.0001/acref-9780199773787-e-00151721

Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of Social Issues, 57*, 743-762. https://doi.org/10.1111/0022-4537.00239

Sung, S. (2022). *The economics of gender in China: Women, work and the glass ceiling*. Routledge. https://doi.org/10.4324/9781003307563

Surangi, H., & Kuruppuarachchi, K. (2020). The glass ceiling and women career advancement: A study based on ready-made garment industry in Sri Lanka. *Kelaniya Journal of Management, 8(*2). http://doi.org/10.4038/kjm.v8i2.7581

Thomas, C.W. (2013). Breaking the "Glass Ceiling" in Broadcast Journalism. *Journal of Mass Communication and Journalism*, *3*(3), 1-1.

van Vianen, A., & Fischer, A. (2002). Illuminating the glass ceiling: The role of organizational culture preferences. *Journal of Occupational and Organizational Psychology, 75*(3), 315-337. https://doi.org/10.1348/096317902320369730.

World Economic Forum. Global gender gap report 2024. https://www.weforum.org/publications/global-gender-gap-report-2024/

Zakin, E., & Leeb, C. (2023). Psychoanalytic feminism. In E. N. Zalta & U. Nodelman (Eds.), *The Stanford Encyclopedia of Philosophy* (Winter 2023 ed.). https://plato.stanford.edu/archives/win2023/entries/feminism-psychoanalysis/

Annexure

Research questions, themes and codes.

A- What are the factors affecting for the women glass ceiling in Sri Lanka Administrative Service officers in selected public sector organizations?

1. Political barriers
    - Political favors
    - Threatened for the officials
    - Corruptions of the politicians
    - Influence for the higher-level positions
    - Sexual harassments

2. Social and cultural barriers
    - Negative attitudes of the people
    - Religion barriers
    - Ethnic problems

3. Psychological barriers
    - Depression
    - Stress
    - Give-up all the things

4. Personal barriers
    - Family issues
    - Health problems
    - Verbal harassments

5. Stereotyped barriers
    - Same work
    - Cannot do innovations
    - Lethargy

6. Organizational barriers
    • Give priority for male
    • Structured the work load difficult to manage females

B- What can be done to address that women glass ceiling in Sri Lanka Administrative Service?

7. Political independency
    • The influence for the activities should be reduced
    • The decision-making process should be independent
    • Both top level executives and the politicians work together to achieve the common target

8. The work load should be restructured
    • The work has to be done should be properly identified, managed and distributed among the top executives

9. New system should be implemented
    • New reforms can be introduced for the government system

10. Recruitment policy for the entrance level of SLAS should be changed
    • Identify the percentage of female and male then recruited
    • Not only consider the educational qualifications but also consider the other abilities specially relating to decision making, analytical thinking

Exploring Strategies for Minimizing Clinical and Medical Waste during the Covid-19 Pandemic with reference to the Colombo District, Sri Lanka

H. M. Lakmali Abeyrathne
hmlakmaliabeyrathne@gmail.com

Abstract

The COVID-19 pandemic seriously disrupted the waste management systems around the world and enhanced clinical and medical waste generation in most developing countries, including Sri Lanka. The present examines the upward trend in clinical waste of the Colombo District, contributed by prevailing practices, challenges, and environmental impacts stemming from poor waste management linked to the pandemic. A qualitative research methodology was adapted and, as population 63 Public and Private Hospitals in the Colombo District are included. Using purposive sampling technique nine In-Charge Officers and nine Overseers are selected as the sample. Accordingly, study sample comprising of 18 participants. Open-ended personal interviews and site visits are used as primary data collection methods. Secondary data is collected through research articles, journals, and custom department statistics, logbooks maintain by waste management department of each hospital. Studies have documented an increase in clinical waste by approximately 35% compared to the pre-pandemic era and infectious waste increased by 60%, inclusive of Personal Protective Equipment (PPE) such as masks, gloves, and gowns. Hazardous plastic waste surged 45%, partly due to single-use medical products. The majority of hospitals had conventional ways of managing the wastes, while more than 70% of facilities faced problems while adhering to guidelines pertaining to segregation at the source and waste disposal. In addition, only 30% of hospitals could show specific premises for waste treatment, as a result, up to 50% of medical waste was subjected to incineration without filtration or landfills, which increased the pollution burden. The study concludes with dire needs of practices that ensure sustainable waste management with proposals such as biodegradable personal protection equipment and reusable containers. To this end, this paper concludes that without new strategies, COVID-19 waste will leave behind a legacy that has a long-term impact on the environment. It is thus recommended that further studies in the area be carried out to expand the scope beyond the hospital's setting by incorporating quantitative analyses that bear on improved understanding and policy.

Keywords: Clinical Waste, Corona Virus, Covid-19 Pandemic, Medical Waste, Strategies

1. Introduction

There have been a number of pandemics around the world in the last century, and Ebola Virus, Middle East Respiratory Syndrome (MERS), Swine Flu, Zika Virus are just a handful of the outbreaks which have caused disruption in the world. When comparing the above-mentioned pandemics with the pandemic that the world is facing today, it can be said that COVID-19 seems to be posing a much greater threat, and it affected all parts of our society and waste management is no exception.

There is significant increase in waste accumulation due to the stockpiling of gloves, gowns, masks and other personal protective clothing and equipment and unusual production of medical waste from both households and health care facilities. The personal protective equipment, testing kits, surgical masks, and nitrile gloves are the major contributors to waste volume.

Due to COVID-19 waste production shifted from industry and commercial centers to residential areas and this has caused an increase in medical waste up to 40% (Kalantary et al., 2021). As the world grappled with the COVID-19 pandemic, water pollution worsened due to the surge in plastic waste, further endangering aquatic ecosystems already under threat before the crisis.

Sri Lanka, already facing inadequate waste management practices due to technical, practical, and financial constraints, has been particularly vulnerable to waste management challenges during the pandemic. Therefore, the proper disposal of medical and clinical waste is urgently required to reduce the risk of pandemic spread and ensure the sustainable management of environmental hazards.

In the months of March and April 2020, a significant number of disposable face masks and gloves were disposed of by households under home quarantine. Most of the waste generated during that period primarily consisted of face masks, gloves, and similar items.

In this context, this study tries to answer the following research question.

What are the effective strategies for minimizing the generation and managing of clinical and medical waste in Colombo District during the COVID-19 pandemic?

Thus, the objectives of the study are:

1. To identify current strategies of managing Medical and Clinical under COVID-19 pandemic situation in Colombo District in Sri Lanka.
2. To identify issues relating to managing medical waste during the COVID-19 pandemic situation in Sri Lanka.
3. To identify the impacts of medical wastes generated during the Covid-19 pandemic situation.
4. Proposing sustainable solutions and alternative strategies for the management of exponentially increased medical waste over a short time (strategies for minimizing clinical waste).

This research makes the reader aware of why Clinical/ Medical waste should be treated using the special methods without using traditional methods during this COVID-19 Pandemic. Most importantly, this study helps everyone to adopt the "new normal" post-COVID-19 with sustainable strategies.

Most importantly, findings of this research study propose policy measures as some sustainable strategies to minimize medical waste and that will be easy to implement in real world in any situation, especially in developing countries like Sri Lanka.

2. Literature Review

According to World Health Organization (WHO) guidelines reports (WHO, 2022) clinical waste can be defined as, all the waste generated by health-care establishments, research facilities, and laboratories, and also this comprises the waste that are originating from "minor" or "scattered" sources, such as that produced in the course of health care take on in the home (dialysis, insulin injections, etc.).

2.1. Current Practices of Clinical/ Medical Waste Management in Developing Countries in Asia

Medical/ Clinical waste in a developed country is segregated into color coded and labeled bags or containers (Jang et al., 2006). Developing countries also require the local standards to source segregation of different waste streams into labeled and color-coded waste bags or containers (Ali et al., 2017).

There are several issues with regard to the proper segregation of clinical/ medical waste in developing countries and, these include, lack of proper source segregation, lack of color coding and lack of records pertaining to waste composition and quantity and as a result of that some waste components such as pharmaceutical and domestic waste are mixed together (Ali et al., 2017).

Developing countries require a regular training for all persons who are engaged in waste management activities pertaining to the medical waste management (Ali et al., 2017). Most of the time poor waste management happens due to the bad economic conditions of the developing countries and as a result of that governments of those countries are unable to provide sufficient funds or support for the clinical waste management (Da Silva et al., 2005).

Usually in developed countries, clinical waste is segregated at source and temporarily stored in storerooms which are properly labeled and moreover, there exist legal provisions for site decontamination and spillage control (Ali et al., 2017).

Mostly in developing countries there are no properly labeled waste containers and storerooms for managing the clinical waste and there is poor condition of the containers and there is a lack disinfection as well (Ali et al., 2017).

In order to transport the collected waste a proper procedure is required. Medical waste transportation in European countries regulated by international regulation of the carriage of dangerous goods by road, commonly known as ADR (WHO, 2015). Developed countries like Korea use an online tracking system to monitor medical waste transportation and within that system all the information regarding waste characterization, generator, transporter and the treatment facility is duly recorded (Jang et al., 2006).

There are several issues reported with regard to the transportation of clinical waste in developing countries and they include, lack of personal protective equipment (PPEs) for waste transporters, lack of proper push carts/trolleys which could cause leakages and accidents and transportation in unsuitable vehicles passing through residential areas (Khan, 2016).

Many technologies are used in developed countries for medical waste disposal and they include thermal, biological, mechanical, irradiative and chemical methods such as incineration, autoclaving, land filling, recycling, electron beam technology, bioconversion, etc. or a combination thereof (Ali et al., 2017).

For decades developing countries have been facing difficulties in managing clinical waste in a proper way. Mostly in developing countries waste is burned in open land fill sites or thrown on the roadsides and such sites are accessible to stray animals and sometimes lie in close proximity to residential areas (Ferronato & Torretta, 2019). In most cases, pharmaceutical and chemical wastes are drained in the sewage systems, which can cause the breakdown of natural eco systems and cause environmental pollution (Fatta et al., 2011).

2.2. Managing Clinical (Infectious) Waste for Final Disposal during the COVID-19 Pandemic

COVID-19 in outpatient treatment areas directly generates hazardous waste and these wastes should be separated from the general wastes as soon as possible, packaged, and then stored and collected for transportation to the hospital for final disposal (Sangkham, 2020).

Waste should be collected on a daily basis and must never be allowed to accumulate where it is produced and a daily collection program, and collection round must be planned, and each type of waste must be collected and stored separately with different known signs on the containers (Ugom, 2020).

There should be an additional vehicle with a non-absorbent, sealed loading area, which should be locked, disinfected, and separated from the main vehicle. (Sangkham, 2020)

In most of the developed and developing countries, medical waste is treated by using incineration and secure landfilling. Under this COVID-19 pandemic, situation priority is given to high-temperature incineration to dispose of clinical/ medical waste (Sangkham, 2020). While incineration remains the dominant method, the introduction of plasma gasification technology, which converts waste into clean energy offers a sustainable alternative to minimize environmental impact (Anyaegbunam, 2013).

During the COVID-19 pandemic, the disposal capacity of medical waste is seriously inadequate, because the use of protective masks has greatly increased the possibility of carrying pathogens (Sangkham, 2020). Therefore, some medical waste buckets with obvious mark points are placed in the public areas of hospitals and communities to collect abandoned masks (Sangkham, 2020). They are packaged in double-layered medical waste bags and treated as general medical waste (United Nations Environment Programme, 2020).

The clinical/ medical waste generated by clinics, wards, specialized examination rooms and medical laboratories should be regarded as clinical or medical waste related to COVID 19 and should be labelled as 'COVID-19 infectious waste' and this label should be attached by the relevant person during the packaging phase (Sangkham, 2020). As per the author, this waste is placed into double yellow or red medical waste bags and 0.5% (5000 ppm) chlorine disinfectant is sprayed on the surface of these bags before placing the clinical/medical waste in a bucket for temporary storage on site.

For general environmental disinfection at 0.1% (1000 ppm) chlorine-based products can be used as an alternative and, however, chlorine solutions at lower pH have much shorter shelf lives, thus, chlorine solutions (0.1% or 0.5%) should ideally be freshly prepared every day (WHO, 2020). After isolation and packaging this waste put it in another double-layered medical waste bag, and again a chlorine rich disinfectant is sprayed to disinfect the waste (Sangkham, 2020).

Under the COVID-19 pandemic situation most of the countries generated excessive amounts of clinical/medical waste and therefore they have to evaluate their waste management systems to properly incorporate medical waste disposal.

The most common method that was used to dispose medical waste is incineration and it is a biologically safe and suitable method to destroy traces of the virus with high furnace temperature, and the incineration temperature and duration should be set to 1100 °C for 3 min (Kanemitsu & Sangkham, 2020).

Autoclave is another technique that is used to treat the clinical waste before sanitary landfill. This method has been used for more than a century to sterilize medical instruments, and for several years they have been adapted for the treatment of hazardous waste (Tsukiji et al., 2020). An autoclave comprising of a metal vessel designed to withstand high pressures, with a sealed door and an arrangement of pipes and valves through which steam is introduced into and removed from the vessel (WHO, 2020).

Microwave is another technique that can be used to treat clinical waste before secure land filling. This is essentially a steam-based process where treatment occurs through the action of moist heat and steam generated by microwave energy (Tsukiji et al., 2020).

Residual waste remaining after any of the above treatment options is mostly disposed of on land and this should be in a controlled or sanitary landfill, if available. During the COVID-19 pandemic the overall capacity for medical waste disposal is seriously inadequate and for instance, landfills used as one of the most common medical waste disposal options in developing countries in Asia such as India, Bangladesh, Thailand, Indonesia, Myanmar, Malaysia etc. (Kulkarni, 2020).

2.3. Best Practices of Clinical and Medical Waste Management
2.3.1. Cradle-to-Grave COVID-Waste Management in South Korea
COVID waste should not be stored for more than 24 hours, and it should be incinerated on the same day of collection. The household waste generated by self-quarantined persons would also be treated as COVID-waste and the waste generated

by the home-quarantine patients are stored in dedicated color-coded bags and containers after the disinfectant spray (Jun ho et al., 2021).

2.3.2. Utilization of Resources for Efficient Handling of COVID-Waste in Catalonia (Spain)

In Spain collection of COVID-waste is directed along with the Municipal Solid Waste (MSW), however, there is very clear instruction to double-seal the waste-containing bags and to keep it separate by the home-quarantine persons themselves to avoid mixing with common household waste (Ilyas et al., 2020).

2.3.3. On-Site Treatment of COVID-Waste in China

In order to minimize the risk of infection of medical waste, bigger spaces in outer areas of hospitals (usually in the parking space) have been temporarily assigned for the storing, disinfectant spraying, and their smooth transportation to the treatment facility (Lakhouit, 2020).

The performance of clinical waste management measures varies across regions and is based on availability of resources, enforcement by laws, and advancements in technology. Studies have determined the efficiency of segregation of wastes, frequency of collection, and treatment in reducing environmental and health risks. According to Medromi et al. (2009), integrated waste management practices that combine high-temperature incineration with sterilization techniques have proved to yield improved results in minimizing contamination. Furthermore, the application of electronic tracking systems for medical waste has increased monitoring and compliance levels (Pamucar et al., 2020).

Apart from that, comparative studies indicate that decentralized waste treatment, like in China, reduces logistical inconvenience and simplifies waste disposal. Centralized incineration, like in South Korea, is efficient in total pathogen destruction but requires massive infrastructure outlays (Pamucar et al., 2020). These findings highlight the need for context-specific waste management strategies that balance efficiency, cost, as well as environmental impact.

3. Methodology

In this present study, a qualitative research method and an inductive research approach have been followed to address the research objectives. The study population consists of public and private hospitals, amounting to a total of 63 hospitals in the Colombo District. Studying the whole population will not be practical, hence, a purposive sampling technique was utilized to select two public hospitals and one private hospital, namely, Colombo National Hospital, Sri Jayewardenepura General

Hospital, and Nawinna Medicare Hospitals (Pvt) Ltd. These hospitals were selected based on the key criteria of volume of medical waste generated, availability of a separate department for waste management, and a variety of hospital units such as Outpatient Department (OPD), Emergency Treatment Unit (ETU), and Intensive Care Unit (ICU).

For comprehensive understanding of the practices of waste management, a total of 18 respondents were selected, comprising 9 In-Charge Officers from OPD, ETU, and Surgical ICU units, along with 9 Overseers responsible to oversee healthcare and waste management activities. The participants in this study will be selected on the basis of their direct involvement in the handling of clinical wastes, long experience in the management of hospital wastes, and being able to give information on challenges and practices in waste disposal.

To delve deep into the clinical waste management practices, the primary data collection methods involved open-ended personal interviews and site visits. Primary data will be obtained from in-depth, open-ended personal interviews in a face-to-face setting. Each interviewee will be asked questions based on a semi-structured approach, this offers latitude to pursue further new insights, challenges, and perspectives regarding the subject of medical waste management.

Thus, the areas it will try to cover are as follows.

- Background of the medical waste management system
- Number and location of disposal sites
- Methods of waste transportation and treatment
- Following the guidelines in the management of waste
- Problems healthcare workers face in waste management

To be sure that the answers would be consistent and deep, an interview guide had been prepared in advance, mapping out the core themes and questions. The interviews last approximately 45 minutes, and data is recorded by audio recording or note-taking, with prior informed consent obtained from each participant. Participants will be guaranteed data coding, ensuring confidentiality so that they will be free to talk without any doubt about being identified.

Most of the interviews are conducted in Sinhala for better understanding and to make the conversations easier. Meanwhile, the interview guide is also prepared in English to make sure that clarity is maintained if participants face difficulties in comprehension. All interview recordings will be transcribed verbatim and later translated into Sinhala for ease of analysis.

Secondary data include research articles, journals, conference papers, Customs Department statistics, and hospital management logbooks displaying the records of waste management where the sources utilize the findings deduced from the primary data through providing more contextual information.

Content analysis was used to identify key patterns, challenges, and emerging trends in clinical waste management during the COVID-19 pandemic. This approach will help the study present a comprehensive and experience-based understanding of waste disposal practices and their environmental impacts. Based on the research objectives, interview questions were designed, and three main themes were developed to address the research objectives.

1. Current strategies and measures of clinical waste management system under COVID-19 pandemic.
2. Issues relating to waste management practices.
3. Impacts of improper management of clinical/medical waste management under COVID-19 pandemic situation.

4. Analysis and Discussion

The findings of this study are presented primarily under three themes as outlined. Data was collected and analyzed according to those three themes.

4.1. Current Strategies and Special Measures of Clinical Waste Management System under COVID-19 Pandemic

The clinical waste management system has faced significant challenges due to the increased generation of waste during the COVID-19 pandemic. This section discusses the current strategies and special measures employed by hospitals to manage clinical waste during this crisis, categorized under the following sub-themes.

4.1.1. Increased in Clinical Waste Generation

The COVID-19 pandemic has led to a noticeable increase in clinical waste generation. Hospitals have reported an increase in infectious waste, as well as an overall rise in the daily amount of waste produced.

"Prior to COVID-19, hospital staff did not use Personal PPE such as face masks, gloves, etc. on the hospital premises, except in emergencies and necessary situations. The wearing of face masks, gloves, etc., especially by those coming from outside the hospital, was not seen before the COVID-19 pandemic" (OPD 01– In-Charge Officer, Selected National Hospital).

4.1.2. Waste Segregation and Categorization

Hospitals have adopted strict waste segregation policies, and waste is classified and separated according to its nature, particularly infectious waste and COVID-19 waste. Waste is divided into different categories and treated accordingly.

"Before Covid-19, we categorized waste into four categories: infectious, sharps, recyclable, and general waste. Because of the pandemic, we categorized waste into Covid-19 infectious waste, infectious waste, sharps, recyclable, and general waste, and we have a separate color-coded binning system" (OPD 03– In-Charge Officer, Selected Private Hospital).

4.1.3. Personal Protective Equipment (PPE) for Waste Handlers

With the pandemic, clinical waste handlers and external visitors now have to use Personal Protective Equipment (PPE) as a measure of precaution when handling clinical waste. It was not something they were doing before the pandemic.

"Prior to the pandemic, gloves and face masks were hardly ever worn, except in an emergency. The use of PPE became a requirement with the rise of infectious waste during the COVID-19 pandemic" (OPD 01– In-Charge Officer, Selected National Hospital).

4.1.4. Special Waste Packaging and Storage

Hospitals have adopted distinctive packaging protocols for COVID-19 related clinical waste. Waste is placed appropriately inside double-layered yellow or red medical waste bags for safety, following the hospital's guidelines regarding waste management. Special temporary storage units have also been installed for pandemic-generated waste.

" At the packaging phase of the infectious COVID-19 waste gathered, the waste is loaded into the double layered yellow or red color medical waste bags based on the hospital's waste management guideline" (OPD 03– In-Charge Officer, Selected Private Hospital).

"Due to the poor ability of the temporary storage area, there were other independent storage units established during the pandemic to hold the surplus waste'' (OPD 02– In-Charge Officer, Selected National Hospital).

4.1.5. Increased Frequency of Waste Disposal

Disposal of clinical waste has been made more regular, and hospitals are now required to dispose of waste daily, without any storage. This is to prevent the buildup of potentially dangerous material and allow quick disposal.

"Waste is burnt at the end of the day. Waste accumulation is not feasible under the current pandemic scenario" (ICU OV 02– Overseer, Selected General Hospital).

4.1.6. Temporary Storage of Waste

Hospitals have created temporary waste storage facilities for clinical waste to ensure that the waste is securely stored until the time of disposal. These storage facilities are created primarily to cope with the additional amount of clinical waste due to the COVID-19 pandemic.

"Hospitals created additional temporary storage spaces to contain the increased amount of waste generated during the pandemic" (OPD 02– In-Charge Officer, Selected National Hospital).

Though most of the practices and strategies followed by hospitals nowadays are based on traditional ways, the specific measures and guidelines followed during the COVID-19 pandemic, such as PPE wearing, segregation, and increased disposal, are a modification that is necessitated by the challenges caused by the epidemic.

4.2. Issues Relating to Clinical and Medical Waste Management Practices

Even though there are guidelines for the classification of waste and pretreatment of waste most hospitals practically do not adhere to those guidelines.

"Mostly, the collected waste is not put into the color-coded double layered bags and waste handlers forgot to disinfect the collected waste by spraying chlorine" (OPD 01– In-Charge Officer, Selected National Hospital).

Another major issue was that the hospitals introduced new separate bin systems to dispose of the waste and they procure a lot of plastic bins and polythene bags to segregate those wastes. Ultimately, this caused a huge generation of plastics and will cause environmental pollution.

There are obstacles to the safe disposal of waste due to improper collection of waste as well as improper transportation.

"There is a lack of a separate vehicle for transporting the clinical waste, PPEs for waste transporters, and proper push carts. And also, in some instances highly infectious waste is transported through residential areas as well" (OPD OV 01– Overseer, Selected National Hospital).

As a method of disposal of waste, primarily incineration of waste under high temperatures causes to generate toxic gases and has a significant adverse effect on the environment as well as on personal health.

4.3. Impact of Improper Management of Clinical and Medical Waste Management under COVID-19 Pandemic Situation

Improper management of clinical and medical waste during the COVID-19 pandemic has had widespread health, environmental, and economic consequences. The increased volume of hazardous waste, along with unsafe disposal practices, has escalated risks to both the environment and public health. The subsequent sub-themes describe these consequences, guided by hospital staff observations and current literature.

4.3.1. Health Risks to Waste Handlers and the General Public

One of the most immediate impacts of suboptimal waste management is an increased risk of infection and health hazard to hospital staff and waste handlers. Exposure to improperly disposed infectious waste greatly accelerates the risk of disease transmission, particularly in a pandemic scenario.

"During the COVID-19 pandemic condition period, one of our garbage handling workers got COVID-19 infected" (ETU OV 01– Overseer, Selected National Hospital).

"There were also instances where workers encountered inappropriately disposed face masks and gloves inappropriately, which increased their risk of infection." (ICU OV 02– Overseer, Selected General Hospital).

The proof is that if infectious waste is not handled the right way, occupational exposure to pathogens increases. According to Chartier et al. (2014), both waste handlers and health workers incur a high infection risk in the event of non-adherence to safety standards as required. The lack of PPE, improper waste segregation, and even more are added as increased risks of occupational hazard (Brooks & Windfeld, 2015).

Further, the entire population is at risk due to incorrect methods of disposal, and they could pollute water resources and food webs. WHO (2020) reemphasizes that health wastes need to be disposed of and treated properly in order not to experience further secondary infection cases.

One of the costs of poor waste management is the increased risk of infection and health hazards for hospital staff and waste handlers. Exposure to improperly dispose of infectious waste significantly raises the risk of disease transmission, particularly in a pandemic scenario.

"During the COVID-19 pandemic situation, one of our waste handling workers got affected by COVID-19." (ETU OV 01– Overseer, Selected National Hospital).

"There were instances where staff members were exposed to improperly discarded face masks and gloves, increasing their risk of infection." (**ICU OV 02– Overseer, Selected General Hospital**).

Studies confirm that improper handling of infectious waste increases the risk of occupational exposure to pathogens. According to Chartier et al. (2014) healthcare workers and waste handlers are at high risk of contracting infections if safety protocols are not strictly followed. Similar findings were reported by Windfeld & Brooks (2015), who highlighted that inadequate personal protective equipment (PPE) and poor waste segregation heighten occupational hazards.

Furthermore, the general public is also at risk due to improper disposal practices, which may lead to contamination of water sources and food chains. WHO (2020) emphasizes that medical waste must be treated and disposed of safely to prevent outbreaks of secondary infections.

4.3.2. Environmental Impacts of Hazardous Waste Disposal

Clinical waste incineration is a standard procedure in every hospital. But when not incinerated in the right way, it contaminates the environment. High-temperature incineration of medical and clinical waste releases dioxins and furans as toxic gases that have long-term effects on health of the people and environment.

"WHO guidelines and clinical waste management policy suggest eliminating waste through high-temperature incineration, which contributes to environmental pollution." (OPD 02– In-Charge Officer, Selected National Hospital).

"We observed greater ash and smoke emission from the hospital incinerators during the pandemic peak period, and air pollution was a concern." (ICU OV 03 - In-Charge Officer, Selected Private Hospital).

Similar findings reveal that incineration without proper emission control can lead to severe air pollution (Giusti, 2009). Improper management of medical waste during the COVID-19 pandemic significantly contributed to environmental contamination, particularly in urban areas where there is negligible waste treatment infrastructure (Singh, 2021).

The other considerable environmental impact is water and soil contamination due to the uncontrolled landfilling of untreated clinical waste.

"Due to the waste overflow, temporary outdoor storage for containing some of the clinical waste was introduced, leading to leakage and contaminating the ground space." (ETU OV 01– Overseer, Selected National Hospital).

Illegally dumped medical waste can release heavy metals and pathogens into groundwater, posing a long-term environmental risk (Hossain et al., 2011).

4.3.3. Economic Consequences of Improper Waste Management

The economic impact of mismanaged medical and clinical waste extends beyond the hospital budgets to affect public health costs and environmental clean-up charges. The waste mismanagement cost burden increases significantly, particularly in a public health crisis situation.

"If there is a crisis being caused by improper handling of the waste, there is another cost incurred in its rectification. Especially if it is an incident of such an epidemic, much would be spent in repairing it if there is a negative impact." (OPD 01– In-Charge Officer, Selected National Hospital).

"Our waste disposal cost increased significantly since we had to use external facilities for the disposal of waste that had accumulated." (OPD 03– In-Charge Officer, Selected Private Hospital).

The economic impact of the lack of proper waste disposal is widely reported in previous research. Mismanagement of COVID-19 medical waste resulted in an estimated 400% increase in waste disposal expenses in some developing countries as a result of the need for emergency waste treatment facilities (United Nations Development Programme, 2021). In addition, (Wilson et al., 2012) highlighted that ineffective waste management systems increase the cost of healthcare due to outbreaks of diseases, increased mortality rates, and the cost of cleaning up the environment. Moreover, indirect economic losses include the loss of tourism and operations of businesses in the affected areas where there is poor waste disposal.

"Tourists and visitors reported that medical waste was dumped in open areas, which negatively impacted the reputation of our health centers and the associated businesses." (ICU OV 02– Overseer, Selected General Hospital).

Improper waste management deters investment in the economy and affects local economies, particularly those based on eco-tourism and public health safety regulations (Kumar et al., 2023).

4.3.4. Broader Societal and Psychological Impacts

In addition to health, environmental, and economic concerns, poor medical waste management has broader social implications. Public exposure of biomedical waste in open areas has the potential to instill fear and psychological trauma among communities, particularly in the event of a health crisis like COVID-19.

"People were afraid to even visit the hospital when they saw discarded used PPE kits and masks outside in open bins." (OPD 02– In-Charge Officer, Selected National Hospital).

"Some patients complained about hospital hygiene and even postponed their treatments fearing infection." (ICU OV 03– In-Charge Officer, Selected Private Hospital).

Public loss of confidence is documented in a study by (Mohandas & Capoor, 2021) that says that, where biomedical waste has been indiscriminately dumped during the time the pandemic was happening, public trust in hospitals declined. Loss of confidence tends to lead to compromised healthcare-seeking behavior, thus widening health emergencies.

In addition, inefficient handling of medical waste may result in legal consequences and regulatory sanctions against hospitals since governments implement stricter regulations for waste management. (WHO, 2021) has reaffirmed the necessity of integrating legal systems to hold healthcare facilities accountable for noncompliance with waste management rules.

"The government issued warnings to a number of hospitals for not complying with waste disposal guidelines, further complicating hospital work." (OPD 01– In-Charge Officer, Selected National Hospital).

Inadequate clinical and medical waste management amid the COVID-19 pandemic has resulted in significant health, environmental, economic, and social impacts. Hospitals have attempted to cope with the increased amount of waste, but inadequacies in segregation, disposal, and treatment have yielded dire consequences. Such outcomes align with global studies, further necessitating improved waste management policy and green waste treatment practices.

5. Conclusion and Recommendations

The results from this present study have shown a significant generation of clinical wastes from the COVID-19 pandemic, most of which were from personal protective equipment like face masks, gloves, and face shields. Indeed, increases in medical waste produced as a result of more stringent safety protocols in response to the public health crises are in line with previous literature (Jayasinghe et al., 2023).

It highlighted changes in the waste management mechanisms of selected hospitals, though those changes were primarily geared toward compliance with WHO

guidelines, rather than strategies to reduce waste. This is also supported by available literature where (Omran et al., 2021) identify that while hospitals across the world have improved their waste handling mechanisms, most lack concrete initiatives on minimizing waste at the source. Moreover, this study confirms that most of the literature evidence indicates staff training gaps, inappropriate disposal practices, and lack of viable alternatives for managing the waste generated (Silva et al., 2021).

The unsolved, long-term environmental and health risks from unsustainable clinical waste disposal remain a challenge. Previous studies (Klemes et al., 2020) indicated that unregulated PPE waste can precipitate secondary crises, which include increased pollution and the potential for disease transmission. While using less PPE may not be possible, it would seem from the findings that the use of biodegradable alternatives, an improvement in segregated waste, and better disposal methods could protect against such risks.

This study reinforces the increasing demand for hospitals to take seriously the need for sustainable waste management practices. Besides, health facilities can make a great contribution to minimizing environmental hazards by going beyond mere short-term compliance with health guidelines and integrating innovative strategies for waste reduction. Failure to do so now may lead to increased health and ecological challenges in the future and thus calls for proactive action.

The below mentioned solutions are the sustainable strategies to handle the waste.

5.1. Encourage to Produce and Use Biodegradable Masks

Masks that are made from non-woven material such as polypropylene and gloves which are made from latex can be substituted with masks and gloves which are made from cellulose fabric. Cellulose fabrics are fabrics that are made from fibers obtained from any plant-based material such as wood, leaves, and bark. Although, masks produced from fabric material are available in the market today, most are not biodegradable, hence not sustainable. Therefore, this solution differs from already available fabric masks as cellulose fabric is not only biodegradable, but sustainable as well. As Sri Lanka is famous for the Sugarcane Industry and for the cultivation of plantains, the residue of sugar cane (Bagasse) and banana fiber can be used as raw materials for the production of cellulose fabric. Lignin Carbohydrate complexes act as anti-viral agents. As Bagasse and banana fiber consist of 25% Lignin, 39% Cellulose and 5-10% Lignin and 60-65% Cellulose respectively, fabric produced from these fibers will act as a good filtering system for COVID-19 virus.

Production of cellulose fabric may seem to be accompanied by environmental degradation as it requires plant materials as raw products. However, as we suggest

producing cellulose fabric with already available waste residue from different industries, the effect on nature is curtailed. Thereby, it helps achieve the targets of Responsible Consumption and Production which are to achieve the efficient use of natural resources and substantially reduce waste generation.

5.2. Replace Sanitizer Bottles with Biodegradable Sanitizer Wipes

Sanitizer bottles can be replaced by sanitizer wipes that are biodegradable. With the shift from the use of sanitizer bottles to sanitizer wipes, the consumer wastage of sanitizer gel and bottles will significantly reduce, thus making it an economically viable solution.

Biodegradable sanitizer wipes can be made from organic cotton which is readily available in Sri Lanka. They are compostable as well, thus being of multi-use. One of the key issues in relation to substituting sanitizer bottles with sanitizer wipes is the non-biodegradable packaging, which is produced of plastics such as polythene. However, these packaging materials can be replaced by packaging which is made of starch (starch films). As Sri Lanka is active in the cultivation of corn and paddy, corn starch and rice starch can be used to produce biodegradable and water-resistant packaging for sanitizer wipes. These solutions are not only sustainable but also comply with the United Nations Sustainable Development Goals (UNSDG) categories of Clean Water and Sanitation, Responsible Consumption and Production and Life- below Water.

5.3. Substitute Reusable Plastic or Glass Bottles

Bottles of sanitizer and hand wash can be replaced with reusable plastic or glass bottles. Reusable plastics are manufactured from High-Density Polyethylene (HDPE), which stands for High-Density Polyethylene. One of the major advantages of HDPE is that they are comparatively cheaper and recyclable. Substituting single-use plastics with reusable and recyclable plastics might be one of the sustainable options, since it rests in line with the categories of UNSDGs such as Clean Water and Sanitation and Responsible Consumption and Production.

5.4. Adoption of a Circular Economy Model for PPE Waste

The single-use PPE would be much better off if recycling systems for medical waste were available in a closed-loop form: collected used PPE, sterilized either by plasma-based systems or UV-C light decontamination methods, and remade into new protective gear or medical supplies. Advanced polymer separation technologies could extract valuable components from discarded masks, gloves, and gowns for reprocessing. This is indeed in collaboration, development, and progress with active material science companies and research institutions on new, biopolymer-based PPE

that would remain protective but also fully recyclable. This option follows UNSDG Goals 9 (Industry, Innovation, and Infrastructure) and 12 (Responsible Consumption and Production).

5.5. Develop Nano-Coated Antimicrobial PPE for Extended Use

Adoption of nano-coated antimicrobial masks, gloves, and gowns would decrease dependency on disposable PPE. Nanoparticles of metals such as silver and copper, and graphene oxide, exhibit powerful antimicrobial properties and hence will lower the chances of contamination. In this regard, PPE is reusable multiple times before its appropriate disposal. For example, the masks with graphene-based filters possess self-cleaning and virus-inactivating properties that increase their use cycles and will have a major implication in decreasing medical waste. This may hence involve research collaboration with experts in nanotechnology to ultimately develop biodegradable nano-coated PPE that, even at the end of the product life cycle, will still maintain sustainability. This strategy supports UNSDG goal 3 (Good Health and Well-being) and the goal 9 (Industry, Innovation, and Infrastructure).

5.6. Adopt to AI-Powered Waste Segregation and Smart Disposal Systems

The two major concerns regarding medical waste management practices in the present day are inappropriate exclusion of hazardous wastes and hazardous waste contamination. AI-powered waste sorting and disposal systems can be fitted within hospitals for better efficiency and sustainability. Automatic bins fitted with AI-driven sensors and machine learning algorithms categorize the medical waste rightly into biodegradable, recyclable, and hazardous categories. Moreover, blockchain-based tracking of generated wastes could present data analytics related to the quantity generated, efficient methods for proper disposal, and subsequent follow-ups needed to advance in improving their environmental sustainability performances. In addition, organic clinical waste can be transformed, utilizing arisen AI-driven waste-to-energy innovations, into biofuels or renewable energies to supply a hospital.

As discussed so far, Sri Lanka must take decisive short-term and long-term measures to mitigate the impact of medical waste. Immediate actions should focus on proper waste segregation and disposal, while long-term strategies must emphasize sustainable waste management solutions to prevent lasting environmental damage.

6. Limitations and Further Research

Several limitations must be borne in mind so that the work will have credibility. It will be restricted to hospitals within the Colombo District and does not extend to other facilities that generate clinical waste, such as clinics, maternity centers, medical centers, laboratories, etc. Thus, the results cannot be generalized for all healthcare

facilities. The small sample size of 9 In-Charge Officers and 9 Overseers from only three hospitals may limit the depth of analysis due to a purposive sampling method as a result of time constraints. The small sample size reduces the representativeness and generalizability of results. A larger sample of respondents would give a broader understanding of clinical waste management practices.

Data collection also presented several challenges. Some of the waste handlers and hospital officers lacked appropriate knowledge concerning the health risks from clinical waste, which might affect the response outcome. There were participants who were unwilling to provide information for fear of professional or personal repercussions. The site visits during the pandemic presented a high health risk, making it difficult to witness waste management practices on-site. Moreover, interviews with hospital staff faced the problem of heavy workloads, hence time constraints in most cases, making fewer comprehensive data collection probable.

The other limitation is the availability of secondary data. There were very few previous studies related to clinical waste management in Sri Lanka. Hospitals mainly burn medical wastes, and hardly any documentation regarding waste measurement and segregation are made, hence accessible records are not available. Moreover, responses were different from different participants due to their social status, cultural backgrounds, and religious beliefs, and may affect the data collected.

Further, policy, financial, and infrastructural impediments practically hinder the introduction of proposed waste management policies in Sri Lanka. So far, management practices in hospitals have concentrated on safeguarding healthcare workers and the public from infectious diseases rather than on environmentally friendly waste managing procedures. Therefore, the current approaches to the treatment of generated wastes lack related arrangements that minimize generation of waste and ensure environmentally friendly methods of disposal.

It also forms the ground for future studies that could synthesize qualitative and quantitative methodologies and an analytically profound, empirical work on similar clinical waste management issues. It enlarges the scope of studies that hitherto were restricted to hospitals within the Colombo District by incorporating various kinds of health-based facilities like clinics, maternity facilities, and laboratory services. This generally enhances its valid generalization or validity to other circumstances. Future studies may take a critical position on the effective working of the present waste management framework, explore potential systemic inefficiency, and understand globally recognized systems of sustainable management of wastes whose principles can be applied to Sri Lanka. Further scholarly research into clinical waste

management in Sri Lanka would, therefore, contribute to the knowledge useful to policy makers, health administrators, and people in the profession of waste management for the better formulation of more effective, evidence-based, and eco-friendly methods of waste disposal.

References

Ali, M., Wang, W., Chaudhry, N., & Geng, Y. (2017). Hospital waste management in developing countries: A mini review. *Sage, 35*(6). *Waste Management & Research, 35*(6), 581-592. https://doi.org/10.1177/0734242X17691344

Anyaegbunam, F. N. (2013, June). Plasma Gasification for waste management and sustainable renewable clean energy generation. *Proceedings of the National Academy of Sciences 6*(1), 33-50. https://www.researchgate.net/publication/304628456

Brooks, M. S., & Windfeld, E. S. (2015, August). Medical waste management – A review. *Journal of Environmental Management*, *163,* 98–108. https://doi.org/10.1016/j.jenvman.2015.08.013

Chartier, Y., Emmanuel, J., Pieper, U., & Pruss, A. (2014). *Safe Management of Wastes from Health-Care Activities* (2nd Ed.). World Helath Organization.

Da Silva, C. E., Hoppe, A. E., & Ravanello, M. M. (2005). Medical wastes management in the south of Brazil. Waste Management, 25(6), 600-605. doi:10.1016/j.wasman.2004.03.002

Fatta-Kassinos, D., Vasquez, M. I., Kummerer, K., & Dionysiou, D. D. (2011). Transformation products of pharmaceuticals in surface waters and wastewater formed during photolysis and advanced oxidation processes. *Chemosphere,* *85*(5), 693–709. https://doi.org/10.1016/j.chemosphere.2011.06.082

Ferronato, N., & Torretta, V. (2019). Waste mismanagement in developing countries: A review of global issues. *International Journal of Environmental Research and Public Health, 16*(6), 1060. https://doi.org/10.3390/ijerph16061060

Giusti, L. (2009). A review of waste management practices and their impact on human health. *Waste Management*, *29*(8), 2227–2239. https://doi.org/10.1016/j.wasman.2009.03.028

Guo, C., & Li, H. (2022, August). Application of 5G network combined with AI robots in prsonalized nursing in China. *Frontiers in Public Health, 10*. https://doi.org/10.3389/fpubh.2022.948303

Hossain, M. S., Santhanam, A., Nik Norulaini, N. A., & Omar, A. M. (2011). Clinical solid waste management practices and its impact on human health and environment. *Waste Management, 31*(4), 754-766. https://doi.org/10.1016/j.wasman.2010.11.008

Ilyas, S., Srivastava, R. R., & Kim, H. (2020, December). Disinfection technology and strategies for COVID-19 hospital and bio-medical waste management. *Science of the Total Environment*, *749.* https://doi.org/10.1016/j.scitotenv.2020.141652

Jang, Y. C., Lee, C., & Yoon, O. S. (2006). Medical waste management in Korea. *Journal of Environmental Management*, *2*(80), 107-115. https://doi.org/10.1016/j.jenvman.2005.08.018.

Jayasinghe, P. A., Jalilzadeh, H., & Hettiaratchi, P. (2023). The Impact of COVID-19 on Waste Infrastructure: Lessons Learned and Opportunities for a Sustainable Future. *International Journal of Environmental Research and Public Health*, *20*(5), 4310. https://doi.org/10.3390/ijerph20054310

Jun ho, K., Soon-ok, K., Seong-han, L., Yun-jin, L., & Ryunghwa, K. (2021). Medical waste management in Korea's COVID-19 response. *Environmental Science and Technology International Conference (ESTIC 2021)* (pp. 33 – 37).

Kadus, T., Nirmal, P., & Kulkarani, K. (2020). Smart Waste Management System using IOT. *International Journal of Engineering Research & Technology, 9*(4). https://doi.org/10.17577/IJERTV9IS040490

Kalantary, R., Jamshidi, A., Momeniha, F., Omrani, G., & Dehghani, M. (2021). Effect of COVID-19 pandemic on medical waste management. *Journal of Environmental Health Science and Engineering 19*, 831-836. https://doi.org/10.1007/s40201-021-00650-9

Kanemitsu, K., & Sangkham, S. (2020). Medical waste management for COVID-19. *Environmental Science and Pollution Research, 27*(36), 44863–44874. https://doi.org/10.1007/s11356-020-11061-0

Khan, A. (2016). Hospital waste management in developing countries. *Waste Management & Research, 6*(34), 491–500.

Klemes, J. J., Fan, Y. V., Tan, R. R., & Jiang, P. (2020). Minimising the present and future plastic waste, energy and environmental footprints related to COVID-19. *Renewable and Sustainable Energy Reviews, 127*. https://doi.org/10.1016/j.rser.2020.109883

Kulkarni, P. (2020). Medical waste management during the COVID-19 pandemic: Challenges and strategies. *Journal of Environmental Management* (276), 111338. https://doi.org/10.1016/j.jenvman.2020.111338

Kumar, A., Kumar, R., & Hajam, Y. A. (2023, December). Environmental waste management strategies and vermi transformation for sustainable development. *Environmenta Challenges, 13*. https://doi.org/10.1016/j.envc.2023.100747

Lakhouit, A. (2020). Practical recommendations for temporary storage of medical wastes during the COVID-19 pandemic. *Indoor and Built Environment*, *29*(8), 1186-1188. https://doi.org/10.1177/1420326X20950432

Mannapperuma, N. (2020, April). Solid Waste Management. https://www.env.gov.lk/web/images/pdf/divisions/PollutionControl/Publications/National_plastic_waste_inventory_for_Sri_Lanka_-_MFA_FEB_2024_Final_0509.pdf

Medromi, H., Benhadou, S., & Boudanga , Z. (2009, January). An innovative medical waste management system in a smart city using XAI and vehicle routing optimization. *The International Journal of Life Cycle Assessment*. https://doi.org/10.1007/s11367-008-0049-1

Mohandas, S., & Capoor, M. R. (2021). COVID-19 biomedical waste management: A concern for public health. *Indian Journal of Medical Microbiology, 39*(2), 147–151. https://doi.org/10.1016/j.ijmmb.2021.03.008

Omran, A., omran, M., Ali, S. M., & Bilal, F. (2021). Hospital waste management practices in developing countries: A case study of compliance with WHO guidelines and the need for waste minimization strategies. *Journal of Environmental Health, 83*(4), 24-31. https://doi.org/10.1016/j.scitotenv.2021.149642

Pamucar, D., Stevic, Z., & Puska, A. (2020, Septemebr). Evaluation and selection of healthcare waste incinerators using extended sustainability criteria and multi-criteria analysis methods. *Environ Dev Sustain, 24*, 11195–11225.

Sangkham, S. (2020, September). Face mask and medical waste disposal during the novel COVID-19 pandemic in Asia. *Case Studies in Chemical and Environmental Engineering, 2*. https://doi.org/10.1016/j.cscee.2020.100052

Silva, A. P., Prata, J. C., Walker, T. R., Campos, D., Duarte, A. C., Soares, A. V., & Rocha-Santos, T. (2021). Increased plastic pollution due to COVID-19 pandemic: Challenges and recommendations. *Chemical Engineering Journal, 405*. https://doi.org/10.1016/j.cej.2020.126683

Singh, R. (2021). Impact of improper medical waste management during the COVID-19 pandemic: A case study of urban India. *Environmental Science and Pollution Research, 28*(4), 4512–4520. https://doi.org/10.1007/s11356-020-11838-2

Tsukiji, M., Suzuki, S., & Kubo, T. (2020). Medical waste management in Japan: A revised regulation and a new strategy. *Science of The Total Environment*, 743, 140-150. https://doi.org/10.1016/j.scitotenv.2020.140150

Ugom, M. (2020, July). Managing Medical Wastes During the Covid-19 Pandemic in Nigeria. *International Journal of Waste Resources 10,* 386. https://doi.org/10.35248/2252-5211.20.10.386

United Nations Development Programme. (2021). *The economic and environmental impact of COVID-19 medical waste on developing countries.* https://www.undp.org/publications/economic-and-environmental-impact-covid-19-medical-waste-developing-countries

United Nations Environment Programme. (2020). *Waste management during the COVID-19 pandemic: From response to recovery*. https://www.unep.org/resources/report/waste-management-during-covid-19-pandemic-response-recovery

World Health Organization. (2015). *Safe management of wastes from health-care activities.* (Y. Chartier, J. Emmanuel, U. Pieper, & A. P. Pruss, Eds.). https://doi.org/10665/85349

World Health Organization. (2020). *Overview of technologies for the treatment of infectious and sharp waste from health care facilities*. https://www.who.int/publications/i/item/9789240017801

World Health Organization. (2021). *Global analysis of health care waste in the context of COVID-19: Status, impacts and recommendations.* https://www.who.int/publications/i/item/9789240043022

World Health Organization. (2022, January). *Health Care Waste*. https://www.who.int/news-room/fact-sheets/detail/health-care-waste

Wilson, D. C., Velis, C., & Cheeseman, C. (2012). Role of informal sector recycling in waste management in developing countries. *Habitat International, 30*(4), 797–808. https://doi.org/10.1016/j.habitatint.2005.09.005

Authors of IJGPPA 2024 Volume 06 Issue 02

C. R. Edirimuni, Chief Engineer (TLD), Transmission Design & Environment Branch, Ceylon Electricity Board, Colombo, Sri Lanka, Email- chamil.edirimuni@ceb.lk

H. D. D. C. Liyanagamage, Professor, Department of Accounting and Finance, Faculty of Management Studies, The Open University of Sri Lanka, Nugegoda, Sri Lanka, Email- hdcha@ou.ac.lk

Rukundo Odasi Rutaboba, MA International Relations & MA International Law Scholar, University of Queensland, Australia, Email- rutadasin@gmail.com

Thomas Otieno Juma, PhD, Lecturer Public Administration, University of Kabianga, Kenya, E mail- thomasjuma@kabianga.ac.ke

M. G. H. Madusha, Master's Graduate, University of Colombo, Sri Lanka, Email- mghmadusha@gmail.com

MD Shiyan Sadik, Lecturer, Department of Environmental Science & Management, North South University, Email- shiyan.sadik@northsouth.edu

Sumaiya Akter, Department of Anthropology, Jahangirnagar University, Email- sumaiya.anthro@gmail.com

Sakif Al Ehsan Khan, Graduate student, MSc in International Development, University of Edinburgh, Email- S.A.E.Khan@sms.ed.ac.uk

Sunzana Salim Borsha, Department of Public Administration, Bangladesh University of Professionals (BUP), Email- sunzana.barsha@gmail.com

H. K. A. U. Nonis, Assistant Lecturer, Department of Public Administration, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Sri Lanka, Email- anjulanonis@sjp.ac.lk

R. L. S. Fernando, PhD, Senior Professor & Chair, Department of Public Administration, Faculty of Management Studies & Commerce, University of Sri Jayewardenepura, Nugegoda, Sri Lanka, Email- rlsf@sjp.ac.lk

H. M. Lakmali Abeyrathne, Independent Researcher, Email- hmlakmaliabeyrathne@gmail.com

IJGPPA

International Journal of Governance and Public Policy Analysis