8TH CONFERENCE OF THE SLACJ

BOOK OF ABSTRACTS

THEME

HARNESSING TECHNOLOGY AND GOVERNANCE FOR NATURAL CAPITAL MANAGEMENT

13TH AND 14TH OF JUNE 2024, NIIGATA, JAPAN

SLAcJ 8th International Conference on Harnessing Technology and Governance for Natural Capital Management

2024

Book of Abstracts

The Association of Sri Lanka Academics in Japan (SLAcJ)

International University of Japan, Niigata, Japan

The Embassy of Sri Lanka in Japan, Tokyo, Japan

Sri Lanka Japan Study Centre (SLJSC)

University of Peradeniya, Sri Lanka

University of Sheffield, England

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13th & 14th June 2024

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SLAcJ 8th International Conference

Theme: Harnessing Technology and Governance for

Natural Capital Management

Friday,14th June 2024 at MLIC Hall

International University of Japan, Japan

09:00	-	09:20	Registration and Arrival of Guests
09:20	-	09:30	National Anthems of Japan and Sri Lanka
09:30	-	09:40	Welcome Address by Professor N. S. Cooray, Conference Co-Chair and President of The Association of Sri Lanka Academics in Japan
09:40	-	09:50	Address by the Chief Guest- His Excellency the Ambassador of Sri Lanka to Japan- Mr. E. Rodney M. Perera
09:50	-	10:20	Keynote Address by Professor Takeo Kikkawa, President of the International University of Japan (IUJ)
10:20	-	10:40	Refreshments
10:40	-	12:10	Panel Discussion 1
12:10	-	13:30	Lunch and Informal Interaction
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16:30	-	16:40	Refreshments at MLIC Hall
16:40	-	17:50	Panel Discussion 2
17:50			Vote of Thanks by Professor Saliya De Silva, Conference Co-chair and General Secretary, The Association of Sri Lanka Academics in Japan

SLAcJ 8th International Conference

Online Session & Ph.D. Colloquium

Theme: Harnessing Technology and Governance for Natural Capital Management

Thursday,13th June 2024 at MLIC Hall
International University of Japan, Japan

09:00 - 09:10	Welcome Address by Professor N. S. Cooray, Conference Chair and President of the Association of Sri Lanka Academics in Japan	
09:10 - 09:40	Keynote Address by Professor Wimal Rankaduwa, Professor, Department of Economics, University of Prince Edward Island, Canada	
09:40 - 12:40	Technical Session 1 - Online Participants	
12:40 - 13.30	Lunch Break	
13:30 - 13:40	Beginning of the Ph.D. Colloquium	
13:40 - 14:10	Keynote Address by Professor Baogang He, Professor, Deakin University, Australia	
14:10 - 16:50	Technical Session 2 - Ph.D. Colloquium (Hybrid)	
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Congratulatory Message from H.E. Ambassador of Sri Lanka to Japan

Mr. E. Rodney M. Perera

It is a distinct honor to extend my felicitations and gratitude to The Association of Sri Lanka Academics in Japan for organizing its 8th International Conference. I congratulate all the scholars who have gathered to explore the timely theme "Harnessing Technology and Governance for Natural Capital Management."

The theme of this year's conference underscores the critical need to integrate technological advancements and effective governance strategies to sustain and enhance our natural resources. The contributions in this volume highlight the latest developments, research findings, and practical applications that aim to address global environmental challenges.

In today's rapidly evolving world, the intersection of technology and governance holds immense potential for the stewardship of our natural capital. This conference, and the research it showcases, is a testament to our collective commitment to advancing sustainable practices and innovative solutions for the challenges we face.

The abstracts compiled in this book represent a diverse array of pioneering studies and insights. They highlight the critical role of interdisciplinary approaches in addressing environmental issues and underscore the importance of collaborative efforts in driving meaningful change.

I appreciate the authors, researchers, and practitioners who have contributed their knowledge and expertise to this conference. Your work is instrumental in shaping a sustainable future and inspiring progress in natural capital management.

I convey my warmest congratulations to The Association of Sri Lanka Academics in Japan, those who presented their research as well as the participants at the Annual Research Conference. May the research presented contribute significantly to efforts for the sustainable economic development of the world.

His Excellency Mr. Rodney Perera

Ambassador of Sri Lanka

Message from the Co-Chairs of the 7th SLAcJ Conference

As Co-Chair, I am honored and delighted to welcome you to the International Conference of The Association of Sri Lanka Academics in Japan (SLAcJ) – 2024.The SLAcJ, in collaboration with the International University of Japan (IUJ), the Sri Lanka Embassy in Japan, the Sri Lanka Academics' Association in Japan (SLAcJ), Sri Lanka Japan Study Centre (SLJSC), University of Peradeniya, Sri Lanka; Sheffield University Management School (SUMS), University of Sheffield; and Faculty of Accounting and Informatics, Durban University of Technology, South Africa, We also have an "International Workshop on AID, FDI, Trade, and Public Governance" simultaneously organized by Professor Chengwei Xu.

This year's conference is organized on the theme "Harnessing Technology and Governance for Natural Capital Management". As we all know, "All men are created equal and endowed by their creator with unalienable rights to life, liberty, and the pursuit of happiness." This was proclaimed by the American revolutionaries when they assembled in Philadelphia on July 4, 1776, to sign the document declaring the independence of thirteen North American colonies from Great Britain (Gerstle 2022). This year's theme "Harnessing Technology and Governance for Natural Capital Management," is very much linked to the pursuit of human happiness. Human happiness depends on social progress. Social progress is sustainable if humans care about the environment. Both social progress and environmental sustainability depend on public governance and corporate governance. Human well-being depends on the accumulation of capital. Scientists call them human capital, physical capital, and natural capital. Technology directly and indirectly influences all this capital formation. This means that the three components of our conference theme, Governance, Technology, and Natural Capital, are interdependent and strongly linked with the well-being of global citizens.

The conference aims to bring academics and practitioners together to critically examine the challenging issues relating to the proposed subject area and to draw feasible policy lessons for the future. Finally I would like to end my welcome address by acknowledging the support and hard work done by individuals and institutions present today. We received incredible support from partner institutions, IUJ Management, faculty, staff, and the students' community. I would also like to acknowledge the organizing committee members for their untiring dedication to organizing this conference. We wish everyone a productive, intellectually inspiring, memorable conference.

Prof. N.S. Cooray
International University of Japan, Japan

Vote of Thanks

The Association of Sri Lanka Academics in Japan (SLAcJ), in collaboration with the International University of Japan (IUJ); the Sri Lanka Embassy in Japan; Sri Lanka Japan Study Centre (SLJSC), University of Peradeniya, Sri Lanka; Centre for Research into Accounting and Finance in Context (CRAFiC), Sheffield University Management School (SUMS), University of Sheffield; and Faculty of Accounting and Informatics, Durban University of Technology, South Africa, organised the 8th International Conference of The Association of Sri Lankan Academics in Japan (SLAcJ) on the theme "Harnessing Technology and Governance for Natural Capital Management".

For two days, it featured more than 50 crucial research in different disciplines, including Economics, Environmental Economics, Management, Business, Marketing, Public Policy, Public Administration, Political Economy, Governance, International Relations and Development, Peace and Security, Human Health Sciences, Language and Culture, and Information Technology, Disaster Management, Urban Planning, Ecology and Sustainability in nine parallel technical sessions. We had a Ph.D. Colloquium for the first time in this conference where 12 PhD scholars presented their impressive research findings. In addition, there were 3 keynote speeches and 2 Panel Discussions by renowned scholars on the conference theme "Harnessing Technology and Governance for Natural Capital Management".

As a Co-Chair of the Conference and Secretary of the Association, I extend my heartfelt gratitude to all of you who are here and who have joined the virtual platform from various countries. Your participation and cooperation have been instrumental in making this symposium a resounding success.

First, we would like to thank the Chief Guest, His Excellency the Ambassador of Sri Lanka in Tokyo, Japan, Mr. Rodney M. Perera, for his presence and for gracing this occasion amidst his busy schedule. Also, my sincere thanks go to our keynote speakers, Professor Takeo Kikkawa, President of the International University of Japan (IUJ), Professor Wimal Rankaduwa, University of Prince Edward Island, Canada, and Professor Baogang He, Deakin University, Australia, for their insightful presentations. And our panelists, Prof. Hiroshi Kato, Vice President and Dean of the Graduate School of International Relations, IUJ. Prof. Ferina Marimuthu, Durban University of Technology, South Africa, Prof. Buddhi Marambe, University of Peradeniya, Sri Lanka, Prof. Chengwei Xu, IUJ, Prof. Kelum Jayasinghe, Sheffield University, England, Prof. Go Ito, Meiji University, Japan, Dr. Ariful Haque,

Embassy of Bangladesh, and Prof. Hongzhou Zhang, Nanyang Technological University, Singapore. Thank you very much for all your inspiring presentations. Thank you very much to the session chairs and facilitators. I would like to express my appreciation to the IUJ for hosting this conference and to all the members of staff and students for their unwavering support. Dear students, I strongly believe that your participation in this conference will profoundly impact

your academic career. This success would not have been possible without your collective effort. Last but not least, special thanks must go to Prof. N.S. Cooray, the conference Co-Chair and President of the Association, for his leadership and dedication to making this event successful.

Once again, I sincerely thank all of you and eagerly look forward to seeing you at our next conference.

Prof. Saliya De Silva
Saga University, Japan

Key Note Speech by Dr. Takeo Kikkawa
President, International University of Japan, Japan

Carbon Neutrality Policy in Japan

A new vision for Carbon neutrality was introduced on October 26 th 2020, when Prime Minister Suga introduced 2050 Carbon Neutrality in the 1 st diet speech. In April 2021, Prime Minister Suga announced at the Leaders Summit on Climate that 46% of GHG reduction could be achieved by 2030 compared with 2013. The pathway to carbon neutrality is based on three core aspects: zero-emission power supply, non-power and carbon removal. Further, the power generation cost in 2050 significantly exceeds the current 13 yen / kWh cost. As it is apparent, cost reduction is the biggest challenge as carbon neutrality raises the energy cost. Innovation and utilization of existing infrastructures are perceived as keys to cost reduction. Further utilization of Biomass is also an important aspect. Within this scenario, coal-fired power plants are perceived as Messiah because coal is a crucial measure for mitigating the power crisis. It is essential to clarify the duration of the discontinuation of coal-fired power. The power mix in 2050 is Renewable energy 50-60%, hydrogen/ammonia 10%, nuclear power + carbon-free thermal power (excl. hydrogen/ammonia) 30-40%. The author's outlook for 2050 is Renewable energy at 50% (60%), nuclear power at 10% (0%), and thermal power (hydrogen, ammonia, CCUS [zero emissions]) at 40%. The targets for government 2030 are renewable energy 36-38%, nuclear power 20-22%, LNG-fired thermal power 20%, coal-fired thermal power 19%, oil-fired thermal power 2% The author's outlook for 2030 is renewable energy at 30%, nuclear power at 15%, LNG-fired thermal power at 33%, coal-fired thermal power at 20%, and oil-fired thermal power at 2%. It is important to note that heavy carbon pricing (coal regulations) is a key to all the above measures.

By leveraging the power of technology, we can revolutionize the energy landscape. The combination of power saving, power storage, and small-scale power generation can achieve the same effects as building a power plant. This is further enhanced by the potential of Microgrid, Smart Community, and the utilization of digital transformation (DX), artificial intelligence (AI), and Blockchain technology. These innovations are not just important, they are crucial in accelerating the concept of Virtual Power Plant (VPP), inspiring a new era of energy management.

Key Note Speech PhD Colloquium

by Prof. Baogang He, FASSA

Alfred Deakin Professor,

Chair in International Relations,

Deakin University

This paper titled "The Politics of Economic Sanctions and the Logic of Self-destruction: The case of China's Countermeasure against Australia, has identified and explained the diminished coercive capacity of China and the enhanced resistance capacity of Australia. Australia has diversified trade relationships, implemented policy measures to improve and strengthen governmental coordination ability, successfully making China's sanction measure ineffective. China's diminished coercive capacity reveals that China's power in reshaping the regional economic order has its limits: it won't go the way China wants.

The paper offers an important lesson concerning the dynamics of strategic interactions between the coercive country and the target countries. Initially, with an overwhelming capacity advantage, China imposed sanctions against Australia. This forced Australia to enhance its resistance capacity, developing effective strategies to mitigate the impact of economic coercion. The result reveals the law of economic sanctions: the substantive reduction of a coercive power's capacity and the enhancement of the resistance capacity of the target country. Hal Brands (2018:89) points out, in another context, "it may seem, at first glance, that the dictators have the upper hand in the world of statecraft, over the longer term a democratic superpower may have the greater structural advantages after all".

By examining detailed mechanisms to demonstrate how and why China's coercive capacity has been weakening, while the resistance capacities of Australia have been increasing, this paper contributes to a theoretical understanding of the capacity for economic coercion and the factors that shape the outcomes of such interactions. Theoretically, this paper advances Mill's thesis of the fatal decline of over-centralized government and Hirschman's thesis of the self-destruction of the dominant power, by illustrating a pattern of diminished capacity of coercive power and enhanced resistance capacity of target countries and highlighting the multidimensional politics of capability development and strategic responses in the context of economic sanctions.

Theoretically, this paper advances Hirschman's thesis of the self-destruction of the dominant power by illustrating the mechanisms of the diminished capacity of the coercive power and enhanced resistance capacity of the target countries. The dynamics of strategic interactions is that China's sanctions have compelled Australia to enhance its resistance capacity by developing effective strategies to mitigate the impact of economic coercion. As a result, Beijing may eventually be forced to concede due to the escalating costs and its diminished capacity to continue imposing sanctions.

Coercion and bullying are unsustainable and unacceptable ways of resolving international disputes. Employing trade sanctions to address political and security issues is ineffective. If self-destruction is a built-in implication of a great power imposing sanctions, it seems better to promote and defend international institutions like the WTO to deal with trade disputes.

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List of Abstracts

Theme: Economics & Public Policy

Human Capital Development for Natural Capital Protection Among Household Farmers in Sri Lanka: A Human Performance Technology Perspective

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Of Sri Lanka's farming community, smallholder farmers (Holdings reporting an extent of less than 40 perches (0.10 Hectares) of land having agricultural produce mainly for home consumption) make up the overwhelming majority, amounting to 1.6 million (World Bank, 2015). These smallholder farmers also include small-scale family farmers at the household level. While there are specific statistics related to these small-scale family farmers, it is reported that 14.8% of the total land area is engaged in household farming (DSC, 2002) and that around 52% of home gardeners are smallscale farmers conducting semi-subsistence farming activities on less than 0.5 hectares of land.

Managing and sustaining natural capital is critical in farming and is closely linked to sustainable development goals (SDG) 11, 12, and 13. Small-scale family farmers comprise a considerable portion of the farming community and play a crucial role in sustainable development, particularly in maintaining and sustaining natural capital. However, their ability to do so can also depend on their human capital - knowledge, skills, and attitudes related to managing and sustaining natural resources. In that, capacity building related to environmental awareness, climate change adaptation, sustainable agricultural practices, incorporating Indigenous farming practices, community leadership, resource management, and technical proficiency is essential.

However, it is reported that small-scale family farmers might need access to the human capital related to managing and sustaining natural capital as a large-scale farmer would. In fact, according to Marzin et al. (2017), national studies of several countries indicate that smallholders need to be more educated and trained than those in the other categories of agriculture and farming. Further, as Marzin et al. (2017) state, ' In addition, making agricultural practices more environment-friendly requires a renewal of knowledge through vocational training, research and extension services, beyond the preservation of traditional know-how in this area' (p. 44).

While there is ample research on areas related to human capital development, such as the effect of training on smallholder farmers' economic outcomes (e.g., Stewart et al., 2015), farm mechanization (AryalThapa, & Simtowe, 2021), technology adoption (Nakano et al., 2018), little could be found on small scale family farmers capacity development related to natural capital in general and protecting natural capital in particular. While various government and non-government organizations conduct training programs related to different areas about household farming, little is known about whether training related to natural capital protection is undertaken, how these programs are designed, conducted, and their effectiveness. It is also noteworthy that human capital development moves beyond mere training and captures awareness creation, education, mentoring, collaboration, and skill building.

Given this background, we propose how human capital development can effectively protect natural capital using the human performance technology (HPT) theory of Thomas Gilbert Pershing (2006) through analysis, intervention, implementation, and evaluation stages. We propose that the current level of human capital and practices of small-scale family farmers be analyzed to Identify the desired performance and causes related to natural capital protection. Then, interventions such as training programs, providing necessary resources that facilitate sustainable farming, designing incentives to encourage farmers to adopt sustainable practices, and redesigning farming processes can be designed and implemented. Finally, these interventions must be evaluated through performance measurement, feedback mechanisms, and impact assessment and engage in continuous development. These suggestions will be helpful for government and non-government organizations in designing and offering human capital development interventions.

Keywords: Small-scale family farmers, human performance technology, human capital, natural resources

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Why Total Factor Productivity is decreasing in the industrial sector of

Sri Lanka

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Introduction

Sri Lanka, which defaulted on its debt in 2022, has been pursuing economic reforms with the financial support of the IMF and is facing major challenges to increase productivity and strengthen international competition. However, there is little research on what factors caused Sri Lanka's productivity to stagnate and in which sectors of the industry. According to the endogenous growth theory, certain investments can positively impact total factor productivity due to spillover effects in technology. However, Sri Lanka has experienced a stagnant record with a widening trade deficit in the past, resulting in an economic crisis. Bandara and Karunaratne (2010) examined the total factor productivity in the manufacturing sector using the data until 1997 and found a productivity slowdown in the manufacturing sector. However, no recent study on total factor productivity in the industrial sector exists. Based on this background, this study investigates total factor productivity in the industrial sector from 2008. The hypothesis is that the industrial sector's total factor productivity growth rate is decreasing despite the investments made in the past. This study gives empirical support for the Cobb-Douglas production function, and the analysis suggests that total factor productivity growth is the source of growth in the industries during the study period.

Theoretical Framework

Adhering to the framework proposed by Kumari and Tang (2024) this study utilizes the Cobb–Douglas production function with constant returns to scale for assessing total factor productivity, as outlined below:

$$Y\_t = A\_t \ [\![K\_t^\alpha]\!] \_^{\ } [\![L\_t^{((1-\alpha))}]\!] \ ^{\ } (1)$$

Where,

Y_   Stands for Output,

L   Stands for Labor,

A_   Stands for Total Factor Productivity,

α   Stands for Capital share to the output

K_   Stands for Capital,

$1-α$ Stands for Labor share to the output

t   stands for time

This study uses log differences to calculate growth rates for each variable. Equation (1) is revisited to add logs as follows:

$$\Delta \text{Log } Y\_t \approx \Delta \text{Log } A\_t + α \Delta \text{Log } K\_t + (1-α) \Delta \text{Log } L\_t \qquad (2)$$

In empirical studies, Net Capital is calculated as below:

$$K\_(t) = (1-δ)K\_(t-1) + I\_t \qquad (3)$$

Where,

K_t   stands for net capital in year t

K_(t-1) stands for capital in previous year (t-1)

δ   stands for depreciation rate

I_t   stands for the addition of capital in year t

The labor share is denoted as follows:

$$(1-α) = S\&W/ Y \qquad (4)$$

Where,

1-α   stands for labor share to the output

S&W   stands for salary and wages

Y   stands for output

Empirical Methodology

The study adjusted values for constant values of the year 2006 using the Consumer Price Index published by the Central Bank of Sri Lanka.

Changes in the log difference of the above equation (2) with time provide the growth rate of each factor that contributes to output growth. Therefore, $\Delta Log\ Y\_t, \Delta Log\ A\_t, \alpha\ \Delta Log\ K\_t, (1-\alpha)\ \Delta\ Log\ L\_t$ are replaced as g_t, (TFPG)_t, k_t and l_t respectively and equation (5) is derived accordingly.

$$g\_t = (TFPG)\_t + k\_t + l\_t \qquad (5)$$

Where,

g_t	Stands for growth rate of output,
(TFPG)_t	Stands for a growth rate of Total Factor Productivity,
k_t	Stands for growth rate of Capital contribution for output
l_t	Stands for a growth rate of Labor contribution for output

Result

Results are presented as a decomposition of source growth and a graphical representation of annual Total Factor Productivity growth as follows.

Table 1 : Decomposition of Growth in the Industrial Sector of Sri Lanka

Time Period	Era	Output Growth	Capital Growth	Labor Growth	Total Factor Productivity Growth
2008-2009	Infrastructure Investment/War	-0.006	-0.013	-0.014	0.056
2010-2014	Infrastructure Investment/Peace	0.283	-0.001	0.020	0.226
2015-2019	Social Market Economy	0.013	-0.134	0.167	0.133
2008-2019	For 12 years	0.289	-0.356	0.215	0.494

Source: Author's calculation based on the equation (5).

Sri Lanka experienced a decline in total factor productivity even though there were high amounts of investments. This decline may happen because investments have yet to help bring a high level of technology to the industry.

Keywords: Growth Accounting, Industrial Sector, Sources of growth, Sri Lanka, Total Factor Productivity

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Does Paid Parental Leave Encourage Higher Birth? Evidence from Bhutan

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Raising children is a core human activity that demands care, time, and resources. All over the world, parents and primary caregivers are often left to struggle with this fundamental task with insufficient support. The struggle is evident in parents' difficulty in earning for their family and providing necessary care. One measure implemented by the government is balancing work and family life with the introduction of Paid Parental Leave (PPL), including maternity, paternity, and parental leave. PPL allows working parents to take time off from work following the birth of a child, providing new parents with the opportunity to care for and bond with their newborn child. This policy intervention compensates the forgone earnings in the labor market and enables mothers to recover from childbirth, empower women, foster gender equality, and influence fertility outcomes globally (Bassford and Fisher, 2020; Chuard, 2023).

Currently, 37 of 38 OECD countries offer paid parental leave, except for the United States. The PPL policy is adopted in developed countries to increase fertility. Developing countries follow suit, including Bhutan. The average total fertility rate for South Asian countries as of 2022 is 2.41 children per woman, with Bhutan having the lowest total fertility rate of 1.41 children per woman (WorldBank, 2022).

The declining fertility trend in Bhutan over the last decade has yet to be successfully reversed. Given that the PPL has worked in developed countries to increase fertility (Stinoch, 2019; Bassford, 2020), it may also work in developing countries. Hence, this paper estimates the causal impact of paid parental leave on birth rates using repeated cross-sectional data from Bhutan Living Standard Survey (BLSS) datasets.

The government of Bhutan introduced major reforms in parental leave policy in 2015 to balance work life for working parents (Royal Civil Service Commission, 2016). However, the policy reform was focused on the government sector employees, ignoring the working parents of non-government sectors. This policy gap provides good opportunities to study policy impact evaluation using the quasi-experimental model, Difference-in-Differences (DD). Thus, this research aims to explore the causal inference on birth outcomes and estimate the impact of PPL on total fertility rates by utilizing the datasets of 2012 and 2017. Adopting the DD model to study causal impact, the extended paid parental leave policy has resulted in a positive and statistically significant 4-percentage point increase in average birth rates over time. A heterogeneous effect of paid parental leave on rural and urban areas also exists. This study validates that the parental leave policy is an effective family-friendly policy for solving demographic challenges in Bhutan and thus exhibits potential for its application to other developing countries. The heterogeneous effect of the PPL on the region of residence is a promising policy for increasing birth rates, particularly in rural areas of Bhutan.

Over the years, several studies have been conducted to establish the relationship between parental leave (PPL) and fertility outcomes in developed countries. However, the existing literature focuses on PPL in developed countries, and to the best of my knowledge, the impact of PPL on fertility has not yet been explored in developing countries. Thus, this study holds economic and socio-cultural significance for the pronatalist program in Bhutan. Economically, Bhutan faces demographic challenges, raising concerns about sustainable economic growth. Socio-culturally, happiness stems from its strong emphasis on large families and the profound social bonds they create. This rich bonding extends beyond immediate family to entire communities (Leaming, 2004). This web of connection provides a sense of security and well-being, which is especially important during challenging times. In conclusion, this research highlights the potential of extending paid parental leave across non-government sectors and benefiting working parents, including informal sectors, in addressing the issue of declining fertility rates in Bhutan. This approach could mitigate the long-term social and economic challenges associated with a low birth rate in Bhutan and other developing countries facing similar demographic shifts and institutional backgrounds.

Keywords: paid parental leave, difference-in-differences, causal inference, subsample analysis, and family-friendly.

JEL Classification: I180, J13, J18, J81

Strategic Integration of Foreign Talent to Foster Organizational Innovation in Japanese Companies

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Abstract

The dynamic global business environment demands continual innovation and adaptation, particularly in technologically advanced economies like Japan. Historically, Japanese companies have struggled with implementing disruptive and data-driven innovation due to rigid corporate cultures that resist digital transformation and innovative business models. This research posits that Japanese firms are now recognizing the value of incorporating foreign talent not just as a remedy for labor shortages or a cost-cutting measure, but as a strategic lever to overhaul their organizational cultures and foster innovation.

To substantiate this shift, the paper delves into several case studies of prominent Japanese technology firms that have embraced foreign expertise. These firms are not only integrating foreign professionals but are also redefining the strategic roles these individuals play in catalyzing change and introducing novel business practices and technologies.

Keywords: Cultural Innovation, Foreign Talent, Japanese Companies, Organizational Change, Strategic Recruitment

Introduction

The introduction reviews the historical context behind the recruitment of foreign talent in Japan, underscoring traditional motives centered on cost reduction and filling labor shortages. It sets the stage for a paradigm shift wherein Japanese corporations now engage international employees to drive substantial organizational transformation, particularly in fostering a culture conducive to innovation.

Objectives & Conceptual Framework

This study aims to elucidate how Japanese companies strategically utilize foreign professionals to invigorate their organizational culture and enhance innovative capacities. The conceptual framework explores this strategic pivot from a cost-centric to a culture-centric approach in

talent management, emphasizing the transformative potential of foreign talent in catalyzing organizational change and fostering an innovative mindset among Japanese firms.

Methodology

Employing a qualitative research design, this study analyzes comprehensive case studies from a selection of Japan's leading technology firms known for their innovative practices. It involves detailed semi-structured interviews with HR managers and foreign professionals, coupled with an extensive review of both internal company documents and external publications. This methodological approach provides a deep understanding of the mechanisms through which foreign talent impacts corporate culture and innovation.

Interpretation of Results and Findings

Analysis from the case studies illustrates that companies actively involving foreign talents in decision-making processes tend to develop more dynamic and flexible organizational cultures. These cultures are better equipped to implement advanced technologies and embrace global business practices, thereby enhancing overall innovation. Moreover, the study finds that such strategic employment of foreign talent not only enriches the companies' intellectual capital but also significantly alters the traditional perceptions of leadership and problem-solving within Japanese firms.

Conclusion

The findings underscore a critical evolution in the strategic management of human resources within Japanese companies, highlighting a significant shift towards valuing diversity and international expertise. By integrating foreign professionals, Japanese firms are not only enhancing their competitiveness on a global scale but are also setting new benchmarks for innovation in an increasingly interconnected world economy.

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The Growing Political Instability in South Asian Countries and Its Impact on Sino-Indian Rivalry: Special Reference to Sri Lanka and Pakistan

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In the post-pandemic world, significant changes in the global political-economic power structure have emerged, forming new alliances and intensifying existing rivalries. The growing Indo-China rivalry is especially noteworthy as it shapes what many analysts believe will be the "Asian Century." The economic advancements of China and the strategic policies of India under Prime Minister Narendra Modi have positioned both nations as formidable global powers, transforming their historical and strategic rivalry into a key element of international politics. China's unprecedented economic growth over the past four decades, bolstered by Xi Jinping's leadership, has elevated its global economic and political influence. Concurrently, India's rapid economic growth and assertive foreign policy have solidified its role as a regional power. Despite ongoing border disputes and ideological differences, economic interdependence has paradoxically fueled both cooperation and competition between the two nations. This rivalry is particularly impactful in the south region, a critical geopolitical area.

India and China have been evolving from two great civilizations and have become traditional enemies as well as strategic partners in contemporary global contexts. The prevailing border issues between the two countries and the ideological differences have aggravated the antagonist nature of the relationship but the economic trading relations partnership has promoted the mutual interdependence between these two countries which ultimately dragged them into the power rivalry. Due to the prevailing power rivalry between these giant economic players in the international system, both countries are using their all means of possible efforts to consolidate and expand their political and economic influence over the international sphere. This power rivalry has become a significant phenomenon which has a greater impact on the Indian Ocean region which would be the geopolitical center of the Asian century.

Many argue that the South Asian region could be identified as a victim for a long time due to the power rivalry between China and India. Under Xi Jinping's Belt and Road initiatives and pragmatic diplomatic approach, most South Asian countries, especially Pakistan, Sri Lanka,

Bangladesh and Maldives, have become dominant development partners. The China-Pakistan Economic Corridor, the Hambantota Harbour and Colombo Port City, the Chittagong Harbour development project in Bangladesh and multiple infrastructure development projects in Maldives have created an irreversible economic partnership which enhances the political affiliation with China.

In order to deter the Chinese influence, India also tailored a strategic approach towards the members of the South Asian region under the neighborhood-first policy of the Modi regime. With this significant political, economic, and diplomatic approach, India has been using its hard and soft power to consolidate her regional strategic interests by closely engaging with potential political leaders and parties in respective countries. This engagement of both China and India into domestic political affairs has negatively affected the respective countries' political-economic stability and governance failure. Sri Lanka and Pakistan's experiences can be cited as evidence for this argument. The problem of the study is how this growing political instability in respective countries in the region impacts on the power rivalry between India and China. The primary objective of the study is to examine the impact of the power rivalry between China and India on causing internal political instability of the small countries in South Asia. In order to achieve this objective, two case studies have been selected under the purposive sampling technique, which are Sri Lanka and Pakistan. This study used a qualitative approach while using secondary data collected from the literature and the descriptive content analysis method to analyze the collected data.

The findings of the study revealed that the power rivalry between India and China, both countries are heavily engaged in accommodating their strategic interests by utilizing all possible means of Sri Lanka and Pakistan. In order to achieve their interest, both countries have utilized not only traditional diplomatic measures but also involving internal political affairs focusing on grassroots-level political, economic and civil society actors. Thus, this study finds that the internal political deviations and formations have been shaping up based on Indian and Chinese elements. It has further divided and complexed the internal political environments, resulting in daunting political and economic deteriorations. The collapse of Pakistan's economy, Imran Khan's regime and the collapse of the Sri Lankan economy and the Rajapaksha regime can be identified as the consequences of the debt trap, which led to internal political instability and power rivalry. Also, this study finds that the growing internal political instability of the south Asian countries will impacts the intensity of the power rivalry between China and India.

Exploring the Nexus of Institutions, Globalization, and Human Trafficking: A Panel Data Analysis

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Human trafficking is a pressing global issue, and therefore, it has become the target of three sustainable development goals: five (gender equality), eight (decent work and economic growth), and sixteen (peace, justice, and strong institution). Many authors have identified poverty, economic insecurity, corruption, and organized economic exploitation as determinants of human trafficking (Cho, 2013; Zhang & Pineda, 2008). Much literature has also explored the impact of institutional quality on economic growth and human well-being (Acemoglu & Robinson, 2014; Cheng & Mittelhammer, 2008). Those who investigated the effect of institutional quality have considered corruption, rule of law, bureaucratic efficacy, and democratic governments (Avdeyeva, 2012; Cho, 2013; Zhang & Pineda, 2008). Those who study the impact of globalization on human trafficking have taken globalization, economic globalization, and social globalization (Cho, 2013; Peerapeng et al., 2020).

However, most of the above literature has focused only on human trafficking and has not systematically investigated other important components of human trafficking, taking institutions and globalization into consideration. The other two key components of human trafficking include trafficking victims (identifying the trafficked people) and states' compliance (prosecution, protection, and prevention measures against trafficking).

Given this background, the research aimed at quantifying the impact of institutions and globalization on three human trafficking components: human trafficking reduction, identifying the trafficked people, and country compliance in the fight against trafficking. Moreover, this

paper estimates the moderate effect of institutions because the outcome of globalization can vary depending on the intuitional quality of the countries.

The data on three components were obtained from the US Department of State's Trafficking in Persons (TIP) reports (US States, 2004-2022) for 113 countries from 2003 to 2021. We used the logit model, OLS, S-GMM, and Ordered Probit Model to investigate the impact. This study found that (1) institutions directly impact human trafficking reduction through enforcement followed by prosecution and conviction of traffickers; (2) institutions impact human trafficking victims through inspecting the exploitative situations in industries, firms, prostitution, etc., followed by rehabilitation, protection, and prevention measures of anti-trafficking; and (3) institution show positive effects on human trafficking compliance through constructive and sustained efforts against trafficking followed by prosecution, protection, and prevention measures.

Based on the study's empirical findings, globalization increases human trafficking-related matters—identification of trafficked people and human trafficking compliances of states and institutions. Economic and social globalization indices show negative coefficients, implying reduced trafficking incidents. Economic and social globalization also result in positive coefficients that increase victim identification and human trafficking compliance—prosecution, protection, and prevention measures.

Keywords: Global justice and governance, Globalization, Human rights, Human trafficking, and Institutions

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Tax Planning, Corporate Governance, and Firm Performance: Evidence from East Africa

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Abstract

Tax planning represents cost savings to firms and equally can accumulate both tax and non-tax costs, especially those associated with agency problems. As a result, the impact of tax planning on the value of firms has been a subject of academic interest. Beyond this interest, the role of corporate governance in moderating the relationship between tax planning and firm value has equally received attention among academics and corporate stakeholders. Consequently, the study examined the impact of corporate governance on the relationship between tax planning and firm value. The data for the study was collected from 99 listed firms in Kenya, Tanzania, and Uganda from 2008 to 2021. The data were analysed using the model specification developed by Ohlson (1995) and the GMM estimation model. The results showed that tax planning has a negative and statistically insignificant effect on firm value. The results also revealed that board size hurts the relationship between tax planning and firm value, while board independence and gender diversity have positive effects. The study also found that ownership concentration positively influences the relationship between tax planning and firm value. The results have several implications for policymakers and stakeholders in East African Countries.

Keywords: Tax Planning, Cash Effective Tax Rate, Accounting Effective Tax Rate, Corporate Governance, Agency Theory, Firm Value, East African Countries.

Exploring the Impact of Education on Women's Social Identity in Sri Lanka: A Historical and Conceptual Analysis

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Introduction

This research investigates the dynamic interplay between education and women's social identity in Sri Lanka, contextualized within the country's historical trajectory. Education serves as a pivotal tool in shaping and safeguarding women's social identity, influencing aspects such as self-perception, societal roles, values, and economic standing. Despite the global evolution of women's studies as a distinct academic discipline, Sri Lanka presents unique challenges stemming from entrenched socio-cultural norms. While strides have been made in women's education, economics, and politics, persistent disparities underscore the need for deeper analysis. This study aims to elucidate the underlying impediments to women's social empowerment within Sri Lanka's societal framework, fostering dialogue among scholars in education and women's studies. Drawing parallels with global trends, particularly in European and Asian contexts, the research underscores the ongoing struggle against patriarchal structures and the quest for gender equity. Despite advancements, women in Sri Lanka grapple with various forms of oppression, underscoring the imperative of understanding the intricate nexus between education and women's social identity.

Key Words: Gender, Feminism, Women's Education, Social Identity, Sri Lankan Woman

Aims, Objectives and Methodology of the Research
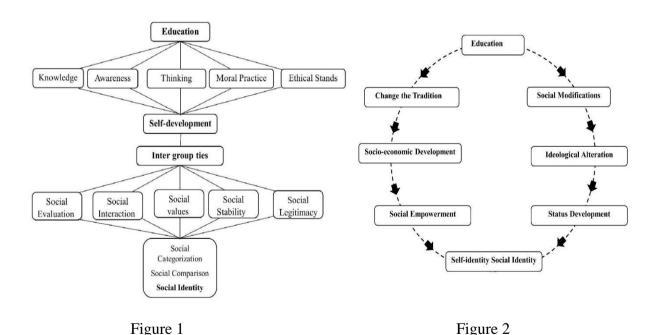
The research aims to identify the conceptual framework and practical applications of education on women's social identity, investigate the evolution of women's social identity, and explore the impact of education levels in contemporary Sri Lanka. The study addresses three key areas: the historical context of women's social identity, the impact of education on women's social

identity, and changes in women's social identity. Specific research questions guide the investigation into these areas.

Considering the methodology, the study employs a mixed-methods approach to examine historical transformations and contemporary landscapes. Historical analysis is informed by feminist and social identity theories, while empirical research involves structured interviews and case studies. Data analysis combines qualitative and quantitative methods, integrating primary and secondary sources.

Conceptual Framework

Focusing on the relationship between education and social identity, they have different definitions. However, most educational scholars and social identity researchers emphasize the practical links between the two concepts. Education is the primary tool for improving human life. To understand women as group members, their self and social identity must be developed through education. Education shapes women's knowledge, skills, thinking, moral practices, and ethical standing, influencing their self and social identity. The following two figures help illustrate this concept.

Figure 1

Figure 2

Discussion and Findings

Considering the educational transformation and Women's Social Identity, over time, changes in education policies and systems in Sri Lanka, including the introduction of free education and equal access initiatives, have significantly impacted women's educational opportunities. The literacy rate among Sri Lankan women has seen a notable increase, reaching 92.2%, correlating with improvements in their social identity. Education emerges as a key determinant of women's social identity, outweighing other factors such as cultural background or caste within Sri Lankan society. The absence of education presents both individual and societal challenges for women, leading to discrimination and limiting economic and social prospects.

As challenges and disparities, despite educational advancements, the lack of occupation-oriented programs hampers women's ability to address economic and social challenges effectively. Traditional customs, religious beliefs, and patriarchal attitudes persist as barriers to women's educational attainment, particularly in acquiring modern technological skills essential for participation in a globalized society. Lingering social disparities, influenced by entrenched patriarchal norms, hinder women from overcoming traditional gender roles and expectations. Direct involvement and representation of women in all spheres of education, policy-making, and decision-making processes are essential to enhance their social identity and empowerment. Creating platforms for women to engage with diverse communities on equal footing within a modern, globalized society is crucial for fostering inclusivity and gender equality. Feminist movements and discourse should prioritize educational empowerment as a fundamental aspect of women's self-identity and social empowerment, shifting focus towards advocating for equal access to education and educational opportunities.

Conclusion

The research illuminates the transformative role of education in shaping women's social identity in Sri Lanka. Historical analysis reveals the direct influence of education on women's personal and social identities. In the contemporary landscape, education remains a key determinant of women's social status and empowerment. The findings underscore the importance of continued efforts to enhance educational opportunities for women and promote gender-inclusive policies. Ultimately, this research contributes to the broader discourse on gender, education, and social identity, advocating for meaningful change and empowerment of women in Sri Lanka.

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Transboundary Water Management in Central Asia: Challenges, Cooperation, and Emerging Issues

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Water scarcity is a critical issue in Central Asia, affecting the region's ecological, social, and economic stability. Since gaining independence in 1991, Central Asian countries have faced the challenge of managing transboundary water resources. The uneven distribution of water has led to mutual dependencies between upstream and downstream nations, where water is vital for hydroelectric power in mountainous areas like Kyrgyzstan and Tajikistan, and for irrigation in agricultural regions like Uzbekistan, Kazakhstan, and Turkmenistan. This study examines the transition from Soviet-era centralized water policies to decentralized management post-independence, focusing on efforts to address water-related issues and the recent challenges that have emerged.

This research uses global environmental governance and political economy theories, incorporating qualitative data from expert interviews across five countries. Key findings indicate that recent diplomatic initiatives have resulted in notable cooperative agreements, such as the resolution of conflicts over the Farhod hydropower plant and the Andijan Reservoir. However, new tensions have emerged, notably between Kyrgyzstan and Tajikistan, and due to the Taliban government's construction of the Qosh Tepa canal in Afghanistan. These developments highlight the intricate interplay of political, economic, and environmental factors in the region's water management. The study concludes that sustained regional cooperation, adherence to international water usage norms, and a balance between large-scale and small-scale hydropower projects are essential for sustainable water management. Addressing these multifaceted challenges requires a coordinated approach informed by both governance principles and political economy insights to ensure regional stability and equitable resource distribution.
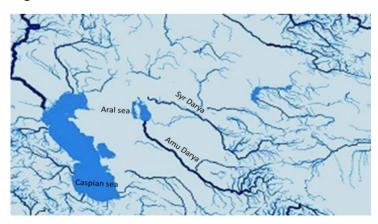
Keywords: Central Asia, Sustainable Management of water resources, Water Scarcity

Introduction

Water scarcity is a pressing issue in Central Asia, with far-reaching ecological, social, and economic implications. Since gaining independence in 1991, numerous natural resources, including major rivers, have become transboundary in Central Asia. The uneven distribution of water resources in the region has led to a mutual dependence between upstream and downstream countries. Water is integral to the economies of the region's five countries. In countries like Kyrgyzstan and Tajikistan, situated in mountainous areas, hydroelectric power is crucial for energy needs and has the potential to become a significant source of export income through the construction of new dams. Further downstream, river water sustains the irrigation systems essential for cultivating agricultural products in Uzbekistan, Kazakhstan and Turkmenistan. Based on data from the World Bank, the population of Central Asia has grown by 56% over the past three decades, rising from 50.2 million in 1990 to 78.4 million in 2022. This population growth has resulted in significant water consumption, notably in agriculture, placing strain on water resources. As a result, Central Asian nations must equitably manage their limited water supplies, considering both the demands of upstream hydroelectric power generation and downstream agricultural needs. Cooperation among these countries is crucial to effectively address this challenge. The utilization of water also carries numerous environmental consequences. Soviet engineers achieved the transformation of deserts into productive farmland, yet this came at the cost of the Aral Sea, once a vast inland lake that has now nearly vanished due to diversion of its waters (Micklin, 1988, O'Hara, 1997). Regrettably, the Taliban government has initiated the construction of the Qosh Tepa canal along the Amu Darya river, raising concerns about the possibility of triggering a new ecological catastrophe. Furthermore, inefficient irrigation systems and unsustainable usage of water resources are resulting in significant water wastage.

Figure 1 - Central Asian water resources

Source: Based on the data of Hyrorivers v1.0, www.hydrosheds.org/products/hydrorivers

Scholars have extensively studied Central Asia's water resources from various perspectives, including politics (Abdullaev, 2011; Stucki, 2012; Janusz-Pawletta, 2015; Wang, 2021), economics (Tsukatani, 1998; Tussupova, 2015), social-ecological dynamics (Aladin, 1995; Lipovsky, 1997; Bekturganov, 2016), agriculture (O'Hara, 2000), and energy (Wegerich, 2008; Yuldashev, 2016; Chen, 2017). However, despite these efforts, new challenges are emerging while existing ones remain unresolved. This research aims to address these gaps in the literature by focusing on two key questions: Firstly, what measures have been taken to address water-related issues? And secondly, what are the recent challenges that have surfaced? The article commences by analyzing the transition from the Soviet Union's centrally controlled water policies to the decentralized due to the independence of Central Asian states in 1991. It comprises two main sections: firstly, a brief overview of water disputes and mismanagement since 1991, and secondly, an investigation into the new challenges confronting water resources, drawing on empirical research and original qualitative interviews.

Theoretical framework

This study investigated its findings by employing the perspectives of global environmental governance methodology and political economy theory. The global environmental governance framework, as articulated by O'Neill (2013), was utilized, alongside the application of hegemony and power theory to the analysis of transboundary water issues, as used by Zeitoun (2008).

The global environmental governance framework focuses on the role of institutions and governance structures in water management. It examines how different policy frameworks, regulations, and institutional arrangements influence water scarcity and management practices in Central Asia. Political economy and power theory explores the political dynamics and economic interests shaping water management policies in the region. It considers how power relations, vested interests, and economic incentives influence the formulation and implementation of sustainable water management policies.

Methodology

The study employed a qualitative research approach, utilizing expert interviews as the primary method of data collection. Expert interviews are commonly used in policy and management analysis, as noted by Littig (2009). This research adhered to the 'Ethical Guidelines for Educational Research' outlined by the British Educational Research Association (BERA, 2018),

ensuring participant confidentiality and anonymity. Therefore, in presenting interview excerpts in the Findings section, only the individual's job category and country is indicated.

A total of 10 interviews were conducted across 5 countries over a one-month period, involving 2 experts from each country. These experts held positions in government or NGOs in their respective nations. The interviews, carried out via the 'Zoom' application, lasted between 30 and 65 minutes. For additional details about the interviewees, please refer to Appendix 1. Russian was used for the interviews due to its common usage as a medium of communication in Central Asian countries. However, interviews with experts from Afghanistan were conducted in English. The experts interviewed were from Afghanistan and other Central Asian countries, with the exception of Turkmenistan. The relative isolation of Turkmenistan made it difficult to identify and contact relevant experts from that country. Interview questions were crafted to address our two research inquiries, with minor adjustments based on participants' roles and countries. Experts had the freedom to add more information during semi-structured interviews if they thought it was important or necessary. Interviews were verbatim transcribed and recorded with participants' consent in order to facilitate a thematic analysis later on.

The six steps described by Braun and Clarke (2006) were followed in conducting thematic analysis, a popular method for interpreting qualitative data: familiarizing oneself with the data, creating preliminary codes, identifying themes, reviewing themes, defining and labeling themes, and producing the report. To supplement the expert interviews, additional secondary data sources were examined, including scholarly publications, policy documents, websites of NGOs and institutions, statistics from the Ministry, and policy documents.

Findings

The interviews yielded substantial insights regarding our queries on efforts made to address water-related issues and the contemporary challenges encountered in this domain.

What measures have been taken to address water-related issues?

Water scarcity has historically been a significant source of conflict in Central Asia. While countries like Kyrgyzstan and Tajikistan possess a surplus of water, downstream nations like Uzbekistan and Turkmenistan face deficits. The Syr Darya and Amu Darya basins supply 90% of the region's river water. Over the past three decades, Central Asia's population has surged by nearly 30 million people, marking a 56% increase since 1990. Increasing in population also

lead to rapid urbanization, that has spurred the need for water reservoirs and raised concerns about food security. Additionally, the region grapples with the enduring legacy of the Aral Sea disaster (see Figure 2), agricultural dependence on cotton, unresolved border demarcation issues, particularly along rivers and reservoirs. Limited arable land is being further depleted by overuse and outdated farming practices, while outdated water infrastructure requires renovation. Furthermore, climate change is expected to exacerbate the region's challenges. Central Asia faces a considerable threat to its GDP due to climate change, with annual economic losses reaching approximately $2.1 billion due to inadequate water supply and sanitation (World Bank, 2019).

Figure 2 - the Shrinking Aral Sea

Source: approximate boundaries of Aral Sea 1960, 1999 and 2023 are based on images of Google Earth and Britannica

In this situation, cooperation between countries was essential, particularly for resolving longstanding issues. After 2016, Uzbekistan's approach towards its neighbors shifted significantly. The newly elected president, Shavkat Mirziyoyev, initiated economic reforms, prioritized regional cooperation, and improved diplomatic relations to address unresolved problems that had persisted for a long time.

Uzbekistan had problems with water distribution with Tajikistan and Kyrgyzstan, especially, building hydropower Rangun and Kambarata I and II, respectively. During Karimov's (Uzbekistan's first president, who ruled from 1991 to 2016) period Uzbekistan was against building hydropower stations, due to upstream and downstream countries had cardinally opposite strategies on it. Currently Uzbekistan's policy changed, and government not opposing these projects, instead tries to be a part of it. (Head of NGO, Uzbekistan)

There were tensions between countries regarding border, water, trade disputes. But it changed to positive friendly cooperation. Uzbekistan and Tajikistan signed strategic cooperation agreement. Territorial disputes were resolved 100%. Imomali Rahmon (President of Tajikistan)

in his visit to Tashkent in 2018 stated that we will not leave uzbek brothers without water. (Politician, Tajikistan)

Tensions over water resources between Tashkent and Dushanbe had prevented cooperation, turning their relationship into a zero-sum game. However, shared challenges have led both countries to realize that creating value through negotiations and finding common ground for agreements is the only viable option.

The dispute over the Farhod hydropower plant has been resolved. The Uzbek and Tajik governments ratified an agreement on its operation, stipulating that the land on which the dam is located will belong to Tajikistan, while the hydropower plant itself, along with its equipment and infrastructure, will be owned by Uzbekistan. It's important to note that the dam was originally constructed during the Soviet era to irrigate farmland in Uzbekistan. The reservoir currently serves over 330,000 hectares of land in Uzbekistan and more than 45,000 hectares in Tajikistan. (Environmentalist, Tajikistan)

Uzbekistan also faced water and border issues with Kyrgyzstan, particularly concerning enclaves. These enclaves, small areas of one country surrounded by another, are a significant challenge for Central Asian countries. They complicate travel, access to water resources, and infrastructure for the people living within them, making it difficult for residents to connect with the main regions of their respective countries. Both countries decide to exchange lands to solve this issue.

The political will of both countries facilitated the resolution of the issue regarding the Andijan Reservoir, known as the Kempir-Abad Reservoir in Kyrgyzstan. In October 2022, Kyrgyzstan and Uzbekistan reached an agreement on border demarcation. As part of this deal, Kyrgyzstan relinquished its claim on the Andijan Reservoir in exchange for 19,000 hectares of agricultural land elsewhere in Uzbekistan (Head of governmental institution, Uzbekistan).

However, the opposition in Kyrgyzstan did not support this agreement and attempted to protest it. Despite this, the Kyrgyz parliament ratified the deal, thereby resolving an issue that had persisted since independence.

Mathematically proving that countries exchanged equal portions of land is challenging due to various factors, such as the type of land (grassland or arid), its distance from populated areas, and other considerations. Critics, especially opposition groups, have raised concerns about land exchanges like those involving the Andijan or Kempir-Abad Reservoir. However, it's essential to adopt a broader perspective. The integration of Central Asia and addressing common regional

challenges are more critical. Thus, countries must be willing to make compromises. (Political scientist, Kyrgyzstan)

Another contentious issue was the Kambarata Hydroelectric Power Plant (hereinafter Kambarata-1 HPP) that Kyrgyzstan planned to build. Uzbekistan and Kazakhstan, being downstream countries, opposed the project due to concerns about reduced water availability during the summer, which is crucial for agriculture. However, initial steps towards resolving the issue were taken. The governments of Uzbekistan, Kazakhstan, and Kyrgyzstan agreed to sign a deal for constructing the Kambarata-1 HPP along the Naryn River in Kyrgyzstan. This agreement, based on a draft by Kazakhstan's Ministry of Energy, specifies collaborative terms for building and operating the plant. The Central Asian countries will purchase all the electricity produced, with operational decisions based on mutually agreed water release volumes. A joint-stock company will be established in Kyrgyzstan to manage the project, with ownership divided among Kyrgyzstan (34%), Kazakhstan, and Uzbekistan (33% each). Each party will independently nominate the company's founder, and the shares' distribution will remain unchanged, preventing any mergers, transfers, or sales. Funding will come from the company's resources and international loans and grants. The roadmap, signed in Bishkek in January 2023, outlines plans for an 1860 MW capacity plant, a 5.4 billion cubic meter reservoir, and a 256-meter dam, aiming to produce 5.6 billion kWh annually, with initial operations starting in four years. The project, initially estimated to cost $2.9 billion in 2014, is now projected to cost $5−6 billion, with a 13−15 year payback period. Tatiana Proskuryakova, Regional Director for Central Asia at the World Bank, emphasized the significance of the Kambarata-1 HPP project, highlighting its potential to deliver substantial advantages in clean energy production, regional collaboration, water resource management, and environmental protection throughout Central Asia (World Bank, 2023).

Figure 3 - Electricity Production by Source in Central Asian Countries and Afghanistan (2022)

Countries	Share of electricity production from fossil fuels, 2022	Share of electricity production from hydropower, 2022	Share of electricity production from solar, 2022	Share of electricity production from wind, 2022	Total electricity production, 2022, measured in terawatt-hours
Afghanistan	15.7%	74.4%	9.64%	0%	0.83

Kazakhstan	87.2%	7.7%	1.6%	3.5%	113.98
Kyrgyzstan	14.1%	85.9%	0%	0%	13.85
Tajikistan	10.6%	89.37%	0%	0%	20.88
Turkmenistan	99.9%	0.04%	0%	0%	23.07
Uzbekistan	93.3%	6.65%	0.01%	0%	74.76
Total	79.4%	18.16%	0.77%	1.6%	247.37

Source: The table is created using data from Ember. https://ember-climate.org/data-catalogue/yearly-electricity-data/

Figure 3 illustrates that the majority, accounting for 79.4%, of electricity in Central Asia is still generated from fossil fuels. Conversely, hydropower contributes 18.16% of the electricity, with Tajikistan and Kyrgyzstan being the main contributors. These upstream countries rely heavily on hydroelectricity, with nearly 90% of their electricity sourced from hydropower. However, despite their significant hydropower potential, Tajikistan has only tapped into 5% of its capacity, while Kyrgyzstan has utilized 10%, and Kazakhstan 13%. If Tajikistan and Kyrgyzstan were to maximize their hydropower resources, they could potentially export surplus electricity to their fossil fuel-dependent neighbors.

Central Asian countries are implementing various strategies to transition from fossil fuel-generated electricity to renewable energy sources. These strategies include investing in hydropower projects, promoting solar and wind energy, and improving energy efficiency measures. In tandem with this transition, these countries are prioritizing sustainable water management strategies to maintain a balanced water equilibrium. This entails enacting policies and developing infrastructure to optimize irrigation methods, promote water recycling and repurposing, and manage watersheds effectively. Moreover, they are actively participating in collaborative regional endeavors and discussions aimed at tackling cross-border water challenges and ensuring fair water distribution among neighboring states.

What are the recent challenges with water issues?

Despite diplomatic efforts to find compromises, several challenges persist and new ones emerge. Recent years have witnessed heightened tensions between Kyrgyzstan and Tajikistan, primarily stemming from water and border conflicts. Disputes over shared water resources, particularly along their mutual border, have fueled these conflicts. A significant incident occurred in April 2021, with clashes erupting between Kyrgyz and Tajik border guards near the Golovnaya water

distribution point, resulting in casualties. Disagreements over water distribution from the Golovnaya reservoir, located on their border, triggered this conflict. Additionally, disputes over territorial claims along their border have further intensified tensions, leading to sporadic clashes and military mobilizations. These conflicts highlight the intricate and volatile nature of water and border issues between the two countries, posing significant challenges to regional stability and cooperation.

Between Tajikistan and Kyrgyzstan there were small local tension regarding water distribution, border disputes, however, they did not rise to big national wide issue. Issues were solved within the frame of local society and governance. Due to it was been kept long time unresolved, it become bigger and become regional issue with the participation of military forces. It creates three challenges. First, if this issue will not be solved there is a risk of renewing it soon or later. Second, militarization of borders and arms race. Third, mistrust between countries. (Politician, Kyrgyzstan)

Another looming issue is the Qosh Tepa canal. Following the Taliban's takeover of the Afghan government, construction of the canal began in 2022. The canal is planned to stretch 285 km in length, be 100 m wide, and 8.5 m deep, aiming to transform 550,000 hectares of desert into arable land. This project diverts water from the Amu Darya River, which originates in Tajikistan and runs along Afghanistan's border. Uzbekistan and Turkmenistan, which are downstream, could experience significantly reduced water supplies as a result. Both countries are already grappling with severe water shortages and are concerned that the canal will exacerbate the situation. Experts suggest that the construction of the Qosh Tepa canal could reduce the Amu Darya's water flow to Uzbekistan and Turkmenistan by 25% (Gafurov et al., 2023).

I am concerned that the Taliban government is constructing the Qosh Tepa canal in a rudimentary manner, simply by digging. Approximately 40% of the water is lost before reaching its intended destination. Worst of all, there is a lack of irrigation networks, distribution-metering facilities, and sufficient agricultural fields to utilize the water effectively. (Scientist, Afghanistan)

The concerns surrounding the Qosh Tepa canal extend beyond its construction to the quality of the build itself. The Taliban is constructing the canal using rudimentary methods, raising fears among experts that the unreinforced bottom and banks will result in significant water seepage into the dry, sandy soil. This could disrupt the regional water balance, causing salinization in some areas and waterlogging in others. In response, Uzbekistan has offered technical assistance to enhance the efficiency of the water redirection. Uzbekistan's interest in the project is

understandable given the serious downstream implications (Wesch, 2024). The country heavily relies on irrigation systems for agricultural production, which constitutes 25% of its GDP, with cotton and wheat being the primary crops. There is already a water deficit in Uzbekistan; the Ministry of Water Resources reported a decrease in agricultural water usage from 48.9 billion cubic meters in 2013 to 38.8 billion cubic meters in 2022, and forecasts a deficit of 15 billion cubic meters by 2030. Ninety percent of Uzbekistan's water resources are used in agriculture. Despite significant economic progress and a steadily growing population, increasing water demand clashes with a dwindling water supply exacerbated by aging irrigation systems and climate change (Garfurov et al., 2023). Consequently, some cotton fields have switched to less water-intensive crops, and the government investing money on water infrastructures and botanizing of the bottom of existing canals. Similarly, Turkmenistan, heavily dependent on the Amu Darya for water, is deeply worried about water scarcity. The severity of the situation is evident from issues like significant water shortages in the Karakum canal. The building of the Qosh Tepa canal in Afghanistan presents not only a problem but also a looming disaster for Turkmenistan.

Another problem with Qosh Tepa canal is there are no agreements between Afghanistan and other Central Asian countries about usage of transboundary rivers. Whereas Central Asian countries have an Almaty agreement, which was ratified by all 5 countries in 1992, and helps to regulate water usage. In addition, Central Asian countries also use the UNECE Water Convention, which was adopted in Helsinki in 1992 (Orazaliev, 2024). In contrast, Afghanistan did not recognize neither of them. This complicates the cooperation between Afghanistan and other Central Asian countries. On top of that regime of Taliban is still not recognized by many countries, including Tajikistan. President of Uzbekistan invited Afghanistan officials to participate in Central Asian meetings on joint water management of Transboundary Rivers. Uzbekistan officials ask Afghanistan participate in regional water use quotes and sign agreements to regulate it (Kamil, 2021).

Afghanistan officials claim that this canal has only agricultural purpose. Due to long-lasting wars Afghanistan lost its most of farmland. In 1970s there were 3.5 mln. hectare farming land in Afghanistan currently it is approximately 1.5 mln. hectare. Afghanistan contributes 10-12% of Amu Darya river. Using this water would help to build farming lands, as a result, it will decrease foot shortage, creates new jobs and stabilize social-economic situation. Devoting over 4,000 workers and numerous capital assets to the project, the Taliban clearly have an interest in seeing this canal completed, regardless of the consequences to the downstream states. (Expert on water resources, Afghanistan)

Officials from Central Asian countries are not opposed to the construction of the Qosh Tepa canal. They recognize Afghanistan's right to utilize transboundary rivers. However, they emphasize that this should be regulated, and Afghanistan should join the Almaty Agreement and other regional frameworks to participate in joint decision-making on regional issues.

Central Asia shares a unified water basin within a single ecosystem. Local violations affect the entire region, making water scarcity our primary challenge. These shortages lead to conflicts, resulting in food shortages, hunger, migration, and disease. While Kyrgyzstan and Tajikistan are increasing hydroelectric power plant constructions and Kazakhstan and Uzbekistan are building more reservoirs to adapt to climate change, these actions unintentionally worsen the situation by disrupting essential natural processes. A collective effort is essential to navigate survival amidst limited water resources and the impacts of climate change. (Expert on water, environment and climate change, Kazakhstan)

Despite many experts viewing the Qosh Tepa canal through an ecological or social lens, it also raises political and geopolitical concerns.

Afghanistan officials claim that this canal has only agricultural purpose. However, this canal can be used as political leverage by Taliban in order to make pressure to Central Asian governments. It should not become a geopolitical tool. While the people of Afghanistan have the right to utilize water, it must be managed according to mutually agreed and regulated international norms. The Qosh Tepa project is slated for completion in 2028. By then, the countries in the region need to sign agreements regulating water usage. (Political scientist, Kazakhstan)

The ongoing issues with the drying Aral Sea are already concerning, and the construction of the Qosh Tepa canal would exacerbate problems in agriculture, the environment, and the health of downstream populations. The canal adds another layer of complexity to the region's stability, which has generally been maintained despite instability in Afghanistan. Central Asian countries must assist Afghanistan in rebuilding its economy after years of war by offering technical and humanitarian support and demonstrating political cooperation. This assistance could include infrastructure projects like railways and transport corridors connecting Central Asia with South Asia, as well as support in the energy, health, and education sectors. By providing alternatives for economic sustainability, Afghanistan can avoid viewing the Qosh Tepa canal as its sole option.

Discussion and conclusion

The historical backdrop of water scarcity in the region, which has often been a source of conflict. The analysis of Central Asia's water-related issues through the lens of global environmental governance methodology reveals the complexities of managing transboundary water resources. Over the past three decades, the region has witnessed significant population growth, urbanization, and economic development, placing strain on water resources. Despite the shared ecosystem and interdependence among countries, water management policies have often been characterized by conflict and competition rather than cooperation. However, recent diplomatic efforts signal a shift towards regional cooperation and consensus-building, particularly exemplified by Uzbekistan's change in approach under President Mirziyoyev. Agreements such as those regarding the Farhod hydropower plant and the Andijan Reservoir demonstrate the potential for diplomatic solutions to water-related conflicts. However, challenges persist, and new ones emerge. Recent tensions between Kyrgyzstan and Tajikistan, particularly over water and border conflicts, highlight the volatile nature of such disputes. The construction of the Qosh Tepa canal in Afghanistan further exacerbates these challenges, raising concerns about its impact on downstream countries and the region's stability.

From a political economy perspective, the management of water resources in Central Asia reflects the intricate interplay of power dynamics, economic interests, and geopolitical considerations. Historical legacies, such as the legacy of Soviet-era water management infrastructure and the exploitation of natural resources for economic gain, continue to shape contemporary water policies. Furthermore, recent developments, such as the construction of the Qosh Tepa canal by the Taliban government in Afghanistan, underscore the geopolitical dimensions of water management in the region.

It is imperative for countries in the region to adhere to internationally agreed-upon norms and regulations regarding water usage and to work collaboratively to address shared challenges. To mitigate disputes over new hydroelectric dams, canal, and water reservoirs governments should establish clear water-sharing agreements where all countries including Afghanistan need to follow the rules and limits. Greater transparency in resource use can ease tensions and ensure sustainable dam operation. Small-scale hydropower offers a less contentious alternative, fitting into existing infrastructure and electrifying rural areas without major environmental disruption. Yet, large-scale projects remain essential for fully leveraging clean energy potential.

In conclusion, the management of water resources in Central Asia remains a complex and multifaceted challenge. While the region has made progress in addressing water-related issues

through diplomatic efforts and infrastructure development, significant challenges persist. Tensions between upstream and downstream countries, territorial disputes, and environmental degradation continue to pose threats to regional stability and cooperation. Moving forward, a coordinated and collaborative approach, informed by both global environmental governance principles and political economy insights, will be essential for addressing these challenges and achieving sustainable water management in Central Asia.

Appendix:

Appendix 1 - Interview Participants' Professional Experience and Interview Duration

Country	Years of experience	Role	Gender	Interview Date	Duration of interview (in minutes)
Afghanistan	14	Expert on water resources	M	Apr 6, 2024	37
Afghanistan	22	Scientist	M	Apr 20, 2024	53
Kazakhstan	18	Expert on water, environment and climate change	F	Apr 27, 2024	44
Kazakhstan	15	Political scientist	M	Apr 5, 2024	63
Kyrgyzstan	21	Political scientist	M	Apr 19, 2024	65
Kyrgyzstan	14	Politician	M	Mar 29, 2024	49
Tajikistan	19	Politician	M	Apr 19, 2024	61
Tajikistan	21	Environmentalist	M	Mar 30, 2024	49
Uzbekistan	25	Head of NGO	M	Apr 20, 2024	58
Uzbekistan	24	Head of governmental institution	M	Mar 29, 2024	46

Source: Interviews conducted by the author between March and April 2024.

Appendix 2 - Essential data points concerning Central Asian countries and Afghanistan.

Countries	Population in 1990	Population in 2022	Change in %	Share of GDP from agriculture, 2021	Water productivity, GDP per cubic meter of freshwater withdrawal, 2019	Share of agricultural land which is irrigated, 2020	Freshwater withdrawals as a share of internal resources*, 2020
Afghanistan	10.6 mln	41.1 mln	288%	33.48%	$1.09	6.5%	Medium stress
Kazakhstan	16.3 mln	19.6 mln	20%	5.03%	$8.97	0.85%	Low stress
Kyrgyzstan	4.3 mln	6.9 mln	60%	14.68%	$1.03	9.69%	Medium stress
Tajikistan	5.4 mln	9.9 mln	83%	23.96%	$1.03	11.57%	High stress
Turkmenistan	3.7 mln	6.4 mln	73%	10.79%	$1.64	n/a	Critical stress
Uzbekistan	20.5 mln	35.6 mln	74%	24.98%	$1.8	14.53%	Critical stress

Source: The table is created using data from both the World Bank and the Food and Agriculture Organization of the United Nations.

* The Food and Agriculture Organization of the United Nations categorizes water stress based on the proportion of water withdrawals to available resources: no stress (less than 25 percent withdrawals), low stress (25 to 50 percent), medium stress (50 to 75 percent), high stress (75 to 100 percent), and critical stress (over 100 percent).

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Decentralizing Development: Assessing Fiscal Policies and Human Capital Outcomes in Sri Lanka's Provincial Councils

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Introduction

In recent decades, decentralization has gathered significant attention and evolved into a specialized concept, particularly as a governance tool for government service delivery. Establishing Provincial Councils in Sri Lanka through the Thirteenth Amendment to the Constitution in 1987, under the framework of the 1978 Constitution, marks a pivotal moment in the country's decentralization efforts. Over the past decades, Sri Lanka has undergone a profound decentralization process, with political, administrative, and fiscal functions and powers devolved to the Provincial Councils. Consequently, Provincial Councils serve as the primary mechanism for decentralization in Sri Lanka, facilitating more local governance powers and decision-making authority.

In Sri Lanka, the Central government and Provincial Councils are responsible for delivering and distributing education and health services. The establishment of Provincial Councils has decentralized primary and secondary education and the health sector, making them among the most decentralized subjects in the country. The government has a longstanding policy of providing free education and health services through the long-established welfare system. Provincial Councils possess fiscal autonomy for revenue and expenditure, subject to conditions imposed by the central government.

Purpose

The establishment of Provincial Councils was intended to bolster human capital development by facilitating the delivery of education and health services. Despite this intention, challenges in human capital development persist across the provinces. To improve human capital at the sub-national level, policymakers need to comprehend the impact of their policies. Therefore, this study aims to address this gap by quantifying the effects of fiscal decentralization on human capital development outcomes among the provinces.

Methodology

The need for quantification regarding the impact of fiscal decentralization on Provincial Councils' service delivery outcomes has fueled the debate surrounding decentralization efforts. From 1988 to 2022, panel data across nine Provincial Councils will be utilized to achieve this. Recognizing potential biases and inconsistencies inherent in traditional panel estimation methods due to correlated error terms and endogeneity issues, this chapter employs the two-step system Generalized Method of Moment estimator. Additionally, correlation analysis and descriptive statistics are utilized to understand the data comprehensively.

Findings

Empirical evidence indicates that decentralization efforts in Sri Lanka have not yielded improvements in the efficiency of both human and physical resources in the province's challenges persist in decision-making processes regarding allocating public funds within Provincial Councils.

Moreover, Sri Lanka's decentralization framework needs to be revised to compare to the robust decentralization models implemented in developed countries.

Implications

These findings underscore the imperative need for policy interventions to enhance human capital development by addressing the inherent weaknesses in the administration of Provincial Councils in Sri Lanka. They also highlight the necessity of restructuring the expenditure and revenue framework of Provincial Councils, as the decentralization process needs to promote human capital development within the Sri Lankan context effectively.

Keywords: Provincial Councils, fiscal decentralization, human capital development, expenditure and revenue structure, budgetary autonomy, fiscal importance, and fiscal policies

The Impact of Post-Liberalization Trade Policies on Foreign Trade,
The case of Sri Lanka

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Trade liberalization has emerged as a key economic strategy globally. This important factor has emerged as a key driver in helping economic growth and improving overall welfare globally. This phenomenon accelerated after the decline of mercantilism, rooted in the principle that opening markets to trade and investment stimulated economic dynamism.

Sri Lanka is a developing country. Sharing much of its early conditions in common with most primary-exporting and low-income countries, it also has some special and unique features. An important feature of Sri Lanka economy at the time of its independence was its relatively smart economic status. The economy, inherited from the colonial past, at that time, was more prosperous than other Asian countries. However, Sri Lanka's experience with liberalization since 1977 has not yielded predictable results, motivating a closer examination of the factors hindering its full realization of economic growth.

A historical overview reveals a shift in Sri Lanka's economic policy from import substitution to outward-oriented trade policies post-1977. A review of Sri Lanka's current trade performance relative to other Asian economies does not convey declining economic fortunes.

This study aims to explore the impact of different policy regimes, both liberalization and protectionism on the export and import structure of Sri Lanka. By analyzing secondary data from Central Bank reports and Census and Statistic Department publications, the research objective is executed through a critical evaluation of the different policy regimes (both liberalization and protective regimes) to fully understand how liberalization influenced export and import structure of Sri Lanka. The paper goes further to interrogate the post-liberalization periods to find out if the trade policy reforms have produced the desired outcomes.

We strive to explain the relationship between trade policy regimes and economic development through a comprehensive analysis of historical trends and policy dynamics. Studying the country's trade landscape and studying future policy decisions would help foster sustainable and inclusive economic growth in the country.

Transforming the Sri Lankan economy from pre-liberalization to post-liberalization has changed the government intervention from import substitution to liberalized export promotion position. Although, this effort has yielded mixed results with internal and external challenges. Those challenges have helped to shape the country's economic trajectory and trade dynamics over the past few decades.

This study delves into the repercussions of trade liberalization policies on Sri Lanka's exports and imports. Over the past three decades, there has been a remarkable shift in export composition from agriculture to industry dominance, while imports of intermediate goods have exceeded consumer goods. Although relative stability in export composition over the last decade, the overall foreign trade structure has significantly transformed. However, this transition has not been without challenges, as evidenced by the rising budget and trade deficit. The analysis underscores the need for a systematic approach to fostering small-scale industries for technological advancement and international competitiveness. Import liberalization should continue, balanced with support for small industries to achieve global competitiveness. Strengthening export promotion efforts, incentivizing export-oriented strategies for small businesses, and fostering bilateral and multilateral trade agreements are crucial policy implications. In addition, measures such as technological upgrades, marketing support and formal regulations are essential for the resilience of small and medium enterprises in the face of global economic uncertainties, particularly the impact of the recent recession on Sri Lanka's industrial exports.

In conclusion, Sri Lanka deserves credit for adopting outward-oriented trade policies. Liberalization of trade policies has significantly changed the composition of Sri Lanka's imports and exports, while Sri Lanka encouraged the growth of non-traditional exports. It did not sufficiently encourage the growth of the traditional exports. Therefore, export composition of non-traditional exports such as garments and textiles. But value-addition is still small and must be worked on. Imports also showed large amount of capital and intermediate goods. These are used as input to industrial products; it also means that until sufficient government capabilities are developed. Trade policies should focus on relatively low level of selectively. An essential pre-condition to all this, of course, is political, economic and social stability to enhance the country's image in the international investors' arena.

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Roles and power dynamics of embedded agents in the implementation of accrual basis IPSAS in Sri Lanka: institutional logic perspective

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Background of the study

The overarching aim of this study is to explore the implementation of accrual-basis IPSAS from an emerging economies' perspective, particularly in Sri Lanka, by emphasising the key actors' engagement in the implementation process with the support of the institutional logic perspective (Thornton et al., 2012; Thornton & Ocasio, 2008). It also addresses the substantial power dynamics among key actors and the logic that drives their agency in implementing accounting reforms. International financial institutions, including donor agencies such as the World Bank and IMF, promoted and guided developing countries to adopt neo-liberal ideologies under the broader label of NPM in their public financial management (Adhikari et al., 2013; Hopper et al., 2016; Jayasinghe et al., 2021). The concept of institutional logic was first introduced by Roger Friedland & Robert R. Alford (1991) to explain the fundamental institutions of modern society, like market capitalism, bureaucratic state, families, democracy, and religion. According to the Thornton & Ocasio (1999), institutional logic could be described as "the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organise time and space, and provide meaning to their social reality." Different logic, including state/bureaucratic, market/ business, community, professional, editorial and personal (Jayasinghe et al., 2021; Mahmood & Uddin, 2020; Mzenzi & Gaspar, 2022; Thornton, 2002).

Methodology

interpretive approach (Bryman, 2003) Using the case study method allows for a detailed understanding of the various stages of creating, shaping, and implementing innovations (Yin, 1994). The proposed study uses the theory of deductive analytical logic and qualitative methodology for data collection and analysis. As a research method, case study methods are expected to perform. The empirical data were collected mainly through semi-structured interviews and supported with official documents. The study identified three main actors, MOF, NAO, and ICASL, as key players behind the reform implementation: reform creators,

promotors, and enforcers. Twenty-eight semi-structured interviews were conducted with representatives from these three institutions and government accountants. Data were analyzed using thematic analysis methodology following open coding to axial coding; later, themes were developed and presented with the support of an institutional logic perspective.

Findings

First, the study supported the previous findings that accounting reform implementation at the central government level created delay and tension among the key actors, particularly government accountants. Issues with the legal identity of SLPSAS, lack of technical capacity of government accountants, resistance to change and issues with the leadership were the main barriers to the successful implementation. In addition, the power dynamic between the main actors, particularly MOF and NAO, created extra tension and unintended consequences for the reform implementation. State and market logic were the main drivers behind these reforms, and later, it added professional logic with the establishment of APFASL of ICASL.

However, the reform implementation still needed to be completed due to the overinfluence of state bureaucratic structures in public sector organisations. It provides opportunities for adopting more ICT, mainly digital technology and social media, to stimulate the implementation and accrual of accounting and IPSAS. This constructed framework provides a better understanding of the current adoption and implementation of SLPSAS (current condition) in developing countries. State bureaucracy, market and professional logic were the main three logics that shaped the agency of embedded actors in implementing accounting reforms in Sri Lanka (Thornton et al., 2012; Jayasinghe et al., 2021).

Conclusion and contribution

This paper contributes broadly to the literature on the role and power dynamics of the institutionally embedded actors in the process of implementation of SLPSAS at the central government level (Jayasinghe et al., 2021; Abras & Jayasinghe, 2023; Adhikari and Jayasinghe et al., 2017). First, this research advances our knowledge of the drivers through which logic made unintended consequences and delays in implementing SLPSAS at the central government level. I thus disentangled the interplay of the actors in the field, at the organizational and individual levels, and explained how and why these different logics created delays and unintended consequences. Second, the findings of this study contribute to a more nuanced interpretation of the institutional complexity that arises in the context of competing/multiple logics in this SLPSAS implementation process.

Keywords: accounting reforms, accrual accounting, IPSAS, institutional logic

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Theme: SDGs, Environment & Health

From Awareness to Action: Evaluating the Impact of Whole School Approach on Plastic Pollution in Galle City, Sri Lanka

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Introduction

Environmental Education (EE) is crucial for raising awareness about environmental protection and improving the quality of life for present and future generations (Ilovan et al., 2019; Premakumara et al., 2016). This is particularly important in addressing global issues like plastic pollution. As of 2015, approximately 6300 metric tons of plastic waste had been produced, with only 9% recycled, 12% incinerated, and 79% accumulated in landfills or the natural environment (Geyer et al., 2017). This poses significant threats to both marine and terrestrial ecosystems. In Sri Lanka, plastic pollution is a major environmental concern, especially in coastal regions where the problem has escalated over the past decade (Premakumara et al., 2023).

To tackle this issue, a pilot project named "Making Galle City Plastic Waste Free" was initiated by the IGES Centre in collaboration with UNEP on Environmental Technologies (CCET), the Ministry of Environment (MOE) Sri Lanka, the Secretariat of the Basel, Rotterdam, and Stockholm Conventions (BRS Secretariat), and the local partner HELP-O. As part of this project, a Whole School Approach (WSA) was piloted in three selected schools in Galle City to foster environmental awareness, promote sustainable practices, and empower students to actively participate in reducing plastic waste. This study evaluates the impact of the WSA on transforming plastic pollution awareness and management among students in the pilot schools.

Keywords: Education Strategy, Environmental Education, Plastic Pollution, Sustainable Development, Whole School Approach

Objective & Conceptual Framework

The objective of this study is to evaluate the effectiveness of the WSA in fostering comprehensive environmental literacy and sustainable practices among participating students, ultimately contributing to the reduction of plastic waste in both the schools and the surrounding communities.

Methodology

The WSA addresses the needs of students, teachers, staff, and the wider community, focusing on curriculum planning and the entire school environment. It fosters collaborative action within schools and extends into their communities, improving student learning, behaviour, and overall well-being while creating supportive conditions for nurturing these traits over the long term (Premakumara et al., 2023).

To evaluate the impacts of the project activities aimed at increasing students' awareness of plastic pollution, the assessment focused on five key components of environmental education: Awareness and Sensitivity, Knowledge and Understanding, Attitudes, Skills, and Participation (USEPA, 2018; Premakumara et al, 2016). The study sample consisted of 15 students, with 5 participants from each of the three pilot schools: Vidyaloka College, Sacred Heart Convent, and Jayawardhana College in Galle, Sri Lanka. McNemar's test was performed to evaluate the significance of the study.

Interpretation of Results & Findings

The evaluation of the WSA project's impact on students' awareness of plastic pollution revealed significant improvements across all five key components of environmental education: Awareness and Sensitivity, Knowledge and Understanding, Attitudes, Skills, and Participation. Before the project, only 50% of the students were aware of the issue. After participating in the WSA project, this number increased to 100%, indicating that all students became aware of plastic pollution and its impacts.

Students' knowledge and understanding of plastic pollution improved significantly, from 15% before the project to 99% afterward. This indicates a substantial increase in students' comprehension of the sources, effects, and solutions related to plastic pollution.

The project also brought about significant positive changes in students' attitudes towards plastic pollution. Initially, only 31% of participants held a strongly positive attitude toward addressing

the issue. After the project, this figure increased to 100%, showing a complete shift in students' attitudes towards acting against plastic pollution.

Skills development was another key area of improvement. The proportion of students with advanced skills related to managing and reducing plastic waste increased from 20% before the project to 91% after its completion. This indicates that the WSA project effectively equipped students with practical skills to tackle plastic pollution.

Participation rates also improved significantly. Although some students had not previously engaged in activities related to plastic pollution, the majority actively participated in the WSA project. The participants found the activities engaging and informative, and all expressed a greater inclination toward future conservation activities.

To assess the statistical significance of these improvements, McNemar's test confirmed that the changes observed in all key components of environmental education were statistically significant. This indicates that the WSA project had a meaningful and measurable impact on the student' environmental awareness and behaviors.

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The possibility of using Islamic Sukuks to finance renewable energy projects in Libya

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Introduction

Interest in renewable energy projects has become one of the most important public necessities and urgent needs in this era, and benefiting from these energies is not limited to developed countries only; Indeed, developing countries can also realize this benefit and benefit from it. Libya today, as it moves towards the process of sustainable development, has an opportunity to benefit from renewable energy, which is considered more friendly and sustainable for the environment. In recent years, Libya has witnessed a severe crisis in the electricity sector, represented by frequent power outages in all seasons of the year and for long hours. Over time, the General Electricity Company's inability to solve this crisis was proven, and in return, this party was the most draining of the state's general budget funds.

Research problem

This requires the implementation of renewable energy projects that will contribute to resolving this crisis and will meet the growing electricity demand. According to statistics, the demand for electricity in Libya will exceed 115 gigawatts by 2030. For such projects to emerge into practical reality and achieve their development goals; We find that obtaining the required financial supply for these projects is one of the most important structural obstacles they face, especially in light of the fluctuation of oil prices and the government's inability to meet capital requirements in light of the repercussions of the transitional phase that Libya is going through. In this context, it appears to us the inevitability of applying Islamic financial tools to provide the necessary financing to complete infrastructure projects and coinciding with the emergence of the executive regulations for Law No. (04) of 2016 regarding Sukuk in Libya, as the application of this tool was not limited to Islamic countries; Rather, its work has expanded to include European countries, due to its great position in the financial community, and its

characteristics that combine authenticity and modernity, in addition to the great growth in its market and its reaching the level of global trading, where growth rates in the volume of its issuances exceeded 40% annually, and expectations indicate an increase in the volume of The sukuk market has increased from $41 billion currently to more than $100 billion this year (IIFM, 2018).

Research objective

Based on the above, the study aims to investigate the possibility of using Islamic financial Sukuks to support renewable energy projects in Libya

Research methodology

The study relies in its methodology on using the descriptive analytical approach, and (2) questionnaires will be designed to research the answers to the questions:

- Will the products developed within the practical framework of the study contribute to meeting the financial needs necessary for the renewable energy projects of the General Electricity Company?

- Will the developed products - Islamic Sukuks - meet the desire of financing parties (financial institutions, Libyan joint stock companies) to invest in Libyan renewable energy projects?

Research findings:

Implementing the idea of Islamic sukuks in Libya is subject to several obstacles, most notably political instability and the fluctuation of the security situation in the country, which may limit the use of sukuks as a long-term financing tool.

On the other hand, we find that there is an increase in the number of financial institutions compared to previous years, in addition to work on the legal framework for this tool. This reinforces the idea that conditions can be expected to improve and barriers to this tool are reduce.

By looking at international practices, we find that the ability of Islamic sukuks to mobilize the financial resources necessary to finance renewable energy projects, especially in light of the multiplicity of their types that suit projects with their different details, and this is what meets the desire of those interested in financing environmentally sustainable projects. Green Mudaraba Sukuks are the closest to suit this type of project, based on previous global experiences in the scope of renewable energy projects.

Keywords: Islamic Sukuks, renewable energy, green sukuks, General Electricity Company, Libya.

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Digitalizing the Libyan Health System: A Prototype of the Tiryaq Project for Public and Private Sectors

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Introduction

Digitization not only reduces the time and effort expended but also contributes to benefiting from big data, by processing it with machine learning techniques and deducing new data that can contribute to the development of these institutions, as digitization contributes to collecting and organizing big data with the aim of transforming it from data Random, unrelated to valuable information, can produce experience that contributes to support decision-making circles. About 1.3 million people in Libya suffer from difficulty accessing healthcare centers. The health system in Libya faces a set of challenges, that limit its ability to digital transformation and make the process of booking health clinic appointments digitally through the Internet almost unavailable except through a group of small initiatives that have many shortcomings; Which made the market thirsty for such projects intensely, and what makes the matter even more difficult is the weak infrastructure in Libya, especially in the field of electricity and the Internet, and from an economic investment point of view, this study discusses a prototype for a start-up company working on developing a healthy digital system that aims to contribute to the digitization of the health system in Libya. It also discusses the extent of its susceptibility to digital transformation in the public and private sectors in a way that provides a tangible addition that differs from previous studies in the field.

Objectives of the study

1. Study the structure of the health sector in Libya in terms of problems, opportunities, and challenges the extent of the possibility of achieving digitization of the health sector in Libya and what are the most prominent challenges and obstacles and how they can be overcome.

2. Learn about similar experiences of some companies that have succeeded in launching health digitization projects in their countries. To know the possibilities, challenges, opportunities, and steps taken to achieve this digitization.

3. Working on creating an investment proposal model in the field of health digitization in Libya by presenting a study for a prototype of a health digital system under construction - Antidote - with attachments of a first applied model from a real sample from the sector, which contributes to presenting an implementation scenario for this project in Libya.

Methodology

During this research, the Libyan health system is studied by publishing an online research questionnaire, analyzing and comparing the results, in addition to relying on previous studies that deal with the health sector in Libya. Through comparison of results and survey research, a model for a startup company working to provide a solution to digitize the health sector in Libya will be built. Internet users in Libya are 88.4% (of the population), social media users represent 85.2% (of the population), while the average mobile internet speed in Libya is 15.12 Mbps and the landline speed is 9.36 Mbps.

Results

This research studies the health system, examines the most prominent possible solutions within the framework of digitization, and reviews some similar experiences. In addition to publishing a questionnaire and analyzing it to gain greater knowledge of the Libyan health sector. Then build a model for an investment project that works to provide solutions to digitize the health sector in Libya. The results concluded that 96% out of 174 participants in the survey support that building a digital system that integrates hospitals, charitable institutions, doctors, and patients will be of great benefit to the health sector in Libya, and 89.1% of them say that they are willing to use it. This study aims to create a model of a digital system called "Tiryaq" that connects hospitals, charity institutions, physicians, and patients and uses this network to expand the healthcare infrastructure by marketing medical equipment.

Through this research, it becomes clear how important it is to create a digital system that links hospitals, charitable institutions, doctors, and patients together, as this model creates added value that works to strengthen health systems in the absence of good health insurance. 66.7% of respondents strongly agreed to this, and 59.2% of participants strongly agreed to use a model similar to "Tiryaq" that provides digital services that combine the above-mentioned elements.

It is worth noting that these results represent the Libyan cities differently depending on the number of participants in the questionnaire, as the concentration of participants varies as follows: Tripoli 26.8%, Zliten 25.6%, Misrata 21.4%, then Benghazi with a percentage of 3%, while the remaining 23.2% is distributed in smaller percentages among the cities. The other

Keywords: digitization, health care, medical insurance, health system, Libya.

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Earnings Management and Corporate Social Responsibility Reporting

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Recent considerations reveal that earnings management has become one of the hot debatable topics of the high society, up to date, the matter remains controversial. In this perspective, earnings management is associated with the manipulation of a firm's earnings in the financial statements to reflect positive profits and liquidity to attract more investors. As a result, the present study aims to investigate how firms use corporate responsibility as a form of social washing to nullify the negative accounting quality reflected on the financial statements. Thus, the present study aims to scrutinise the relationship between earnings management and corporate social responsibility reporting across the sub-Sahara region to ascertain if the allegations about the current subject matter are genuine or not. The data from sub-Saharan countries was extracted from Bloomberg and annual reports. A panel regression will be used to run the analysis where the earnings management will be measured by accounting conservatism and corporate social responsibility reporting will be measured by corporate social responsibility reporting (CSRR) and Audit quality (AQ). It is noted that this study is among the front-runner studies that strive to examine earnings management through the perspective of corporate social responsibility. Furthermore, the findings of this study are expected to have practical implications for investors and other stakeholders.

The Role of Nuclear Weapons in Shaping Security and Stability in the Indo-Pacific Region;
Special Reference to India, China, and Pakistan

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Abstract

The Indo-Pacific region, a significant geopolitical domain of the 21st century, copes with political economic dynamism amidst its territorial disputes and a complex security landscape. The rise of India and China as major powers in international political economic spheres, with possessing nuclear arsenals, creates much opportunities and risk on security and stability of the region. Thus, the nuclear arsenals play a crucial role since it's inceptions from the second world war. As India, China and Pakistan emphasize their influence and navigate ideological and territorial disputes within the global politics, the presence of nuclear weapons creates complexities that require careful analysis to ensure regional security and stability.

Understanding how nuclear weapons shape states behavior is crucial for assessing regional security and stability. This study aimed at to investigates how the role of nuclear deterrence in shaping security and stability interactions among India, China, and Pakistan. This research utilizes John Meashmier's Offensive Realist approach to analyze the power-driven and competition-focused nature of the international system. Offensive realists argue that states are constantly striving to maximize their power and potentially achieve regional hegemony. Nuclear weapons are used as a tool to achieve their national interests while deterring rivals. This study uses qualitative method which primarily based on the secondary data collected from the archival research, published and unpublished annual reports, conference and meeting outputs, reports and analyses by various think tanks, and research institutions that have examined the nuclear deterrence and significance in the Indo-Pacific region. Apart from the

secondary data, primary data also has been used which collected from the semi structured interviews. The sample of the study has been selected from the snowball sampling technique. Collected data has been analyzed by descriptive content analysis to achieve the research objectives of the study. The research findings which are based on the three hypotheses, the hypothesis (H1) proved that nuclear deterrence reduces the risk of conventional conflict escalation among major powers in the Indo-Pacific. An analysis of historical conflicts in the region (post-1947), shows a decline in major power clashes following the nuclearization of India, China, and Pakistan. This aligns with the core tenets of deterrence theory, where the threat of MAD discourages direct confrontation.

However, its important to acknowledge that other factors like the decolonization and end of Cold War have also contribute to this decline. The study proved the hypothesis (H2) that the significant asymmetry in nuclear capabilities between China and other actors significantly influences security postures and strategic calculations. China's growing and modernizing nuclear arsenal, as shown by the analysis of estimated nuclear warheads, creates a complex deterrence environment for India and Pakistan.

This asymmetry aligns with Offensive Realism's emphasis on power disparity and potential for insecurity. It might lead to increased military spending. An analysis of military expenditure trends in India and Pakistan suggests a rise in spending, potentially driven by a perceived need to counter China's growing nuclear arsenal and secure their own regional influence. Furthermore, analysis of official statements by Indian and Pakistani officials revealed concerns about vulnerability and considerations of adopting potentially destabilizing postures due to the asymmetry. Offensive Realism suggests such postures might be seen as necessary to deter China and prevent them from achieving regional dominance.

The study offers a comprehensive understanding of the relationship between nuclear deterrence and proxy conflicts. While deterrence may prevent direct clashes between major powers, it might create space for proxy wars, partially supporting the hypothesis (H3). The analysis of historical proxy conflicts triggered in the Indo-Pacific region, visualized in a map with color-coding for major power involvement, suggesting a continued prevalence of such conflicts. However, further research is needed to unravel the specific role of nuclear deterrence from historical grievances and territorial disputes that often contributed for proxy conflicts.

The study produces the policy recommendations of that emphasizing the importance of crisis communication channels and confidence-building measures to reduce the risk of possible accidental escalation due to miscalculations or misunderstandings among the major powers. Furthermore, the study highlights the significance of arms control initiatives and non-proliferation efforts requires for preventing the further expansion of nuclear arsenals and the

potential entry of new nuclear actors into the region.

Key Words: Asymmetric Capabilities, China, India, Indo Pacific region, Nuclear Deterrence, Pakistan

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The Need for International Cooperation in Farming System Management: Lessons from the Forestry Sector in Sri Lanka

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Abstract

Current farming systems create global impacts on human health and the natural environment. They contribute to six of the top 11 risk factors of global diseases, 60 per cent of terrestrial iodiversity loss, 24 per cent of greenhouse gas emissions, and 33 per cent of soil degradation (UNEP 2016). It's important to note that while food-producing countries bear the local costs of farming systems, such as deforestation, soil degradation, and child labour, countries that rely on food imports indirectly export these costs to the food-producing countries. This underscores the need for international cooperation in developing sustainable farming systems, particularly in developing countries with limited technological and financial resources. This paper explains the economic justification of international resource transfer for sustainable farming systems in developing countries, taking Sri Lanka as an example. The study identified the lack of proper valuation techniques to measure the existing farming systems' local and global benefits and costs. As a result, it brings lessons from the forestry sector in Sri Lanka by comparing estimated global and regional benefits and costs of forests using various valuation techniques to justify the need for international cooperation for natural resource conservation in Sri Lanka. This paper also investigates the strengths and weaknesses of the existing international governmental, non-governmental and private sector mechanisms of international resource transfers (such as subsidy/ compensation, inputs, technology, etc.), certification, and trading (fair trade, trade barriers) to develop sustainable farming systems in the world.

The China Effects on Pakistan's Economic Development under China Pakistan Economic Corridor (CPEC) Project: From the Perspective of Sustainable Development Goals (SDGs)

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Abstract

The China–Pakistan Economic Corridor (CPEC), a multi-billion dollars ongoing mega development project, has occupied an immense significance in contemporary times. Keeping in view, the present study aims to assess the importance of the collaboration between China and Pakistan under the aforementioned project and its manifold developmental implications pertaining to the social, economic and environmental aspects on Pakistan. Moreover, the study emphasized on the project from the perspective of the Sustainable Development Goals (SDGs) and how this project could lead Pakistan towards the path of sustainable development in futuristic times. Data from various secondary sources such as historical documents, research reports, briefs of think tanks etc. were collected for the analysis. Methodology followed for the study was exploratory qualitative based on case studies of the four completed development projects (720 Megawatts Kerote Hydro Power Project, 1000 MWs Quaid-e-Azam Solar Park, Orange Line Metro Train and Pak-China Technical and Vocational Institute) pertaining to development sectors of an economy i.e. energy and water conservation, communication and works, transportation and education (technical and vocational). The study had brought into light the impact of the executed development projects (early harvested projects) in development of the Pakistan, leading to the wider socio-economic development through provision of manifold advantageous benefits to the target populace and areas. Analysis/results indicated that through the implementation of different development projects, CPEC holds multifarious bright prospects on the road for the Pakistan in short, medium and long term. It is considered as a

mammoth developmental intervention holding an immense potential to serve as a game changer mega project to steer wider socio-economic development and contribute towards an attainment of national Sustainable Development Goals (SDGs). The potential of the project can be gauged by the fact that in eight years (from 2015-2022), it has brought more than 25.400 billion dollars (US) of investment to Pakistan. In addition, the early harvested projects (completed) pertaining to power/energy sector have led to an addition of 12,520 MW to the national energy grid which have greatly addressed the energy issues in the country and provided a huge sigh of relief to the different allied sectors of an economy (like industries, agriculture, IT etc.) as well as the larger populace of Pakistan. The study identified that the projects of CPEC are aligned with the United Nation's Agenda for Sustainable Development (2015) and played a pivotal role in the economic development/upliftment of Pakistan from the social, economic and environmental perspectives. Nevertheless, the major reliance of the Chinese investments under CPEC remained on the infrastructure and productive sectors. Social sectors although linked with infra-led development were assigned less priority. The sectorial/sub-sectorial and project specific budgetary allocations are recommended to be enhanced in futuristic times for a balanced economic development of the latter sectors. These productive and social sectors include agriculture, forestry, water conservation, wildlife, fisheries, climate change, social welfare, women development, health and education etc. Moreover, environmental aspect needs to be made an integral part of every infrastructural development activity (under CPEC) and sufficient resources (funds) are required to be earmarked for implementation of efficient and effective mitigation and adaptation measures for promoting an eco-friendly development.

Keywords: sustainable development, Sustainable Development Goals (SDGs), economic development, impacts (social, economic and environmental), China-Pakistan Economic Corridor (CPEC).

Impact of Lean Manufacturing Practices on Waiting Time of Patients in Outpatient Department (OPD): A Study in the Sri Lankan Public Healthcare Industry

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Introduction
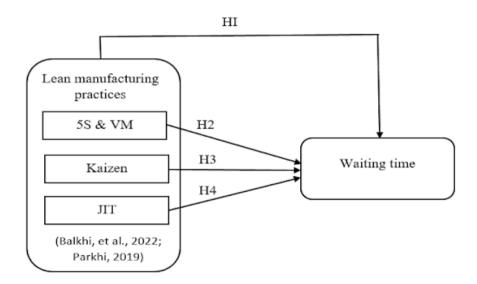
Lean manufacturing is one strategic tool adopting by many manufacturers to sustain the efficiency in the operational process. Lean manufacturing practices originally evolved within manufacturing, they have found application in various industries, including healthcare. Goal of healthcare industries is to maximize the service quality for patients focusing on minimizing waste and waiting time, a focus on patient value is expected to benefit others involved in healthcare (Hammoudeh et al., 2020). In the Sri Lankan healthcare context, waiting time in public hospital OPDs is a significant challenge, with patients often complaining of experiencing long waiting times and queues (Rajapaksa, et al., 2021). OPD congestion in Sri Lanka's public healthcare results limited space, doctor limitations, and late arrivals, leading to prolonged waiting times at least minimum of 15-20 minutes per patient. (Sabhapathige et al., 2021). The queuing theory has been used in of lean methodology; in order to improve patient flow and reduce the number of queues, hospitals have adopted queuing theory to schedule appointments (Alejo, 2021). Leaving a significant theoretical gap to be addressed. Also, limited studies have empirically shown the impact of lean manufacturing practices on waiting time on patients with OPD in the Sri Lankan public healthcare industry (Hammoudeh, et al., 2020; Biya, et al., 2022). It has been evident that 5s and Visual management, kaizen, just in time are currently practicing at Sri Lankan healthcare sector.

Hence the problem statement of the study is: Is there is a significant relationship between lean manufacturing practices and waiting time of patients in OPD in the Sri Lankan public healthcare industry.

Objectives and Conceptual Framework

- To investigate the impact of lean manufacturing practices on waiting time of patients in OPD in the Sri Lankan public healthcare industry.
- To identify the impact of 5S & VM on waiting time of patients in OPD in the Sri Lankan public healthcare industry.
- To identify the impact of kaizen on waiting time of patients in OPD in the Sri Lankan public healthcare industry.
- To identify the impact of JIT on the waiting time of patients in OPD in the Sri Lankan public healthcare industry

For this study below the conceptual framework developed.
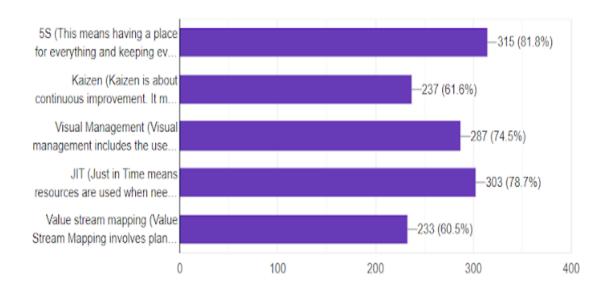
Methodology

This study falls in to positivist research philosophy based on the quantitative research methodology. For this study, a survey has been used as the research strategy. This study has used a single cross-sectional time horizon since the researcher has collected data from a sample of individuals at a single point in time. The study target population consists of patients at public hospital OPDs in Kandy district, Sri Lanka. Using stratified sampling, sample of 384 patients was proportionately selected from different hospital types to represent the public hospitals. This instrument incorporated validated scales and a 5-point Likert scale to assess the implementation

and impact of specific lean practices, namely 5S & Visual Management, Kaizen, and Just-In-Time (JIT). Data analysis was conducted using SPSS software.

Interpretation of Results and Findings

According to the figure, more than 60% of the respondents report that lean manufacturing practices are implemented in healthcare. So, it confirmed the widespread adoption of lean manufacturing practices within the Sri Lankan public healthcare industry, as evidenced by the responses from the 384 respondents.

Reliability & Validity Test

Variables	No Of Questions	Cronbach's Alpha	KMO and Bartlett's Test Values	P Value
Waiting Time	4	0.751	0.744	0.000
5S & Visual Management	7	0.760	0.798	0.000
Kaizen	7	0.709	0.726	0.000
Just In Time	8	0.899	0.925	0.000

Source: (Survey data, 2024)

Based on the reliability and validity analysis, Cronbach Alpha has above 0.7 indicating high internal consistency among the data collected. Also, the KMO measures of sampling adequacy for all variables are greater than 0.7 with the significance level of 0.000.

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Normality Test of Variables

Variables	Waiting Time	5S & Visual Management	Kaizen	JIT
Skewness	.961	-1.207	-1.124	-1.110
Std. Error of Skewness	.125	.125	.125	.125
Kurtosis	.495	.644	1.527	.738
Std. Error of Kurtosis	.248	.248	.248	.248

Source: (Survey data, 2024)

The table indicates that all variables have skewness (+1 to -1) and kurtosis (-3 to +3) within normal limits. So, the researcher can conclude that the variables are normally distributed.

Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	5S & Visual Management	.460	2.174
	Kaizen	.772	1.295
	Just In Time	.476	2.102
a. Dependent Variable: Waiting time			

Source: (Survey data, 2024)

The table indicates tolerance values above 0.1 and VIF values below 10. It confirmed the research is free from multicollinearity.

Hypothesis Testing

	Hypothesis	B	p-value	Result
	Lean manufacturing practices have a significant impact on waiting time	-0.626	.000	Supported with negative relationship
	5S and VM has a significant impact on waiting time.	-0.585	.000	Supported with negative relationship
	Kaizen has a significant impact on waiting time.	-0.406	.000	Supported with negative relationship
	JIT has a significant impact on waiting time.	-0.559	.000	Supported with negative relationship

The results highlight negative and significant relationship for all hypothesis. These findings shows that when a health care sector implement the lean manufacturing practises the waiting time can be reduced.

Conclusion

This study provides valuable insights into the impact of lean manufacturing practices on waiting time of patients in the Outpatient Department (OPD) of the Sri Lankan public healthcare industry. Practitioners could focus on the results to achieve a reduced waiting time in the future.

Keywords: Just In Time, Lean Manufacturing Practices, Outpatient Department, Visual Management, Waiting Time

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Exploring Quality of Life among Sri Lankan International Students in Japan: A Cross-Cultural Study

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Introduction

In an era marked by globalization, an increasing number of international students are opting to pursue higher education abroad, driven by aspirations for academic excellence and exposure to diverse cross-cultural experiences. This study delves into the multifaceted dimensions of the quality of life (QoL) experienced by Sri Lankan international students in Japan, focusing on cultural dynamics, social integration, academic challenges, and personal growth. Recognizing the transformative potential of international education, this research aims to shed light on the unique circumstances faced by Sri Lankan students and the factors influencing their overall QoL. Despite the rising trend of international student mobility, there exists a research gap in understanding the adjustment issues specific to Sri Lankan students in Japan, particularly in their initial stages of transition. This study seeks to address this gap by exploring the strategies employed by these students to adapt to their new environment, thereby contributing to the discourse on cross-cultural adjustment in international education.

Objectives and Conceptual Framework

The objective of this study is to comprehensively examine the factors influencing the quality of life of Sri Lankan higher education students residing and studying in Japan. Drawing on existing literature, this research integrates concepts such as cultural adaptation, social integration, academic challenges, and personal resilience to construct a comprehensive conceptual framework for understanding the QoL of Sri Lankan students in Japan.

Methodology

Employing a quantitative research design, this study surveyed Sri Lankan students enrolled in Japanese universities. Digital research methodologies were utilized to minimize costs, with data collection facilitated through the Sri Lankan Association of Japan's Students from Sri Lanka to Japan Universities (SLAJS). This survey is currently ongoing, and we present preliminary data

obtained from a sample consisting of 32 voluntary participants. Data were analyzed using descriptive statistics with SPSS.

Interpretations of Results and Findings

The study on Sri Lankan students in Japan provides significant insights into various aspects of their lives and experiences. Firstly, the demographic profile highlights the predominance of female students (69%), married individuals (60%), and representation from urban areas like Tokyo (28.1%) and Saitama (12.5%). Notably, 78% of participants benefited from full scholarships, emphasizing the crucial role of financial support in their educational pursuits. Perceptions of separation from Sri Lanka varied, with some expressing neutrality or little concern, suggesting diverse positive attitudes towards this aspect of their experience abroad. Challenges related to language proficiency and integration into the Japanese community were evident, despite a generally positive outlook towards interaction with Japanese peers.

Living arrangements predominantly comprised apartments (62%), with language proficiency posing a challenge for a majority (53%). However, notable percentages had JLPT N4 or N5 proficiency levels (28%). Communication skills with locals were generally positive (78%), yet around 22% reported difficulties in daily interactions. The primary reason for choosing Japan was financial support, and participants perceived Japanese culture positively. While academic pressure was noted by 50% of respondents, most managed it positively (62.5%). Financial concerns were prevalent (56%), but resourcefulness was evident, with 40% relying solely on scholarships and 38% engaging in part-time work. Despite challenges, the quality of life (QOL) of Sri Lankan students in Japan hinges on factors like financial stability, support mechanisms, financial well-being, health, employment satisfaction, and overall well-being, with an average life satisfaction rating of 7.5 out of 10 indicating a relatively positive quality of life. These findings underscore the multifaceted nature of the challenges faced by international students and highlight the need for targeted interventions to address their diverse needs.

In conclusion, the study emphasizes the significance of understanding the complex interplay of social, cultural, academic, and financial factors in shaping the experiences of Sri Lankan students in Japan. Effective support structures tailored to their unique needs are essential for enhancing their well-being and academic success. Additionally, the findings contribute to the broader discourse on migration, education, and cultural adaptation, highlighting the importance of support systems and individual resilience in facilitating successful integration into diverse cultural contexts. Policymakers and educational institutions should prioritize initiatives aimed

at fostering a supportive and inclusive environment for international students to promote their overall well-being and academic achievement.

Keywords: Quality of Life, Cultural adaptation, Sri Lankan students, International Education, Japan

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Can Peace Education be integrated into the Sri Lankan Curriculum through 'Life World References'? A new perspective for peacebuilding in Sri Lanka through CONTESSA Module 3

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Sri Lanka has suffered a prolonged ethnic conflict between the Sinhala-dominant government and Tamil Elam (LTTE) for about a quarter-century since 1983. The war cost the country over a hundred thousand lives and twice as many causalities. Moreover, the natural environment, public and private property, and the entire economy of Sri Lanka were destroyed (Thapa et al., 2010). However, the armed conflict ended in 2009, and Sri Lanka has 'absolute' peace. Although Sri Lankans live in a peaceful environment, tension and mistrust between the ethnic groups remain. Living together in harmony in a multi-ethnic, multi-lingual, and multi-cultural society is a great challenge. Not only that, the brutal memories of the war may also remain in the children's minds. Therefore, if no one addresses this issue, those memories may bring hate among the next generation of ethnicities, leading to a recurrence of another conflict. Castro & Galace (2008) have pointed out that Humankind needs to take lessons from its past to build a new and better tomorrow. One lesson learned is that it should prevent violence-ridden history from repeating itself; peace, non-violence, tolerance, human rights, and democracy must be taught to every woman and man – young and old, children and adults alike. As the quotation shows, those brutal armed conflicts should not happen again in the country. It is essential to address those bad memories before they create another conflict. In this situation, Galtung (1996) states that Sri Lanka is in "Negative Peace." It means "the absence of war." However, it should have "Positive Peace." Positive peace means not only the absence of conflicts but also the absence of courses of conflict. In Sri Lanka, even a "foundation for a multi-lingual, multi-ethnic and multi-cultural society has not been laid yet." (Thapa et al., 2010. p.31). Therefore, the root causes of the ethnic conflicts have not been addressed yet.

The Sri Lankan government and all educational authorities must offer opportunities to prepare pupils to live satisfying lives and be accountable and productive residents. Educators must familiarise themselves with a holistic and empowering curriculum and extra-curricular activities to cultivate a culture of peace in young minds. The CONTESSA module is the best forum to cultivate peace in every young mind. CONTESSA: Contemporary Teaching Skills for South-East Asia program in embedding peace in the minds of teachers and students through the teaching-learning process. CONTESSA's project on five modules for primary teacher education has addressed a range of concepts to empower teachers in knowledge, skills, and dispositions to transfer learning effectively to primary classrooms. The main objective is to analyse the effectiveness of the CONTESSA Module 3 in incorporating peace education via Life World references. This explores the potential of Edmund Husserl's concept of life-world experience in Module 3.2; according to Edmund Husserl, the term "lifeworld" encompasses the natural world, the world as it is individually experienced daily. Every child uniquely experiences the world, shaped by their surroundings and with multiple ways of perception. These various perceptions must be considered the basis of all understanding of knowledge. (Hummel et al., n.d.) Lifeworld references and prospects for building peace will be included in the teaching-learning through 'Life World References.'

The study uses qualitative research, a documented process involving desk research enriched with national and international literature, particularly the CONTESSA module 3. An analytical approach based on evidence obtained from published documents, especially Contessa module 3 and several case studies in different regions. The findings suggest that education can promote sustainable peace, national unity, and understanding among various ethnic groups. The study recommends that peace education-related specific life-world-related activities should be included in teacher training programs in Sri Lanka. This will help build trust and understanding among different ethnic groups through their life-world references. Policymakers should introduce peace programs in the teaching-learning process, primarily through 'Life World Reference' as a new perspective for curriculum development in Sri Lanka through the CONTESSA module. This will help promote sustainable peace in the country, and quantifiable measures should be taken to evaluate these programs' effectiveness.

Keywords: CONTESSA module, Peace education, Peace programs, Sustainable peace, life world references

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Taxonomic Revision of Historical Polychaete Collections: Implications for Contemporary Ecological Studies and Biodiversity Monitoring

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Introduction

Polychaetes or bristle worms are vital bioindicators in marine ecological studies to monitor ecosystem health and water quality due to their sensitivity to environmental changes such as pollutants, oxygen levels and habitat alterations. Their presence, diversity, and abundance provide critical data for assessing the impacts of natural and anthropogenic factors on marine environments. (e.g. Daz-Castaeda and Reish, 2009; Feebarani *et al*., 2016; Sanchis, Soto and Quiroga, 2021)

Museum collections hold immense importance in ecological research, serving as repositories of historical biodiversity data. These collections offer an image of past ecosystems, preserving specimens that allow researchers to study long-term ecological changes and initiate conservation efforts. Taxonomic revision and validation of museum specimens are important for their use as reference samples for ecological studies, allowing researchers to access reliable historical data of species occurrence records, which is important to study community ecology over time. (Gotelli, 2004)

Accurate taxonomic identification is crucial for the effective use of marine biotic indices, such as the AZTI Marine Biotic Index (AMBI) introduced by Borja *et al.*, (2000), which rely on precise species-level data to assess ecological quality. By ensuring the correct identification of species, these indices can provide more reliable and informative results for ecological assessments (e.g. Carvalho *et al.,* 2006; Daief *et al*, 2014). This, in turn, aids in the development of better conservation strategies and environmental policies.

Research Objectives

1. Taxonomic revision and re-validation of polychaetes collection in a National Museum using contemporary taxonomic identification keys.
2. Re-cataloging of the polychaete collection for future reference.

Methodology

Polychaete specimens from the Colombo National Museum (Sri Lanka) collection, dating from 1960 to 1969, were selected for this study. Alongside these specimens, relevant scientific publications from the same period were reviewed. The collection included approximately 100 specimens, and a limited number of scientific publications on polychaetes were available in the museum library.

The taxonomic revision was conducted using contemporary taxonomic keys, and the specimens were re-examined to validate their identification. The specimens were observed under a Stereo microscope (model: Leica EZ4) for taxonomic identification.

The World Register of Marine Species (WoRMS) was used to verify their classification and comparison with other contemporary taxonomic standards, ensuring the accuracy and relevance of the data.

Interpretation of Results and Findings

The museum collection contained 16 genera across 12 polychaete families, as documented in scientific publications (e.g., De Silva, 1961; De Silva, 1965). Upon re-examination, we identified 15 genera across 12 families using the most recent identification keys. Our results were validated using the World Register of Marine Species (WORMS) database, accessed from April 1 to April 30, 2024, available at: https://www.marinespecies.org/.

In our study, we found that nearly 20% of species were re-assigned to different genera and 10% were identified as different species. The species *Thormora jukesii* Baird, 1865, was originally classified in the subfamily Polynoinae under the family Aphroditidae. According to the latest taxonomy, we assigned this species to the subfamily Lepidonotinae under the family Polynoidae. This correction addresses previous misclassifications where the subfamily Polynoinae was treated as part of the family Aphroditidae.

The summarized results, including 12 polychaete families and 20 different species with their accepted names according to the latest taxonomy, are presented in Table 01. Among these, *Namalycastis meraukensis* var. *zeylanica* Silva 1961, belonging to the family Nereididae, is considered an uncertain species by WORMS.

Table 01. Families and accepted names of polychaete specimens available in the Colombo National Museum based on the latest taxonomic keys.

Family	no. of sp.	Accepted Name of sp.
Amphinomidae	2	*Eurythoe complanata* (Pallas, 1766) *Pareurythoe pitipanaensis* De Silva, 1965
Cirratulidae	1	*Cirriformia maryae* Silva, 1961
Eunicidae	1	*Marphysa corallina* (Kinberg, 1865)
Glyceridae	1	*Glycera lapidum* Quatrefages, 1866
Hesionidae	1	*Leocrates claparedii* (Costa in Claparède, 1868)
Maldanidae	2	*Axiothella obockensis* (Gravier, 1905) *Axiothella australis* Augener, 1914
Nereididae	4	*Nereis splendida* Grube, 1840 *Perinereis nigropunctata* (Horst, 1889) *Perinereis cultrifera ceylonica* Silva, 1961 *Namalycastis meraukensis* var. *zeylanica* Silva, 1961
Oenonidae	1	*Oenone fulgida* (Lamarck, 1818*)*
Polynoidae	1	*Thormora jukesii* Baird, 1865
Sabellariidae	1	*Sabellaria chandraae* Silva, 1961
Spionidae	3	*Scolelepis (Scolelepis) squamata* O.F. Muller, 1806 *Scolelepis knightjonesi* (Silva, 1961) *Scolelepis williami* (de Silva, 1961)
Terebellidae	2	*Terebella ehrenbergi* Grube, 1869 *Loimia medusa* (Savigny, 1822)

Our results provide valuable insights into the Polychaete specimens in the Colombo National Museum of Sri Lanka, including their updated taxonomic classifications. These updated data can be utilized in various indices, potentially yielding more accurate results in ecological studies. Furthermore, our study underscores the importance of taxonomic revision and validation of museum samples through the application of contemporary scientific literature.

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Theme: International Relations, Governance

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Human development emerged as a concept and its importance became apparent around 1990, when it was linked to human capital and alternative development. The advancement of human knowledge, skills, and health drew a large crowd. Human abilities and freedom greatly influence the development of human (Chaudhary, 2019). Later, the scholars attempted to ascertain factors that may affect human development. They found out that governance will boost human development. The concept of "good governance" refers to the administration of government that is essentially free from corruption and abuse, preserves the rule of law, and allows the people to engage in public affairs (Mengistie, 2022). Since the United Nations Development Program initially highlighted the connection between human development and government, numerous studies have been carried out by researchers. However, it is rare to find studies carried out from a global perspective under this concept. Hence, this study aimed to explore the effect of good governance on human development using a panel dataset to fill that research gap in the literature. In addition, identifying the good governance impact difference on human development between developed and developing countries was the second objective of this study. This research included 158 nations across 12 years, from 2010 to 2021, of which 19 fall into the low-income category, 48 into the lower-middle income category, 39 into the upper middle-income category, and 52 into the high-income category. In this study, human development was the dependent variable, and the independent variables were a composite governance indicator and six governance indicators. Aside from that, we employed two control variables: economic growth and government spending on health and education. The researchers assumed that implementing six governance indicators can help achieve SDG 16's goals of Peace, Justice, and Strong Institutions, leading to the growth of a country and improved human

capabilities, which are crucial for a nation's development. Furthermore, SDG goals 3, 4, and 8 appear to be crucial for the advancement of human development because health, education, and economic growth are interconnected with the dimensions of the human development index. It is anticipated that there will be a positive correlation between the independent and dependent variables.

We utilized both the Difference Generalized Method of Movement (DGMM) approach and the Pooled Ordinary Least Squire (POLS) strategy, nevertheless we concentrated on the results of the DGMM model as we employed it as a robustness check. The results showed that human development and composite good governance indicators had positive and substantial connections during the study period. Furthermore, we discovered a strong and positive correlation between human development and all six governance indicators throughout the study period, except for the regulatory quality and corruption control. Despite the low coefficient's magnitude, government investment in education & health and economic growth in human development have a positive and substantial correlation. Voice and Accountability show the highest impact on HD in developing countries and government effectiveness shows the highest impact on HD in developed countries.

Keywords: difference GMM, economic growth, expenditure on education and health, good governance, human development

JEL Classification: H51, H52, J24, O15, O43

The Preferences of Development Officers Towards the Current
Grievance Handling Procedure;
A Conjoint Survey Experiment in Sri Lanka

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Introduction

Considerable attention is received in research studies for the grievance-handling field in various countries. This study seeks to understand the Development Officers (DOs) preferences towards the grievance handling procedure in the Sabaragamuwa Provincial Council (SPC) in Sri Lanka. In Sri Lankan context, DO is an employee category, attached to workplaces in central government, provincial councils, district administration, and other government organizations. Provincial Councils (PC) selected to study, are the second tier of administration and, in this study, it is considered one PC out of the total 9 PCs in Sri Lanka. This study aims to address the grievance handling of the public sector in Sri Lanka and contribute to narrowing the literature gap in human resources studies in the public sector. In addition, the experimental method – conjoint is not previously followed in the country context to examine the preferences of the DOs and capture the prioritized attributes of grievance handling. This further helps to determine the attributes where potential improvements can apply to the current procedure.

Methodology

The study population consisted of the 113 Dos working under the permanent cadre of SPC to examine what changes to the current system would be preferred. A set of 20 structured questions was included in the questionnaire. The first six questions reflected the profile of the respondents, and the second part was with direct questions for obtaining their level of satisfaction towards the current grievance handling procedure with a 5-point Likert scale, ranging between "Strongly

Satisfied (1)" and "Strongly Dissatisfied (5)". The last part of the survey incorporated a conjoint experiment, presenting hypothetical grievance handling procedures with seven attributes, and respondents were asked to select their preferred option. These seven attributes have been selected because of their hypothesized impact on employees' satisfaction with the grievance handling procedures. Specifically, we expect that satisfaction is influenced by (1) the time taken to solve a grievance, (2) the simplicity of the procedure, (3) the roles of the executive officers, (4) the flexibility of appealing, (5) confidentiality, (6) union participation, and (7) follow up process. The hypotheses were developed accordingly for each variable.

H1 -The employees prefer a grievance handling procedure (GHP) which takes a time less than one month

H2 -The employees prefer a GHP which is simple with two steps or less

H3 -The employees prefer the sensitivity of the executive officers involved with the GHP

H4 -The employees prefer a GHP which allows the right to appeal when the grievant is not satisfied with the given decision

H5 – The employees prefer a GHP that ensured the trust securing confidentiality

H6 -The employees prefer a GHP allows the union participation

H7 -The employees prefer a GHP with follow-up mechanisms through proactive measures

Considering that a grievance handling procedure consists of multiple characteristics and the Dos would consider various features of the procedure, the conjoint experiment was used for testing the hypotheses. Each attribute consists of two levels. Table 1 indicates the attributes and the levels for each attribute.

A paired comparison format is generated with the *Conjoint.ly* software. Thereby, the respondents are given two hypothetical grievance handling procedures (A and B) that consist of the above-mentioned seven attributes, with only one level selected for each attribute. They had to select a preferred one between the two hypothetical profiles. This task was repeated five times in the questionnaire survey, meaning each respondent evaluated five pairs of profiles.

Findings

The responses to the direct questions asking about satisfaction levels suggest that most respondents are either neutral or dissatisfied with the current procedure, which underscores the importance of improving the current system.

The results of the conjoint experiment reveal that the DOs preferred procedures which have the following features: (1) a simplified procedure, (2) a high level of confidentiality, (3) an opportunity for appealing when the decision given is not satisfactory, (4) executive officers with sensitive attitudes towards the grievances, and (5) follow-up mechanisms that minimizethe reoccurrences. On the other hand, the time takes for resolving the case and union participation was found to be unimportant.

Examining E-Procurement Policy implementation and operation:
A Case study in the selected public sector in Ethiopia

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This study takes a comprehensive approach to investigating the implementation and operation of e-procurement policies within Ethiopia's public sector. Our objective is to identify gaps in existing e-procurement policies and their impact on public organizations, emphasizing cost efficiency, time reduction, procurement transparency, accountability, and budget management. To investigate the particular obstacles and enablers of e-procurement integration within the Ethiopian public sector, emphasizing empirical data collected from specific public institutions. We evaluate policy effectiveness using a qualitative data-driven approach, comparing e-procurement practices through interviews and questionnaires in ministries and federal budgetary agencies that implement e-procurement and those that do not. Our research delves into the existing policy privileges in the Federal Democratic Republic of Ethiopia's e-procurement system, particularly within selected federal ministries in Addis Ababa and regional administrations. We also examine the challenges faced by the Ministry of Finance during policy implementation and evaluate the impact of operational activities on addressing these challenges. Our research questions explore how IT infrastructure affects E-procurement, how institutional skills affect the implementation of E-procurement in Ethiopia's public sector, and how e-procurement policies, stakeholder complaints, and technology adoption contribute to the implementation of the e-procurement process. Despite limitations due to reliance on primary and secondary data, our study provides invaluable insights into implementing e-procurement policies, with direct implications for enhancing supplier capabilities and modernizing the electronic procurement system.

Keywords: How do IT infrastructure, Institutional skills, e-procurement policies, stakeholder complaints, and technology adoption

The effect of official development assistance (ODA) on control of corruption: Evidence from low, lower-middle, and upper-middle-income countries

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Official Development Assistance (ODA) has been an indispensable part of the development efforts of developing nations, although the impact of ODA has been extensively questioned. Many studies have investigated the impact of governance on ODA; however, few studies have examined the influence of ODA on governance issues, specifically the control of corruption. Therefore, this paper attempts to examine the effect of official development assistance on the control of corruption in recipient countries with different income levels: low-income, lower middle-income, and upper-middle-income. This paper employs Ordinary Least Squares (OLS) and a Fixed Effect (FE) econometric model using a panel data analysis of 131 countries over the period 1998–2022. The findings of the study illustrate that ODA has a significant and negative impact on the control of corruption, indicating an increase in ODA fuels (**mitigates**) corruption levels (control of corruption) in the recipient countries, irrespective of their income level. This infers that official development assistance decreases the corruption perception index (CPI), resulting in more corruption in the country. Overall, the study fulfills the need to understand the ODA-corruption nexus in recipient countries with different income levels. Finally, the findings of this study are robust to various alternative empirical model specifications and estimation techniques.

Keywords: Official Development Assistance (ODA), Corruption, Donor countries, Recipient countries, Sustainable Development Goals (SDGs)

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Impact of India - Sri Lanka Free Trade Agreement (ISFTA) on the Export Sector in Sri Lanka

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The India-Sri Lanka Free Trade Agreement (ISFTA) aims to strengthen economic ties between India and Sri Lanka by creating a better business treaty between the two countries. Many studies have been done in the related field; however, few studies have in-depth explored factors related to the impact of the India-Sri Lanka Free Trade Agreement (ISFTA) on Sri Lanka's export sector. There exists a knowledge gap that underscores the necessity for further investigation and analysis to fully understand the factors influencing this matter. To fill that gap, this study identify the impact of the India-Sri Lanka Free Trade Agreement (ISFTA) on Sri Lanka's export industry. The specific objective of the study is to explore the potential for future growth of export operations for Sri Lanka as influenced by the ISFTA.

The study focused on fifty BOI-registered export companies based in the western province. We collected the primary data using a survey questionnaire. The study examined five distinct variables: export growth, export income, the type of goods exported, GDP contribution, and tariff concession.

According to the research findings, the majority of exporters to India state that they have significant demand for their products in the Indian market, demonstrating that export growth has increased after engaging with the ISFTA agreement. This survey expresses that the business's production has grown since the signing of the ISFTA. Furthermore, exporters participated in international trade with India after the ISFTA, exporting their goods as processed materials. The export companies report increased profits following the signing of the ISFTA agreement, taking into account the GDP contribution. Considering the impact of the ISFTA's tariff concession on Sri Lanka's export market, most survey respondents report that they export all their goods under tax concessions. This demonstrates that the ISFTA has not only increased production for existing exporters but has also sparked interest in expanding operations for future growth.

The findings indicate that the ISFTA positively influences Sri Lanka's exports, which makes them more appealing to Indian companies and consumers. Because ISFTA has helped build an economic partnership, the two countries' commerce partnership has become stronger and more cooperative.

The study pointed out that the ISFTA has had a positive overall effect, paving the way for better economic cooperation between the two nations. The study also mentioned concerns about market access and non-tariff barriers that slowed down export businesses. Even with these problems, ISFTA has eventually led to more trade and economic growth for both countries it involves.

Testing China's Sharp Power Thesis in Sri Lanka: The Case of Information Sphere.

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With the recent developments in Sino-Sri Lankan relations, Chinese influence efforts in Sri Lanka have become an international matter of contention, which has mixed presumptions, and it tends to view Sri Lanka as a 'victim' of China's malign power tactics. In this context, the newly emerged "Sharp Power" concept aligns with the growing critical attitudes towards China's influence. Recognised as an authoritarian nation in the international system, and Beijing's emergence as a global power has sparked political and academic discussions about its authoritarian influence and impact, where 'democratic backsliding has become an increasing trend' (Carothers & Press 2022, p.1) In 2016, an American scholar, Christopher Walker observing post Cold war international political landscape identified that authoritarian nations including China have begun to infiltrate democratic societies and exploit open systems serve their national interests. He notes that the authoritarian states imitate the 'soft power' techniques, which often manipulate democratic societies to perceive malign influence efforts as genuine. Consequently, in an effort to recognise the new phenomenon, Walker and Jessica Ludwig coined the idea of sharp power, which is defined as 'authoritarian countries' efforts to 'pierce, penetrate, or perforate the political and information environments of targeted countries through sharp power strategies to achieve their foreign policy goals' (Sharp power: Rising authoritarian influence Report 2017, p. 6). In the aftermath of the controversial Hambantota Port issue, Beijing's involvement in countries has become a global conversation intertwined with the subject of efforts to exert authoritarian influence. This research identified the knowledge deficit in exploring China's influence in the Sri Lankan context through the conceptual framework of sharp power and the significance of investigating the reality of contemporary power dynamics. To fill the aforementioned knowledge gap, this research attempted to answer the question of whether the concept of sharp power is appropriate and sufficient to understand China's influence in Sri Lanka by conducting an empirical investigation. This research paper investigated China's influence strategies by focusing on one of the major power realms, the information sphere. The power of information has become the 'new oil' in this information era (Rosenbach & Mansted 2019). Modern-day forms of power are not only confined to resources or capabilities of hard power but have expanded, decentralised and become more intangible. With hyper-globalisation, the footprint of international media has expanded, resulting in

blurred national boundaries. The constraints that previously existed in accessing information have diminished, and individuals now have access to many platforms for global information consumption. Similarly, nations have gained increased access to foreign media platforms, facilitating international media collaborations and fostering a more interconnected global media landscape. The increasing interdependence of the global information sphere has emerged as a significant dimension of state power. In China's case, its global rise entails the expansion of telecommunications, media and digital infrastructure on a global scale. The international community has expressed concerns regarding the potential risks associated with China's infiltration into the information spheres of foreign countries. The idea of sharp power reiterates the importance of investigating Beijing's influence efforts and impacts on democratic societies. Therefore, this research paper investigated China's influence in Sri Lanka by carrying out an empirical study, employing the qualitative methods of data collection focusing on the timeframe from 2009 to 2020. This project conducted 24 in-depth interviews (2021- 2022) with Sri Lankan intellectuals, scholars, and journalists and analysed the data utilising Nvivo software applying the analytical framework of sharp power. Secondly, this carried out a literature analysis of local scholars on the subject matter and an examination of Chinese media and educational events in Sri Lanka. The main findings revealed that the nature of Beijing's influence is shaped by Sri Lankan internal political, media, social, and economic dynamics and individual experiences and preferences. Those have become critical factors in shaping the power dynamics shaping interests and perceptions regarding Chinese initiatives. Secondly, the research discovered that China has expanded and created multiple access channels to the information sphere. This includes institutions such as China Radio International, Sri Lanka China Journalist Forum, local media outlets and efforts such as journalist training programs, scholarships and sponsored tours. Thirdly, findings revealed several malign impacts and characteristics of the efforts aligned with the concept of sharp power, which was more subtle and difficult to notice. This includes subtle efforts to increase propaganda through local journalists, controlling information, normalising ideas of controlled media freedom and censorship, utilisation of financial capabilities for image–building, and attempts to infiltrate local media outlets to promote a positive image. Finally, the investigation into the local context revealed Sri Lanka's soft authoritarian tendencies and undemocratic practices embedded within the political culture have facilitated sharp power influence efforts, and the increase in media control and suppression practices in the small island is not directly connected to China's presence. Instead, it is ingrained within its own national political context. This on-the-ground systematic study revealed that China's involvement in the Sri Lankan information sphere could

impact the democratic environment by compromising the integrity of local media institutions due to Chinese affiliations, leading to a decline in independent and unbiased reporting and potentially aligning journalists with the Chinese agenda in Sri Lanka. Not only that, but this also emphasises the urgent need to strengthen democratic policies and the environment in Sri Lanka.

Key Words: Chinese Influence, Diplomacy, Sharp Power, Sino-Sri Lankan Relations, Soft Power

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Theme: Management, Marketing & Business

Factors Affecting to the Family Businesses Succession in Sri Lanka, with Special Reference to the Small and Medium Apparel Sector in Western Province

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Many economies consider family businesses as their foundation, providing stability and continuity across generations (Poza, 2010). In 2022, the International Federation of Accountants Fund conducted a study that revealed that family firms comprised 95% of all small and medium-sized enterprises (SMEs) worldwide. Similar to many economies, SMEs in Sri Lanka also play a crucial role in driving the national economy, and within the SME sector, family businesses play a vital role. KPMG's 2021 survey reveals that only 17% of Sri Lanka's small and medium family business sector successfully transitions into their second generations, posing several challenges in their succession process. Numerous studies have examined Sri Lanka's family business sector, but only a few have delved deeply into the factors associated with family business succession. There is a knowledge gap that highlights the need for additional investigation and analysis to fully comprehend the factors influencing the succession of family businesses in Sri Lanka. Given this significance, the objective of this study is to identify the most influential factors that affect successful family business succession in the small and medium-sized apparel sector.

To determine successful succession, it has employed subjective assessment of successful succession as a predecessor and family member satisfaction about succession, according to Miller & Le Breton-Miller, 2005. The three independent variables used for the study were the successor's entrepreneurial ability, successor's relationship with family members which cover psychological aspects of succession, and successor's readiness for the succession which cover technical aspects of the succession. According to the available literature, many family business successions have prioritized procedural preparedness, focusing on succession planning, legal and financial arrangements, and developing contingency plans for future unforeseen events to ensure smooth business continuation.

For the study, it has distributed the structured questionnaire, which includes closed-ended and open-ended questions and a Likert scale for grading remarks, to 15 textile and apparel factories that have undergone previous successions to collect data. The analysis utilized multiple regression analysis, correlation analysis, and descriptive statistics. Regression analysis reveals a relationship between successful succession and three independent variables. However, combining three independent variables and comparing them with the dependent variable in multiple regression analysis revealed no significant relationship between the readiness factor and successful succession. While entrepreneurship, family relationships, and readiness factors individually contribute to successful succession, their interactions with each other affect the dependent variable differently. The findings of this study conclude that, while all three variables are significant, the psychological aspects hold greater influence than the procedural aspects. But the study's results show that while all three variables are important, the psychological factors have a bigger effect on how well the succession process works. In this case, it seems that a strong family relationship and the desire to be an entrepreneur are more important than following the right steps for a smooth transition of the family business. The study emphasizes the need for a balanced approach that includes both psychological and procedural factors in order to have a smooth and successful succession in family business.

Keywords: Family Business, Psychological Factors, Small and Medium Sector, Successful Succession

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Process Analysis and Improvement: Case of Development Bank of Mongolia

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This research examines the existing processes in the Development Bank of Mongolia (DBM), particularly in the loan approval processes to identify the bottleneck processes so as to enhance the efficiency and effectiveness of DBM's project financing mechanisms. Comprehensive analyses of the loan approval process by synthesizing qualitative insights from structured surveys and semi-structured interviews with quantitative data analysis were conducted. Given the nature of Development Finance Institutions (DFIs) and their recent trends, particularly their importance in emerging economies, the research tries to highlight development banks' critical role in addressing market failures in order to support the economic growth of Mongolia.

The research investigates the related regulatory framework outlined in the DBM's official documentations and explores the organizational structures governing project financing within this context. Through a systematic examination of the loan approval process phases, from request review to funding, the research identifies critical areas for enhancement, such as finding the process delay (bottlenecks), lapses in communication channels between stakeholders, and concludes with implementable recommendation for improvement.

Keywords: Development Bank of Mongolia (DBM), Development Finance Institutions (DFIs), Loan approval process, Process improvement, Project financing.

Introduction

Development finance institutions (DFIs), including development banks, are pivotal mechanisms for channeling finance towards sectors crucial for economic growth. They address market failures, promote inclusive growth, and support sustainable development globally. With

over 500 operating worldwide, DFIs play a significant role in mobilizing capital for infrastructure development, industrialization, and poverty alleviation initiatives.

Likewise, The Development Bank of Mongolia (DBM), committed to provide financing for large-scale projects aimed at Mongolia's development. Furthermore, the DBM plays a crucial role in facilitating infrastructure development, supporting key industries, and fostering innovation and entrepreneurship across Mongolia. By financing projects in strategic sectors like infrastructure, energy, manufacturing, and housing construction, DBM contributes to Mongolia's sustainable economic growth and long-term prosperity. However, to fully realize its potential impact, addressing the challenges within its financing process is essential. This study analysed the bottlenecks within the DBM's financing process and provide actionable recommendations for improvement to enhance its role in fostering Mongolia's economic development.

Conceptual Framework

The primary focus of this study is to identify challenges within the Development Bank of Mongolia's (DBM) financing process and provide actionable recommendations for improvement to enhance its role in Mongolia's economic development.

1. *Analysis of Financing Process Bottlenecks:* This component entails a comprehensive examination of the loan approval pipeline at DBM, including material submission delays, excessive documentation requirements, and limitations in the IT system.

2. *Evaluation of Regulatory Compliance and Documentation Procedures:* This component delves into the regulatory compliance measures and documentation procedures at DBM, and explores challenges related to compliance with that and the impact of documentation procedures on project financing timelines.

3. *Assessment of Human Resource Empowerment and Technological Integration:* This component examines the role of human resources and technology in streamlining DBM's financing process.

4. *Formulation of Actionable Recommendations:* Based on the analysis of bottlenecks and challenges identified in the financing process, this component proposes actionable recommendations for improvement.

Objective

1. Identify bottlenecks in the loan approval process at DBM, including delays in material submission, excessive documentation requirements, and limitations in the IT system.

2. Evaluate the effectiveness of regulatory compliance measures and documentation procedures in ensuring adherence to legal and internal requirements.

Methodology

This research employed a mixed-methods approach to comprehensively investigate the loan approval process at the Development Bank of Mongolia (DBM) and to identify opportunities for improvement. The methodology involves a combination of secondary data analysis, structured surveys, semi-structured interviews, and process flowcharting.

1. Data Sources:

· Secondary Data: Internal documents, reports, publications of DBM, and relevant literature.
· Structured Surveys: Administered to key stakeholders involved in the loan approval process.
· Semi-Structured Interviews: Conducted with select stakeholders to gather qualitative insights.

2. Process Flowcharting: Based on insights from data analysis and interviews, a flowchart was developed to depict sequential steps, decision points, and stakeholders involved in the existing loan approval process.

Findings

The findings of the report highlighted several key areas of concern within the Development Bank of Mongolia's (DBM) financing process. These included significant bottlenecks in the financing process, particularly in the phases of material collection and decision-making, stemming from delays in document submission and inadequate regulatory compliance. Regulatory compliance and documentation procedures emerged as primary challenges, necessitating clearer guidelines and improved regulatory measures. Furthermore, the assessment of human resource empowerment and technological integration revealed areas for improvement in workforce capacity and technology utilization. These findings underscore the

importance of streamlining processes, enhancing regulatory compliance, and empowering human resources to optimize DBM's financing operations.

Recommendations

Recommendations include refining material requirements to accommodate diverse project needs, strengthening regulatory compliance measures, improving document collection procedures through digital platforms, investing in technology, enhancing communication, developing a workforce succession plan, cross-training initiatives, streamlining workflow processes, strengthening performance management, and promoting leadership development.

Effect of Institutions and Globalization on Opportunity Driven Entrepreneurship: Case of Middle and High-Income Countries

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Abstract

This study investigates the determinants of Opportunity-Driven Entrepreneurship (ODE) in high and middle-income countries, focusing on economic freedom, governance, and globalisation. It employs robust statistical methods across a 2004 to 2018 unbalanced panel dataset of 64 countries by utilising the data from the Global Entrepreneurship Monitor (GEM) and composite indices from reputed data sources. Results reveal a positive effect of economic freedom on ODE in both income groups, though governance's impact is significant only in high-income countries. Conversely, globalisation exhibits a negative relationship with ODE across both groups. These findings provide valuable insights for policymakers and scholars aiming to promote ODE and equitable economic development, despite acknowledging study limitations.

Keywords: opportunity-driven entrepreneurship, economic freedom, governance, globalisation, high income, middle income

Introduction

Recognising its significance, numerous scholars advocate for prioritising ODE due to its profound impact on economic growth. This study seeks to offer fresh insights into the determinants of ODE across both high- and middle-income countries, underscoring the pivotal role of the institutional and economic environment in nurturing ODE. Despite some existing studies acknowledging the importance of institutional quality and economic freedom in driving ODE, there remains a gap in comprehensive quantitative and qualitative analyses. Furthermore, previous research often dissects institutional quality indicators and globalisation measures without fully considering their holistic impact on ODE. Therefore, this study endeavours to

address these gaps by comprehensively assessing the overall effect of governance, economic freedom, and globalisation on ODE.

Methodology

Utilising an unbalanced panel dataset covering 64 countries categorised into high and middle-income groups from 2004 to 2018, the study employed the Robust Least Squares (RLS) method for estimation, with the Ordinary Least Squares (OLS) used for robustness identification. The primary source for measuring ODE is the Global Entrepreneurship Monitor (GEM), a globally recognised database widely used for collecting entrepreneurship-related data. Economic freedom, governance, and globalisation summary indexes were derived from reputable databases, with economic freedom and globalisation summary indexes sourced from sources like globaleconomy.com. Governance indicators were sourced from the World Bank World Development Indicators (WDI) database. Additionally, the gross enrolment ratio for tertiary education and the research and development expenditure are used as control variables which are derived from the World Bank. The sample was classified into two income categories as high and middle income based on the World Bank's income classification 2023.

Results and Analysis

The study's results demonstrate a positive and significant impact of economic freedom and governance on ODE across both high-income and middle-income countries, albeit with differing magnitudes of effect. Economic freedom exhibits a stronger positive influence on ODE in high-income countries compared to middle-income countries. Governance shows a positive significant effect in high-income countries; however, it remains insignificant in middle-income countries. Furthermore, the study uncovers a negative relationship between globalisation and ODE for both study groups, with a more pronounced negative impact observed in middle-income countries.

Conclusion and Recommendations

The research necessitates tailored institutional quality enhancements in high and middle-income countries. Moreover, it emphasises the pivotal role of adeptly navigating the evolving landscape of globalisation by fostering an environment conducive to entrepreneurial endeavours. Middle-income countries should focus on enhancing institutional quality and economic freedom to create a supportive environment for entrepreneurship, while high-income countries can benefit from refining governance and economic freedom within their already established institutional

frameworks. Moreover, globalisation necessitates sound policy interventions in high-income and middle-income countries, with governments encouraged to cultivate an entrepreneurial culture, adapt to global market dynamics, and provide support for domestic entrepreneurs to compete globally. Specifically, middle-income countries should prioritize innovation, research, and development through well-crafted policy implications. Overall, policymakers must tailor strategies to navigate the complexities of globalization, promoting entrepreneurial endeavors while addressing challenges posed by increased competition and market dynamics.

Nevertheless, the study acknowledges several limitations. Data constraints, particularly in coverage and availability, pose challenges to comprehensively analysing ODE across all income groups and countries. Additionally, the study primarily focuses on ODE as captured by GEM data, which may not fully encapsulate the nuances of entrepreneurial activity within existing ventures.

Clearance Process Improvement in Nepal Customs: A Case Study on Risk-Based Clearance and Technological Advancements

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Abstract

Inefficiencies in Nepal's customs clearance process, particularly in risk management and lane allocation, impede trade facilitation. This study investigates these bottlenecks by analyzing customs data and surveying customs officers. It reveals an overreliance on time-consuming physical inspections due to an imbalanced lane distribution. The survey further highlights limitations in risk assessment, yard management, and inter-agency coordination. To address these challenges, the research proposes a multi-pronged approach. This includes implementing advanced risk assessment tools like UNCTAD's Dynamic Selectivity module and customized AI/ML models. Building expertise in data analytics and AI within Nepal Customs is also crucial alongside the complementary measures like digital forensics, X-ray scanners, and improved inter-agency coordination are recommended to further streamline the clearance process. By adopting these solutions, Nepal Customs can leverage technology and expertise to create a more efficient and business-friendly trade environment.

Keywords: Nepal Customs clearance, risk management, AI/ML powered risk engine, trade facilitation, edge/cloud computing

Introduction

Nepal's customs operations play a critical role in facilitating international trade while ensuring compliance. However, the current system suffers from inefficiencies, especially in risk assessment and directing shipments to appropriate clearance lanes. This leads to delays, increased costs, and potential errors. This study addresses these bottlenecks to achieve smoother and more efficient customs operations. Risk based clearance system, though perceived in the Nepal Customs' various official documentation and commitment, implementation is still rudimentary. Required is the identification of lapses and consequent implementable recommendations.

Conceptual Framework:

The central theme of this study revolves around the modernizing Nepal Customs' risk management practices to enhance efficiency and facilitate smoother trade flows. The conceptual framework identifies limitations in the current system, such as its reliance on a basic, rule-based approach.

- **Technological Advancements in Risk Assessment:** This component focuses on implementing the UNCTAD Dynamic Selectivity module and AI/ML models for data analysis and anomaly detection, enabling a shift from basic rules to a more sophisticated risk assessment system.
- **Human Resource Development:** This component emphasizes building expertise within Nepal Customs by providing comprehensive training on data analytics and AI for risk management. It recommends strategic staff deployment to leverage acquired skills effectively.
- **Complementary Measures:** This component explores additional measures suggesting implemention of digital forensics for electronic document verification, equipping customs offices with X-ray scanners for faster inspections, and improving coordination with other government agencies involved.

Objectives:

- Identify the primary bottlenecks hindering Nepal's customs clearance process.
- Evaluate the effectiveness of the current risk management and lane selection system (selectivity).

- Recommend solutions to improve efficiency and accuracy, focusing on integrating advanced technologies like Artificial Intelligence (AI) and machine learning and entire risk management infrastructure

Methodology:

A mixed-methods approach was employed, combining quantitative analysis of customs data from the ASYCUDA World system over the past five years with qualitative insights from a survey of customs officers. The data analysis focused on trends in lane distribution and clearance times. The targeted survey, consisting of 20 objective questions, gathered officers' perceptions and experiences regarding risk management, selectivity, and clearance procedures.

Findings:

The research identified two key areas of concern: lane distribution and bottlenecks within the clearance process.

- **Lane Imbalance:** Analysis revealed a significant imbalance in lane distribution. Around 60% of imports were directed to the red lane, requiring thorough physical examinations. This rigorous process contributes to longer clearance times and increased operational costs, while also raising the risk of human error.

- **Bottlenecks Identified:** Customs officers highlighted selectivity as the most critical factor impacting clearance times. Inefficiencies in risk assessment, yard management, and coordination with other government agencies were identified as key bottlenecks. The survey results pointed towards a need for better data utilization and technology integration to improve the accuracy of risk assessment.

Recommendation

This study proposes a multi-pronged approach to modernize Nepal Customs, focusing on risk assessment. It recommends *phased implementation of an AI-based risk engine*, starting with edge computing for faster deployment and leveraging existing infrastructure. Utilizing UNCTAD's Dynamic Selectivity module and staff training in risk management and data analytics are suggested. These improvements aim to enhance efficiency and facilitate smoother trade flows.

Influence of Motivating Factors on the Job Satisfaction of the Major Apparel Manufacturing Company Employees in Colombo District

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Job satisfaction is about the feeling or affective response an employee has within all different areas of the individual's work. It depends on the different factors but this research focuses on Herzberg's motivation factors and their influence on the employees in apparel manufacturing companies. The purpose of focusing on apparel manufacturing general employees is the prominence of the apparel industry towards the Sri Lankan economy. Even though the apparel sector has a major significance to Sri Lanka economic growth, previous studies that have been conducted so far only focus on particular aspects such as stress or the research is only focused on less prominent geographic areas in the country. This research will delve into and reassess the job satisfaction levels of the employees, recognizing its importance as a significant factor in apparel and textile production.

The research was conducted by three major apparel companies with 41 responses. The results shows that job satisfaction level is neutral level as a results companies need to take strategic decisions to improve the job satisfaction. Implementing the Mckinsey 7's framework would help the management to take strategic decision making since this framework help improve the effectiveness of the company. Demographic comparison shows the vital insights of young generation and the new recruits has less job satisfaction. This report focuses on Herzberg's Motivation-Hygiene theory to determine the key factors influencing job satisfaction and their impact on employee motivation. Motivation factors show a high rate of significance to job satisfaction which means job satisfaction is influenced by the motivation factors. The data has shown that job satisfaction is above the moderate level and improvement needs to be carried out. Particularly for the younger generation the demographic data in age and work experience shows that this demographic segment needs to be improved.

Once most critical factor to be improved is Responsibility since granting responsibility will increase the satisfaction of employees but if the employees face a high level of job responsibility employee's efficiency level drops and increases stress. It is important to find out the right balance between empowering employees with responsibility and mitigating job stress in paramount.

The statistical evidence has shown that management needs to improve its strategies since the job satisfaction level is not up to a satisfactory level. This will affect the productivity of the employees as well as the whole organization since it shown in previous research that satisfied employees tend to be more productive compared to less satisfied employees. As a result, it is imperative to the management to identify the interconnection between job satisfaction and overall productivity. In this instance, the findings underscore the role of the management to develop a conducive environment that will nurture employee job satisfaction. The responsibility factor is fine line between satisfaction and dissatisfaction of the employees since the over granting responsibility as lower the satisfactory level and causes stress. The research also focus on how the productivity will be affected by the satisfactory level. The overall results demonstrated that job satisfaction is influence by motivation factors in the apparel manufacturing companies in Colombo district.

Challenges and Suggestions for the Development of the Oil and Gas Sector of the Republic of Uzbekistan

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Abstract

This study seeks to identify the challenges and opportunities for developing Uzbekistan's oil and gas sector, which is crucial to the nation's economic growth and energy security. The research employs mixed methods to conduct a comprehensive analysis, employing a rigorous methodology incorporating comparative case analysis, expert interviews, surveys, and secondary data analysis. It offers comprehensive insights and actionable recommendations to enhance policy formulation, promote sustainability, and elevate the international stature of Uzbekistan's fossil fuel industry. Furthermore, collaborative efforts with international and domestic experts helped pinpoint historical and current challenges and opportunities for sustainable development. The surveys gathered the perspectives of 207 industry professionals from domestic and international, further enriching the data. The study findings highlight several critical issues: growth demand, declining production, aging infrastructure, resource depletion, lack of technology, poor logistics, management deficiencies, and environmental impacts. The research proposes avenues for modernization, technological advancement, and strategic management improvements by examining strategies employed in Japan, Singapore, and China. The recommendations of this study highlight the importance of implementing advanced technology in deep refineries, drilling, and exploration, improving the investment climate, environmental management, developing human capital, and reforming strategic management practices. It emphasizes the need for continuous innovation, governance reform, and international collaboration to ensure a sustainable and competitive future. The research

advocates for global collaborative efforts to strengthen environmental management, which is crucial for sustainable development and competitiveness of the sector.

Introduction

Uzbekistan's oil and gas sector is crucial to the country's economy. Despite this, the sector faces numerical challenges, including growth demand, declining production, aging infrastructure, resource depletion, import dependency, and environmental concerns. The sector contributes to the national GDP by approximately 3.5% and over 15% of total exports. However, it is imperative to address these challenges effectively to maintain and enhance this contribution. This study seeks to analyze these issues, compare them with successful strategies from other countries globally, and provide recommendations for sustainable development.

Conceptual Framework

The conceptual framework for this study identifies and analyzes challenges and opportunities within Uzbekistan's oil and gas sector. It integrates a comparative case analysis with qualitative and quantitative data from expert interviews, surveys, and secondary resources. This framework aims to understand how international best practices can be adapted and applied to Uzbekistan's context.

Objectives

· To examine the historical and current state of the oil and gas sector in Uzbekistan.

· To compare Uzbekistan's oil and gas sector with those of Japan, Singapore, and China.

· To develop practical and actionable recommendations for the technological, managerial, and policy improvement sectors.

· To promote the adaptation of sustainable practices and international collaboration to ensure the long-term viability and competitiveness of Uzbekistan's oil and gas sector.

Methodology

The study employs a mixed-methods approach, combining qualitative data from experts' interviews with quantitative data from survey questionnaires and secondary data sources. The comparative case analysis of Japan, Singapore, and China serves as a benchmark for evaluating Uzbekistan's oil and gas sector. Data collection involved a comprehensive survey with 207 industry domestic and international professionals, and in-depth interviews with experts provided key experts with qualitative insights. Secondary data was analyzed to understand the sector's historical trends and current dynamics.

Findings

The research highlights several critical challenges facing Uzbekistan's oil and gas sector:

- **Growth demand:** continuously increasing domestic demand for oil and products.

- **Declining production:** significant reduction in natural gas and oil production.

- **Aging Infrastructure:** Outdated facilities and equipment.

- **Resource Depletion:** Decreasing reserves of easily accessible natural gas and oil.

- **Lack of Technology:** Insufficient advanced technology for exploration and production.

- **Poor Logistics Management:** Inefficient transportation and distribution systems.

- **Environmental Impacts:** Significant ecological damage due to outdated practices.

Recommendations

This study suggests that to enhance Uzbekistan's oil and gas sector, it is crucial to implement advanced technologies in drilling and refining, improve the investment climate, strengthen environmental regulations, and develop human capital through specialized training programs. Adopting strategic management best practices and engaging in international collaborations for technology transfer and sustainable practices will further boost efficiency, productivity, and sustainability.

Assessing the Influence of Institutional Quality on Entrepreneurship in Emerging Countries: A Comparative Study of Prospect Entrepreneurs and Early-stage Entrepreneurs

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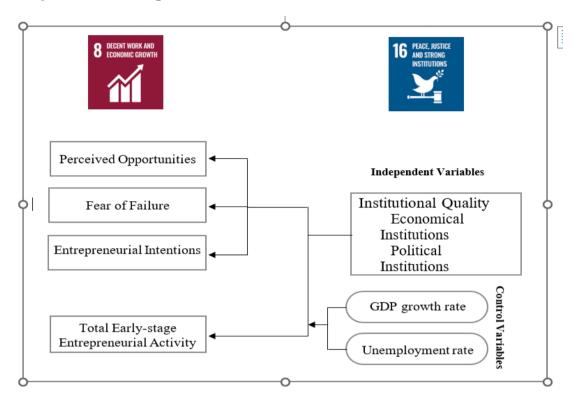
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This study explores the impact of institutional quality on both prospect entrepreneurs and early-stage entrepreneurs using a panel dataset covering 13 emerging countries across 14 years, from 2006 to 2019. We employed both Pooled Ordinary Least Squire (OLS) approach and Robust Least Squire (RLS) approach, with a specific focus on the outcomes of the RLS model. The results indicate that institutional quality, as measured by quality of governance proxy for political institutions and economic freedom proxy for economic institutions, exerts a notable influence on both stages of entrepreneurs. Economic institutions demonstrate a statistically significant positive association with perceived opportunities and entrepreneurial intentions, while exhibiting a significant negative correlation with fear of failure. Political institutions exhibit a significant negative impact towards fear of failure. Upon comparison of the elasticities of the coefficient values, it becomes apparent that the influence of institutional quality is more pronounced among prospect entrepreneurs in contrast to early-stage entrepreneurs. The study aims to address a notable void in the existing academic literature. Furthermore, the findings of the study hold valuable insights for the policy makers to make future decision.

Research objectives & Conceptual framework

Numerous scholars have researched the impact of entrepreneurship on economic growth (Coe & Helpman, 1995; Zhang et al., 2011). Moreover, researchers have shown that institutional quality also significantly influences economic growth (North, 1989; Acemoglu & Robinson, 2010; Siddiqui & Ahmed, 2013; North, 2016). Nonetheless, there are many studies that focus on the early-stage entrepreneurs as TEA is widely used by many scholars to examine the entrepreneurial activity of countries (Kreft & Sobel, 2005; Hall & Sobel, 2008; McMullen et al., 2008). There is a literature gap in terms of how institutional quality affects prospect entrepreneurs. At the same time the number of studies focused on emerging countries are yet again limited (Loukil, 2019). The primary objective of this research is to investigate the impact of institutional quality on potential entrepreneurs and early-stage entrepreneurs. The specific research questions to be addressed are as follows:

- What is the impact of institutional quality on potential entrepreneurs?
- What is the impact of institutional quality on early-stage entrepreneurs?
- How does the impact of institutional quality differ between prospect entrepreneurs and early-stage entrepreneurs?

Methodology

The analysis spans 14 years starting from 2006 to 2019, 13 countries were selected as emerging countries for the study based on the criteria of the International Monetary Foundation (IMF). We use both Pooled Ordinary Least Square (OLS) method and Robust Least Square (RLS) method to examine our hypothesis. Particularly RLS due to its robustness to heteroscedasticity and outliers. RLS provides an attractive approach when the assumptions underlying fixed effects, random effects, and generalized method of moments techniques still need to be fully satisfied. Offers. FE and RE models are susceptible to unobserved heterogeneity and may not adequately address endogeneity concerns (Greene, 2003; Wooldridge, 2010), whereas GMMs rely heavily on moment conditions, especially for large datasets (Cameron & Trivedi, 2005; Wooldridge, 2010).

Interpretation and Findings

By using descriptive statistics, the research highlights the nature and level of entrepreneurial activity in these regions. Correlation analysis confirms a significant relationship between the studied variables, aligning with previous research by Sobel et al. (2007) and McMullen et al. (2008).

The study measures the impact of economic and political institutions through governance indicators and economic freedom indices. Robustness is ensured by employing both pooled least square and robust least square methods. The findings contribute to literature by demonstrating that high-quality economic institutions positively influence TEA, perceived opportunities, and reduce fear of failure. Conversely, while political institutions negatively affect fear of failure, they do not significantly impact TEA or entrepreneurial intentions.

The analysis reveals that economic institutions are more indicative of potential entrepreneurial activity than political institutions. The impact of institutional quality is notably more

significant for prospect entrepreneurs compared to early-stage entrepreneurs. Therefore, the study concludes that institutional quality plays a critical role in fostering entrepreneurial prospects in emerging markets, validating all the proposed hypotheses.

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Tourism potentials of the analog forestry towards multiplying benefits for local communities: Exploring the Sri Lankan experience

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Introduction

Analog Forestry is an approach to ecological restoration that uses natural forests as guides to create ecologically stable and socio-economically productive landscapes (International Analog Forestry Network, 2015a). Despite of their developmental levels and geographical differences, several countries in the world such as USA, Cuba, Brazil, Costa Rica, Kenya, Uganda, India, Philippines and Sri Lanka practice analog forestry as a sustainable land use method towards eco-friendly agriculture and biodiversity conservation (International Analog Forestry Network, 2015b). Analog forestry aims at addressing the social and economic needs of local communities by taking their knowledge and contribution in establishing analog forestry sites (Jones, 2001; Martin, 2017). Sri Lanka is a pioneering example of analog forestry with its founder being a Sri Lankan, Dr Ranil Senanayake (Senanayake, 2012). This research focusses on the tourism potentials of analog forestry towards multiplying benefits for local communities. It asks why analog forestry sites should be promoted as tourist destinations, and how to obtain the contribution of local communities to promote analog forestry as a tourism initiative.

Objectives

The research mainly focusses on tourism potentials of the analog forestry sites towards multiplying benefits for local communities. Further, it explores the ways in which to enrich biodiversity and agricultural sustainability of analog forestry sites obtaining the contribution of knowledge, skills and cultural background of local communities towards promoting tourism.

Methodology

The research relied on qualitative data gathered using semi-structured interviews and site observations based on two pioneer analog forestry sites located in Belipola which is the world's first analog forestry site, and Haputale as a replica of Belipola. Both sites are located in the Uva province, representing same climatic and geographical zones. Interviews were conducted with the founder of analog forestry and five analog forestry practitioners in the selected analog forestry sites. In addition, three analog forestry experts and trainers, and eight locals and five foreigners who visit the selected analog forestry sites were interviewed. Nine interviews were conducted with the local community members who involved in analog forestry. The data were categorized thematically under following four codes: 1. Knowledge on analog forestry; 2. Relationship between analog forestry and tourism; 3. Benefits for local communities through analog forestry-based tourism; and 4. Sustainable agriculture and local livelihoods, and analyzed manually and descriptively.

Interpretation of results and findings

The findings related to local and foreign visitors suggest that there should be components for them to see, do, buy and feel when they visit the analog forestry sites. It means a tourist who visits an analog forestry site should be able to see a man-made forest landscape, native and exotic flora, fauna, local culture and lifestyle. The tourists should get a chance to do activities such as camping, cooking, hiking, tree climbing, swimming, bird watching, gardening, drawing, meditation, photography and research. It is important to provide a space for tourists to buy spices, bee honey, wild tea, handicrafts and other non-timber forest products.

The analog forestry practitioners and experts explained the importance of providing opportunities for tourists to feel nature through reconnecting with the wild, contributing to combat against climate change and supporting re-wilding. In addition, the tourists should feel the community life through experiencing the culture and the lifestyle of local communities.

According to the founder of analog forestry, the government authorities related to forestry, wildlife, agriculture, local governance and tourism need to positively involve in promoting analog forestry among local communities. Restoring forest ecosystems through analog forestry to provide habitats, increase biodiversity, conserve soil and water, and to beautify landscapes could encourage tourism practices such as eco-tourism, nature tourism, agro-tourism, heritage

tourism and research tourism enhancing the income levels and food security of local communities in Sri Lanka.

The willingness to promote analog forestry-related tourism using their knowledge, skills and cultural background has been highlighted by the local community.

As Sri Lanka is a small island, strategies are needed to increase the productivity of limited number of lands protecting the forests and biodiversity at the same time. Through practicing analog forestry-based tourism, the local communities could increase their income without harming the environment. The findings suggest that awareness is needed to promote analog forestry among local communities as a tourism initiative.

Keywords: analog forestry, ecosystem restoration, local communities, Sri Lanka, tourism

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Factors Affecting the Green Purchase Behavior for SMEs in Sri Lanka

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Introduction

When companies make an effort to maximize profits, it is often blamed as the creator of many environmental and social problems (Paulraj et al., 2017). Problems are created when companies drive to maximize profit without considering the environmental and social factors that should be considered by today's business management. Some famous and controversial cases happened in Sri Lanka due to neglecting the environmental responsibility of manufacturers. Eco-friendly practices or green practices are adopted as the commonly accepted solution for preventing or minimizing environmental problems specially created by the manufacturing and service sectors. Green Purchasing (GP) behavior is one of the major green supply chain practices that is followed by both enterprises and consumers around the world. In recent years, there has been a notable global shift towards environmentally conscious consumption, with consumers increasingly considering the environmental impact of their purchases. This trend is not only prevalent among individual consumers but is also gaining significance within the business sector, particularly among SMEs. Therefore, GP is defined as the idea of purchasing which is oriented to environmental awareness, purchasing raw materials that prioritize environmental sustainability, such as reducing sources of waste, promoting recycling and reuse, reducing resources, and using environmentally friendly materials (Sugandini et al., 2020). The government of Sri Lanka recognizes SMEs as the backbone of the economy, as they account for more than 75% of the total number of enterprises, provide 45% of employment, and contribute to 52% of the Gross Domestic Production (GDP). Therefore, this study was conducted with special reference to SMEs in Sri Lanka. Moreover, although Sri Lankan SMEs have implemented GP practices, affected factors of adopting GP practices have not been investigated.

Objectives and conceptual framework

Ascertaining the drivers affecting GP practices of SMEs is an essential finding for academics and practitioners in the field of sustainable development. Therefore, the main objective of the study is to explore the factors affecting the GP practices of SMEs in Sri Lanka. Eight factors i.e., Environmental Awareness and Concerns, Government Policies and Regulations, Corporate Social Responsibility, Customer Pressure, Supply Chain Practices, Competition, Perceptions of product quality, and Cost Considerations were identified from the thorough literature review. Hence, these factors were employed to conduct the study, and sample SMEs were requested to select the most relevant three factors out of these 08 factors that affect adopting GP practices.

Methodology

This study was conducted as a quantitative survey study. Since the majority of SMEs are operated within the western province, 510 SMEs located in the western province of Sri Lanka were selected employing the convenient sampling method. Further, the sample encompasses 324 manufacturing firms and 186 service firms. An email questionnaire was used for the data collection and respondents were requested to select the first, second, and third reasons for adopting green purchasing practices from the given factors/reasons through the questionnaire. The gathered data was analyzed quantitatively using mathematical tools.

Interpretation of results and findings

Findings confirmed that regulations act as the major factor for adopting green purchasing practices, followed by "environmental awareness", and "competition". Further, after these three factors, results indicated, that the perception of product quality, customer pressure, corporate social responsibility, and cost consideration respectively influenced to adoption of green purchasing practices among SMEs. Moreover, findings confirmed that "environmental awareness and concerns" has occupied the second affected factor for embracing GP practices by SMEs. Although the environmental awareness of the business sector in emerging economies is poor, present results confirmed the higher level of environmental consciousness of SMEs in Sri Lanka. However, in the Sri Lankan context, this situation may be the consequence of continuous awareness programs on environmental conservation conducted by

both the government and non-government organizations. Even though numerous research findings (Eltayeb & Zailani, 2010; Lin, 2007; Ramakrishnan et al., 2015) identified "customer pressure" as a major factor affecting GP practices, according to findings of the current study, it is not included in the first three factors prioritized by the Sample SMEs.

Keywords: Government policies and regulations, Green purchasing behavior, Quantitative survey, Small and medium scale enterprises, Western province

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Management Accounting and Control in Ethnic Minority Business: The SST analysis of UK Curry Houses

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Introduction

The paper contributes to the accounting literature by revealing the MAC practices adopted in a relatively under-researched multi-cultural and immigrant labour-bound study context, i.e., ethnic minority business. There has been considerable interest among accounting researchers in whether ethnic culture and values produce distinctive management accounting practices and control (Ansari & Bell, 1991; Hauriasi, Van-Peursem, & Davey, 2016; Efferin & Hopper, 2007). This study therefore aims to explore this ethnic minority owners' context, conduct, and overall agency influence in MAC practices at Curry Houses, UK.

Objectives and Conceptual Framework:

The paper draws on Stones' (2005) Strong Structuration Theory (SST) framework to explore the Management Accounting and Control (MAC) practices in the UK curry houses.

Methodology: The study followed the principles of qualitative research traditions and adopted a multiple case study approach (Yin, 2003, 2009) for data collection. The case study combined primary and secondary data sources, including interviews and observations with restaurant owners, managers, chefs, and staff.

Interpretation of result and findings: The study's findings are significant, revealing that despite being a disadvantaged ethnic minority, the Bengali community from Bangladesh owns a majority of the Curry Houses in the UK, commonly known as Indian restaurants. The direct influence of Bengali and Muslim cultural values in shaping their MAC practices is a noteworthy discovery. The findings highlight the deliberate absence of rational accounting practices and the prevalence of informal cultural controls over the immigrant labour force, both shaped by Bengali and Muslim cultural values, as two key factors ingrained in these Curry House managements.

This study demonstrates that accounting is an unstructured operational tool at the Curry House that functions as a non-deterministic control and consequences. This kind of management accounting practice fails to capture the accurate picture of the Curry business, as it does not relate sales revenue to total food, labour, and other overhead costs. The study findings suggest that tracing the relationship between management accounting and control for decision-making in the Curry House case is not straightforward.

Theoretically, the ethnic minority business owners' agential duality within the dualism and position practice relationships with other agents in the context (both internal and external) are significantly predisposed in developing these culturally bound MAC practices in the Curry Houses. The SST framework in the study delivered tremendous flexibility in analysing all the related agents and their position-practice relationships with other agents in the CH context, i.e., the UK government, HMRC, local authority, community, customers and staff. Curry House owners' habitus has created these critical distances that ultimately affect overall MAC practice and outcomes. In the Curry House case, the absence of formal management accounting and control practice was replaced by Bengali-Muslim cultural beliefs and practices, which are non-corresponding, sometimes even unfamiliar and conflicting with the UK context.

Keywords: Agential duality, Ethnic Minority Business, Management accounting and control (MAC), Position practice relations, Strong structuration theory (SST).

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A Multidimensional Analysis of Integrated Reporting Practice and its impacts on Firms' Valuation: Evidence from sub-Saharan Africa

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Abstract

A new corporate reporting system called Integrated Reporting (IR) seeks to depict how a company creates value in the short, medium, and long terms. Information connectivity distinguishes IR from other disclosure methods as it emphasises on non-financial components, such as social, environmental and governance factors. Integrated reporting has recently attracted more academic and professional interest. The quality of the reports is still a crucial component of IR being debated because it influences funding and investment decisions.

Despite the fact that many studies look at IR, very few focus on quality and its drivers. This study aims to examine the effects of culture, ethics, and audit quality, which are independent variables, on IR and the impact it has on funding and investment decisions. The cultural aspect considers the six Hofstede dimensions of power distance, individualism, masculinity, indulgence, long-term orientation, and short-term orientation. The ethical standpoint aims to look at the ethical and accountability assurance on IR from a country-specific level compared that to the sub-Saharan African level. The audit quality takes into account the overall audit quality of a country. Therefore, the study's research design will be quantitative in nature. It will make use of secondary data which will be derived from the firms' annual integrated report. The population comprises of all the listed sub-Saharan African (SSA) companies. The sample will consist of all the firms but subject to being listed for at least five continuous years. Data will be collected from Bloomberg and the World Economic Forum database and will be analysed using multiple regression and econometric models.

This study intends to contribute to the relevant literature by analysing the above-mentioned factors that influences the quality of corporate reports. This study will investigate culture, ethics, and audit quality on IR practices and how it impacts investment and funding decisions in SSA countries.

Keywords: Audit quality; Culture; Ethics; Integrated Reporting; Investment and Funding

Optimizing Revenue in Corn Starch Production: A 3-Corn Variant Input Model for Indian Industry

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Introduction

India is the world's second-largest agricultural producer, generating $448.2 billion in agricultural output in 2021. Of that total, $422.5 billion was attributed to food production (FAO, 2021). However, India is also one of the poorest countries on a per-capita basis and it's agricultural sector faces a complex market landscape characterized by fluctuating demand, price volatility, limited access to credit and technology, inadequate infrastructure, and the need to balance productivity with environmental sustainability. It also contends with social factors such as labor availability, skill gaps, and cultural practices. Optimizing production facilities in the sector is crucial for achieving sustainable growth and meeting increasing demand for food while still addressing market and social conditions.

This study focuses on optimizing revenue in corn starch production using a 3-corn variant input model tailored for the Indian industry. Corn is a vital crop grown widely across many Indian states, and starch is one of its most versatile by-products, with wide applications in food processing industries, textiles manufacturing units, and paper mills due to its unique and valuable properties.

Keywords: Corn starch production, price forecasting, revenue optimization, 3-corn variant model, and agricultural sustainability.

Objectives and Conceptual Framework

The framework integrates price forecasting with optimization models, focusing on maximizing net revenue from corn starch production. Objectives of this framework are:

1. Price Dynamics and Forecasting: Investigate the price trends of corn and its by-products, developing predictive models to anticipate future market conditions.

2. Optimization of Corn Processing: Determine the optimal mix of Industrial Dent Corn, Normal Corn, and High Amylose Corn that maximizes revenue from the production of

starch and its by-products.

3. Cost-Efficiency and Sustainability Impact: Assess the cost-effectiveness of using different corn varieties in starch production, considering both revenue potential, processing costs, and sustainability.

Methodology

Data Collection& Price Forecasting:

To optimize the corn starch production cycle, a multi-dimensional approach is required. This study analyzes market conditions, demand, pricing, and competition using quantitative and qualitative methods. The ARIMA model was employed to predict future prices of starch, germ, fiber, and gluten. The time series data underwent stationarity checks and differencing to ensure reliability. The best ARIMA model parameters were identified using AIC criteria, and future prices were forecasted for a 12-month period.

Optimization Model & Sensitivity Analysis:

Economic models, such as cost-benefit analysis and production function analysis, are then employed to evaluate production facilities' profitability and efficiency. Additional historical price data and estimated processing costs were incorporated for comprehensive analysis. Last, market research and case studies provide insight into consumer preferences, market trends, and the competitive landscape. To assess the robustness of the model, sensitivity analysis was performed by adjusting by-product prices by ±10%. This helped assess the impact of price fluctuations on the optimal mix and revenue.

Interpretation of Results and Findings

The ARIMA model effectively forecasted future prices, providing a foundation for revenue optimization. The forecasted prices indicated potential trends and market conditions that could impact revenue. The Optimization model showed that a combination of specific variety of corn can be used for maximizing revenue and yields. For example, Industrial Dent Corn, given its current market conditions and processing efficiency, is the most profitable variety for maximized starch production. Even with a ±10% adjustment in by-product prices, Industrial Dent Corn remained the optimal choice, demonstrating the robustness of the model. This consistency underscores the reliability of focusing on Industrial Dent Corn for maximizing corn starch yield.

Conclusion

This project, a collaboration with Prof. Rajasekera, Prof. Olver, and Blue Ocean Biotech Pvt. Ltd., India, seeks to improve our understanding of the intersection of ecological models and digital agriculture. The findings provide valuable insights for policymakers, agricultural practitioners, and industry stakeholders. By leveraging these insights,

decision-makers can develop targeted interventions, formulate appropriate policies, and implement sustainable practices to enhance productivity, profitability, and social well-being in the sector. The optimized corn starch production facility model developed in this research serves as a guide for agricultural entrepreneurs and existing plant owners to improve operational efficiency, reduce costs, and ensure environmental sustainability. This multifaceted approach can be further expanded to other production facilities across the agriculture sector of India.

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Budgeting In Different University Settings: The Case of Indonesia

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Abstract

Kerr & Kerr (2001) describes the excellence of being an autonomous university. Nevertheless, decreasing external supervision reduces the divergence of opinion and may increase the opportunistic action of certain parties. Autonomy is essential for universities to be able to make decisions that are in the best interest of their students, faculty, and staff. This autonomy allows universities to develop and implement policies that meet the needs of their students and faculty and create a learning environment that is conducive to success. However, Providing autonomy will enhance the quality of education but requires significant costs (Hartley and Ruby, 2021). In Indonesia, public university with autonomy known as PTN-BH. The government reduces the portion of education maintenance funding to public universities with PTN-BH status. Reducing government subsidies should force the university to be more efficient and efficient in carrying out its operational activities.

One of the autonomies given to the PTN-BH university is the search for funding and financial management. Public universities enjoy a strong reputation and do not charge tuition fees, making them the evident preference for most students (Hossain et al., 2018). Public university autonomy will be a differentiator of organizational diversity compared to private universities based on Islam.

Compare to public university, the practical dynamics between private universities and the yayasan that govern them can be more intricate than their formal relationship suggests (Urbanek, 2020). This complexity arises due to the potential disparities in interests and priorities that may exist between university rectors, managers, and officials within the controlling foundation. This divergence of perspectives and agendas can lead to tensions and challenges in decision-making processes and the strategic direction of the institution.

Organizations encounter institutional complexity when they grapple with the influence of two or more conflicting institutional logics (Greenwood et al., 2011). Academia offers various descriptors for these competing logics (Kallio et al., 2022), such as academic logic versus

market logic (Juusola et al., 2015). For instance, while university rectors and managers may be driven by academic and operational considerations that aim to enhance the institution's reputation and quality of education, foundation officials may have broader philanthropic or administrative goals in mind. These differing viewpoints can result in conflicts over resource allocation, strategic planning, and overall governance.

The diversity within the university's leadership and workforce can shape budgetary decisions and outcomes by molding organizational culture, influencing decision-making processes, and guiding strategies for resource allocation. However, coercive controls exert greater influence than enabling controls, primarily because dominant individuals wield power and influence resulting from ongoing conflicts among those pursuing varied interests and strategic initiatives (Seneviratne and Hoque, 2023). Both organizational and individual diversity could also have an impact on budgeting decision and results.

Parmenter (2003) explains the existence of ego-centric problems arising in the preparation of budgets that will interfere with the development of the organization in the long term. Ego-centrism can also emerge at the individual level, which forms communities based on standards, such as idealism and culture. This thesis assumes that each person carries an ego-centric based culture that will form a community that will fight for himself or his group. At a higher level, it will be a characteristic feature of an organization.

Based on the explanation above, I propose research question, "What are the main factors influencing the budgeting process at two different universities, and how does organizational and personal diversity influence budgeting decisions and outcomes?".

To answer the research question, this theses will apply semi structured interview. All participants, from both Universitas Gadjah Mada and Universitas Islam Indonesia, have undergone the budgeting process at least once. Participants can come from members of the budgeting team, from the level of study programs to the university level, such as deans, department heads, program heads, and faculty members who have previously been part of the budgeting team.

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Theme: Innovation and Technology

Institutions, Innovation and Economic Growth: Do Institutions Moderate the Effect of Innovation on Growth?

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This research explores the impact of governance institutions on economic growth in countries from 1980 to 2022. The paper highlights the relationship between governance institutions, innovation, and economic growth in various countries. Using patent per resident, and research and development expenditure as measures of innovation, this research provides insight into the relationship between the measures of innovation, the six governance indicators, and economic growth measured by GDP per capita. Additionally, using mediation analysis shows how governance institutions indirectly affect economic growth through innovation. The results show that institutional quality and patent application significantly impact economic growth. The results show that institutions have a statistically significant mediation effect on patent applications, and on overall economic growth. study concludes that policymakers should enhance political institutions and innovation measures to achieve economic growth and sustainable development goals.

Keywords: Governance Institutions, Economic Growth, Innovation, Sustainable Development Goal

Exploring the Potential: Can Japan and South Asia Forge a Geopolitical Alliance in the 21ˢᵗ Century, Paving the Way for a Sustainable Future?

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South Asia and the Indian Ocean have emerged as vitally essential regions in Asian development. It is expected that Asia's rapid and sustained economic advancement and evolution over the recent decades will enable Asia to regain its predominant position in economics, politics, and commerce in the 21st century, showcasing its historical resilience and adaptability. The 21st century is frequently portrayed currently as the "Asian Century" in the same manner as the 20th and 19th centuries were described as the "American Century" and the "British Century", respectively. According to the Asian Development Bank growth scenario, Asia may account for 52% of world income in 2050 (ADB, 2011).

In the 21ˢᵗ century, global geopolitics is changing rapidly, significantly impacting the global economy and the international order. Geopolitical history says that in 12 out of 16 past episodes, a rising power has threatened an existing ruling power. China is an increasing power threatening US dominance, showing historical patterns of fighting for order (Allison, 2017). China, India, and Japan are the biggest economies in Asia. Whoever dominates the Indian Ocean may govern the global economy by controlling oil transport, accounting for nearly 90% of global trade. The Indian Ocean in the 21st century is vital for Asian development, and therefore, many countries in the region and outside are interested in its security (Hall, 1996; Kaplan, 2011). Given the strategic prominence of the Indian Ocean, regional powers such as

China, India, and Japan, and their rising naval power, America must establish links with Indian Ocean Countries if it wants to have geopolitical influence (Kaplan, 2011). The gravity and responsibility of these roles cannot be understated, and Japan's role in ensuring peace and security in the Indian Ocean is of utmost importance.

China, Japan, and the USA are leaders, among many other countries interested in the Indian Ocean or South Asia. The Quadrilateral Security Dialogue, commonly known as the QUAD, includes countries such as Australia, India, Japan, and the USA, attempting to counterbalance Chinese influence in the Indian Ocean. Given this increasing geopolitical importance, there is potential for both conflict and cooperation in South Asia. Given Japan's aspiration, its role in the QUAD and former Japanese Prime Minister Shinsho Abe's introduction of the Free and Open Indo-Pacific affirms Japan's interest in the Indian Ocean Rim Countries (IOR), specifically South Asia (Jain, 1997; Maniyar, 2020). Japan's links with Indian Ocean countries are vital for its prosperity as 90% of oil imports from oil-producing countries of the Arabian Gulf transport through the Indian Ocean (Maniyar, 2020).

Meanwhile, sustainability has emerged as a vital issue in geopolitics (Kononenko & Noonan, 2022). However, Sachs (2023) argues that our global politics have not considered sustainability challenges. India is one of the biggest economies and most populous democracies, and it has the geopolitical capability to emerge as a global leader in decarbonization. Japan also plays a vital role in international environmental issues, and it should attempt to create a geopolitical alliance that can deal not only with maritime security and free and open trade but also with environmental problems in South Asia. Our research explored Japan's potential to forge a sustainable alliance in this evolving geopolitical landscape and power rivalry in South Asia. We also examined the strategic importance of the Indian Ocean and Japan's role in safeguarding peace and security, stability and sustainability, and well-being in South Asia.

Despite many activities by power rivalries operating in South Asia, we found that they are involved mainly in infrastructure projects and trade and maritime security issues and less in environmental sustainability-related projects. The use of energy has become a driving force of growth and development. It has created interdependence and also geopolitical tension in the world. South Asia is no exception to this global trend. For Asia to mark the 21st century as the Asian Century in the future annals of economic history, the South Asian nations may have to address diverse, compelling, and overwhelming issues and challenges. These would include,

among others, sustainable management of new geopolitics, effective global governance, promotion of inclusive growth, poverty, and inequality, the realization of Sustainable Development Goals (SDGs), and environmental and climate change. The urgency and significance of these issues cannot be overstated, and their resolution is crucial for the future of South Asia.

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Effects of Internet Access on Tuberculosis Incidence: Evidence from Cross-country Panel Data

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Tuberculosis (TB) is the top cause of death due to a single infectious agent globally. While several research relating to digital epidemiology and telemedicine have identified positive outcomes of e-health in curbing infectious diseases, few so far has investigated the relationship between internet access and TB. This research examines the effect of internet access on the TB incidence among various countries. The research data is comprised of a cross-country panel from 179 countries, within the Web 2.0 period, 2006 to 2022. Web 2.0 refers to the second phase of the internet's evolution where users can both read and write Web contents. Internet penetration refers to individuals who have accessed the Internet in the past three months irrespective of access location. TB incidence, which is expressed as the rate per 100,000 individuals, is the estimated annual number of new and relapse TB cases. This includes all forms of TB.

Like most technologies, there are disparities on the access, adoption and utilization of internet in the health sector. This research further disaggregates internet penetration into two modes, namely fixed broadband internet penetration and mobile phone subscriptions, as these are the most common modes of access among the regions.

TB control and prevention measures vary by country. Geographical factors such as temperature and altitude differences that affect TB epidemiology for every country is held constant through country fixed-effect. Since this study deals with infectious disease rates, TB incidence of the previous year likely affects that of the present year. These were addressed by

using Arellano-Bond two-step GMM. Lastly, in order to further investigate the multiplicative effect of internet penetration with TB incidence, fixed-effect Poisson regression was used given that the dependent variable, TB incidence, satisfies the assumptions for a Poisson distribution.

This study establishes a direct causal link between internet penetration and incidence of tuberculosis. It provides evidences on the positive effects of internet access in curbing TB incidence; geographical variations on the effects of internet access to TB incidence; and log multiplicative effects of the various modes of internet access on reducing TB incidence. The GMM model reveals that an increase in the percentage of internet penetration would likely reduce the TB incidence by 9.27. Results of the fixed-effect Poisson regression predicts that for every additional percentage internet penetration, fixed broadband internet subscription and mobile phone subscription in a country located within the African continent, its log TB incidence decreases by 0.149, 0.192 and 0.214, respectively. These impacts of internet access modes are lower in other continents but remain significant throughout all modes of access.

Keywords: fixed broadband internet subscription, internet access, internet penetration, mobile phone subscription, tuberculosis

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Barriers to Adoption of National Education Management Information System in Educational Institutions - Case Study of an Official Development Assistance Project in Sri Lanka

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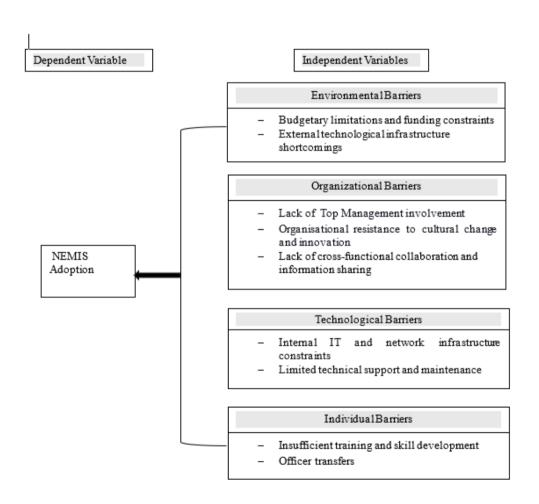International Christian University, Tokyo

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Introduction

Ministry of Education (MoE) in Sri Lanka is the primary regulatory body in charge of the country's free education system(MoE, 2020, a). MoE has implemented many Information Management Systems (IMS) to digitise the management process(Kumara, 2018). Although the information systems have been implemented, functionality and adaptation have been significant issues for the Ministry of Education, Sri Lanka. In 2017, the Ministry of Education Sri Lanka introduced a National Education Management Information System (NEMIS), an online web portal that automates the entire end-to-end management of education data and related administration operations (MoE, 2020,b). Furthermore, it enables stakeholders in the education sector to use educational information in a meaningful format to improve the decision-making process of the Sri Lankan education system(MoE, 2020,b). Ministry of Education, Sri Lanka is implementing the Secondary Education Sector Improvement Program (SESIP) with the financial and technical support of the Asian Development Bank (ADB) to improve the quality of education (ADB, 2020). This program supports the development of NEMIS. However, currently, the sustainability of the NEMIS is considered one of the most crucial challenges in Sri Lanka's education sector. Also, limited conceptual and empirical research has been conducted to investigate the elements that challenge or hinder its successful implementation.

Objective & Conceptual Framework

This study's objective was to explore the barriers that influence the successful adoption of NEMIS in educational institutions in Sri Lanka.

Based on the existing theories, the TOE framework is suitable for studying the barriers to adopting NEMIS in Sri Lankan Educational Institutions. Further, it is beneficial to incorporate the TOE framework with the individual context could provide a more comprehensive understanding of the factors influencing NEMIS adoption, considering both the macro-level organizational and environmental factors and the micro-level individual factors. The existing literature highlights several barriers to successfully adopting NEMIS in Sri Lanka, categorising them into four dimensions - technological, organisational, environmental, and individual barriers. The conceptual framework for this research is depicted in Figure 1.

Figure 1: Conceptual Framework

Source: Author's compilation

Methodology

This study investigates the statistically significant effect of nine barriers on the adoption of National Education Management Information System (NEMIS), using primary data collec

through a questionnaire-based survey of 334 participants who are working as NEMIS responsible officers in the Western Province of Sri Lanka. The collected data were analysed using the R software. Multiple regression analysis was used to identify significant barriers that negatively affect the adoption of NEMIS among educational institutions in Sri Lanka. The regression analysis's validity and accuracy were ensured by testing assumptions such as correlation, normality, linearity, homoscedasticity, and multicollinearity.

Interpretation of Results & Findings

The regression model, with the Multiple R-squared value of 0.6933, shows that the study's identified barriers account for approximately 69.33 percent of the variance in the dependent variable, the Adoption of NEMIS (AN) in Sri Lankan educational institutions, which is explained by the independent variables, adoption barriers. The Durbin-Watson value of 1.7006 indicates that the model has a high level of predictive power, making it useful for understanding the factors that influence the adoption of NEMIS. Results indicate that budgetary limitations and funding constraints, external technological infrastructure shortcomings, organisational resistance to cultural change and innovation, lack of cross-functional collaboration and information sharing, internal IT and network infrastructure constraints, and officer transfers have a statistically significant negative effect on NEMIS adoption (p<0.05).

The importance of the study is that its findings fill a gap in the literature through quantitative analysis of the barriers to the adoption of the NEMIS. These findings will aid in developing more effective government policies and planning decisions related to successfully adopting education information systems in developing countries.

Keywords: Adoption, Barriers, National Education Management Information System, Official Development Assistance, Sri Lankan Education System

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Systems Thinking, Individual Performance, and Openness Propensity - Global and Uzbekistan Profile

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Systems Thinking is considered a practical approach for making decisions in complex systems. This study explores the relationship of Systems Thinking with Individual performance, openness, and people's demographic characteristics (gender, age, work experience, occupation, and geographical origin). It mainly studied the survey responses of International students at the International University of Japan, including alums and employees of an engine production plant in Uzbekistan.

The study aims to enhance performance in organizations by implementing research results and contributing to the development of Production operations in Uzbekistan.

For these purposes, survey data was analyzed, and the responses of 294 international students and alums (graduating between 2018 and 2024 years) from IUJ and 87 responses from the UMPT engine plant in Uzbekistan were analyzed. The quantitative research methodology utilizes an electronic questionnaire survey system to collect data. A questionnaire survey includes 20 (6 Likert-scale type) questions based on Systems Thinking Scale (STS) developed by Moore, Dolansky, Singh, Palmieri, and Alemi (2010), 18 (6 Likert-scale type) questions from Individual work performance questionnaire Ramos-Villagrasa (2019), 12 (6 Likert-scale type) openness measuring questions from The Big Five Inventory–2 (BFI-2) (Oliver et al. Soto, 2015) and eight demographic questions.

The research results show a statistically significant relationship between Systems Thinking and individual work performance at IUJ and UMPT. Studying the relationship of Systems Thinking with the demographic profile of people, there is also a statistically significant difference in Systems Thinking among Southern Asian students and alums compared to Central Asian, Eastern Asian, and South-Eastern Asian students and alums. The mean Systems Thinking total

score for Southern Asia was higher (M=92.38) compared to Central Asia (M=80.23), Eastern Asia (M=80.95), and South-Eastern Asia (M=83.57).

Enhancing Human Resource Management Efficiency through Multi-Document Hierarchical Automatic Text Summarization

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Abstract

This paper explores the potential of multi-document hierarchical automatic summarization (MDHAS) techniques to improve human resource management (HRM) performance. In the fast-paced human resource management (HRM) landscape, effectively managing and utilizing massive volumes of text data poses significant challenges. Based on a thorough review of existing literature and case studies, this study examines the application of MDHAS in various aspects of HRM, including recruitment, training, policy management, performance appraisals, and employee engagement surveys. By combining multiple documents into structured summaries, MDHAS offers HR professionals simplified access to critical information, making it easier to make informed decisions and allocate scarce resources. In addition, the paper discusses technical aspects and strategies for implementing MDHAS in HRM work processes. The benefits of predictive summarization for improving decision making, information retrieval, and communication in human resource departments are also emphasized. Ultimately, this study aims to contribute to the development of human resource management practice by harnessing the power of automated summarization technology.

Introduction

Hierarchical automatic text summarization from multiple documents in human resource management processes involves compressing multiple documents related to human resource

management into a concise summary while retaining important information. This process typically involves grouping documents into subcollections, extracting key sentences, and organizing information hierarchically to provide a structured overview (Yang and Wang, 2008). Multi-document summarization, a key aspect of this task, focuses on selecting important sentences from various documents to create a comprehensive summary (Patel, 2017). They have been found to improve natural language processing tasks such as automatic text summarization, which may be useful in summarizing HRM-related content (Lamsiyah et al., 2020).

Automatic text summarization systems play a critical role in facilitating information retrieval and decision-making processes by extracting meaningful information from large volumes of data, such as biomedical repositories, to support complex clinical decisions (Afzal et al., 2020). It can reduce reading time, assist in document selection, improve indexing efficiency, and provide less biased summaries compared to human-written summaries (Hailu et al., 2020). Additionally, automatic text summarization helps efficiently compress text documents, allowing users to quickly access important information. (Ontum and Chan, 2021).

In the context of human resource management processes, where large amounts of text data are typically used, the use of automatic text summarization techniques can simplify information processing and decision making. Using techniques such as cluster-based proposal ranking and hierarchical summarization, organizations can extract key management information. effectively from various HRM documents (Meena & Gopalani, 2015). Moreover, the integration of advanced models such as abstractive text summarization using deep neural networks can further improve the summarization process by generating concise and informative summaries from long texts (Rahman & Siddiqui, 2019).

Theoretical basis of predictive summarization

This paper proposes a new approach to automatic text summarization in HRM activities. This will further improve the efficiency of decision making. Automatic predictive summarization involves providing possible outcomes such as employee productivity and employee retention rates. It is necessary to improve the proposed system for assessing personal qualities, including predicting the creativity of applicants based on input data.

Predictive automatic text summarization can be used in career guidance activities for young people. They can receive from the system the right recommendations for choosing future

professions based on their personal qualities, hard and soft skills.

Conclusion

In conclusion, the application of automatic text summarization techniques in HR processes can significantly improve the efficiency of information retrieval, decision making, and overall document management within organizations. Leveraging advances in natural language processing and machine learning, HR professionals can benefit from automated tools that accurately and efficiently summarize complex HRM-related content.

Keywords: abstractive text summarization, extractive text summarization, human resources management, multi-document hierarchical automatic summarization, predictive summarization,

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Enhanced Cyberbullying Identification on Social Media Using Emojis and Text

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In the modern world with the increasing social media usage, cyberbullying in social media has become a serious problem that should be addressed immediately. Since cyberbullying always leaves digital footprints, it has attracted researchers over time. Even though there exists a tremendous amount of work, they mostly focus only on text-based or image-based harassment. Nevertheless, the meaning of a sentence with text can be entirely toppled with a single emoticon or an emoji. Due to this reason, studies have been hampered and the research community has yet to investigate harassment based on emojis' influence. Also, the consideration of emojis in sentiment analysis may provide a better understanding of cyberbullying scenarios and help in reducing non-textual harassment as a whole. This study attempts to include emojis in sentiment analysis and thereby classifies cyberbullying replies by considering emojis along with the text. To the best of our knowledge, this is the first study that is focusing on emojis in cyberbullying. This study mainly focuses on data acquisition from the popular microblogging platform Twitter. As a contribution to this study, a labeled dataset is created. After cleaning and labeling the data set contains 7725 labeled data points. Labeling a sentence as cyberbullying is based on various types directed towards an individual or a group of people, such as a band, a sports team, a political party, religion, nation, gender, etc. Random upsampling has been applied to overcome the data imbalance. Then, text and emoji vectorization and classification are performed. The classifications are done by using three models namely, a Recurrent Neural Network (RNN), a Long Short Term Memory Recurrent Neural Network (RNN) and a Support Vector Machine (SVM) model. Among all three models, the LSTM model gives 0.7767 and 0.8001 accuracy and F1 scores respectively with the upsampled dataset. The F1 score for the RNN model was 0.7922 and the accuracy for the model was 0.7670. The F1 score and the accuracy for the SVM model are 0.7935 and 0.7975 respectively. The best result was obtained using the LSTM model. The vectorization of emojis plays a critical role in this study and the vectorization is done considering the standard

description of emojis. But when it comes to cyberspace, especially social media the same emoji is used for different meanings and different slang interpretations might have hindered obtaining higher accuracies. The accuracy and F1 score are expected to be enhanced in the future by improving the emoji database and looking out for improved vectorization techniques. Future works include improving the vectorization by vectorizing single emojis and combinations of emojis using an unsupervised approach.

Towards Synergistic Noise Reduction in Fetal Phonocardiograms Through Entropy-Guided Preprocessing and Sparse Autoencoders

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Fetal phonocardiograms (fPCGs) are a non-invasive, cost-effective method of assessing fetal heart sounds, facilitating the evaluation of fetal cardiac functionality; however, fPCG signals frequently suffer from corruption due to noise interference. Current literature lacks consideration of realistic noise scenarios in fPCGs therefore, the primary aim of this study is to employ sparse autoencoders for noise reduction in phonocardiogram (PCG) signals, representing a step towards enhancing the fidelity of fPCGs and realistic noise modeling. Our motivation to employ sparse autoencoders was based on their ability to effectively extract interesting features that are robust for de-noising tasks. An entropy-based preprocessing technique was introduced to improve the sparse autoencoder's effectiveness in reducing PCG signal noise. The original dataset considered in the study contains five signal categories: four pathological and one neutral, out of which only the neutral subset with clean heart sound signals is selected for the study. Then realistic noise is introduced to it to simulate a noisy PCG signal. For this purpose, a separate noise dataset was compiled focusing on five noise categories that have been selected based on their likelihood to appear as unwanted noise in PCG signals. Noise categories included burping and eructation, chewing and mastication, sneezing and respiratory sounds, coughing and finger snapping. For each noise category, a total of 200 audio signals are selected due to the constraint of the number of signals in the clean heart sound dataset, which contains only 200 signals. In cases where a noise category comprises more than 200 audio signals, random down sampling is employed to select 200 signals. Conversely, for noise categories with fewer than 200 audio signals, random up sampling is employed to create 200 signals. The audio signals containing noise were initially captured at a sampling rate of 44.1kHz. In order to synchronize these noise signals with the

sampling rate of the clean heart signals, they are down sampled to 8kHz and subjected to uniform length adjustment through either truncation or zero-padding to standardize the duration of the noise audio signals to match that of the clean heart sound signals. Length adjusted audio signals are iteratively added to combine various noise types with the clean heart sounds to form the noisy PCG dataset. Two sparse autoencoders are trained and evaluated for their ability to reduce noise in the noisy PCG dataset. The first sparse autoencoder is trained with the noise-added signal as the input and the noiseless, original signal as the target variable. With the second model, the noise-added signal is preprocessed using the proposed entropy-guided preprocessing approach and fed into the sparse autoencoder, with the target variable being the noiseless original signal. Visual inspection of the results obtained showed, sparse autoencoder alone could not effectively reduce high-frequency, low-amplitude noise. Conversely, the sparse autoencoder trained with the preprocessing algorithm was capable of significantly reducing high-frequency, low-amplitude noise. The de-noising performance of the sparse autoencoder alone yielded an average Pearson Correlation Coefficient (PCC) of 0.832, an average Dynamic Time Warping (DTW) distance of 823 and Spectral Coherence (SC) of 0.106. Incorporating the preprocessing algorithm with the sparse autoencoder improved de-noising performance, resulting in an average PCC of 0.877 and a lower average DTW distance of 788. This indicated enhanced time domain similarity and waveform alignment between the de-noised and ground truth signals. However, the average SC remained around 0.100. Overall, the sparse autoencoder with the preprocessing algorithm could achieve a closer resemblance to the ground truth signals. Future work of this study includes building a noise model that generalizes noise found in fPCGs and utilization of the algorithm in a low-cost fetal heart rate detection system with introducing the mothers heart rates into it.

Keywords: Entropy, Noise, Phonocardiograms, Preprocessing, Sparse Autoencoder

Compilation of Glycaemic Index Data for Commonly Consumed Sri Lankan Foods: A Systematic Approach

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Introduction

The rising prevalence of diabetes and other chronic diseases has encouraged more research to prevent them from worsening (Caballero et al., 2020 and Rowley et al., 2017). As a result, researchers pay close attention to the dietary intervention approaches, which can provide prevention and management of non-communicable diseases (Browne et al., 2019). The glycaemic index (GI) and glycaemic load (GL) are an appropriate nutritional concept that allows for greater insight into the relationship between physiological effects on carbohydrate (CHO)-rich diet and human health (Eleazu, 2016). More recently, evidence has been accumulating that a low-GI diet protects against the development of obesity, diabetes, cardiovascular disease, and cancers (Chiavaroli et al., 2016). Furthermore, appropriate written-based or electronic versions of tables of GI and/or GL compiled from the scientific literature are instrumental in improving the quality of research examining the relationship between the dietary glycaemic effect and the improvement of long-term health. Many developed countries maintain extensive lists of the GI and GL values of foods as tables or E-database to guide consumers to consume low-GI, CHO-rich foods for weight control and good health.

Objectives & Conceptual Framework

Systematic tabulation of GI and GL tables developed from the literature is limited in many developing nations. It is essential for developing nations including Sri Lanka because they have a unique cuisine style comprised with have several locally produced starchy foods. To

bridge this research gap, the objective of this study is to systematically tabulate the GI and GL data from the published research articles and thereby generate a database management software for the glycaemic response of frequently consumed Sri Lankan Foods. The specific objectives of the study are to conduct a comprehensive literature review to systematically tabulate the GI and GL data from the published research articles, design and develop user-friendly database management software regarding GI and associated information, mainly targeting Sri Lankan consumers and researchers, design of the GI calculator which is associated with database management software, mainly targeting researchers and highlight the future research that is needed to conduct to provide a comprehensive tabulation of commonly consumed Sri Lankan foods.

Methodology

Initially, research articles were selected by conducting a Google Scholar and PubMed online search. The search was limited to human studies published in English that followed a standardized methodology. Both full paper publications, extended abstracts, and abstracts were considered in this study and collected as much locally published *in vivo* research findings regarding GI and GL of commonly consumed Sri Lankan foods. Next, research paper selection was done for the database development. After selecting research papers, the information was tabulated in a separate Google Excel sheet. Once the tabulation was completed, the data were carefully examined and subdivided again into the 12 major food categories as rice, sweeteners, bakery products, yams and tubers, tropical fruits, legumes, porridge, processed starchy-based foods and mixed main meals. This e-based GI software has been developed using one of the most common SDLC models called Prototype.

Interpretation of Results & Findings

This methodical database summarizes almost 208 GI data entries for local foods from verified published sources. This E-database further includes custom-built software for calculating GI values and provides an overall summary of the GI and/or GL data along with its information of the GI study (i.e., reference food, number of subjects, cooking method, fasting hour, available CHO of the food). This project covers 12 food categories such as common rice varieties, traditional rice varieties, basmati rice varieties, rice-based mixed diet, processed starchy based foods, dairy products, porridges, legumes, yams and tubers, sweeteners, bakery

products, and Sri Lankan tropical fruits. Different food categories including rice, and starchy foods were available in both high and low GI versions whereas porridges and fruits were found to have a low GI. This study further identified that several food categories merit a future investigation of the postprandial glycaemic response such as traditional sweets, underutilized fruits, starchy vegetables and underutilized yams and legumes, etc. In conclusion, the E-database management system based on GI and GL of commonly consumed Sri Lankan foods provides user-friendly platform to researchers and clinical practice but also promotes healthy food selection among the general population.

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Economic Evaluation of Hydrometallurgical Recycling Routes for Spent Li-ion Batteries.

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Introduction

The Li-ion battery (LiB) market is one of the fastest-growing industries today, driven by the high demand for electric vehicles (EVs). This surge in demand has increased the pressure on virgin raw materials required for LiB manufacturing. Furthermore, as these EVs reach their end of life (EoL), a significant number of spent batteries will accumulate in vehicle dismantling premises. Therefore, the proper handling of waste batteries is an urgent issue that needs immediate solutions. Effective management of waste batteries not only mitigates their hazardous nature but also addresses raw material shortages. Many raw materials essential for LiB manufacturing are categorized as critical or strategic raw materials (CRM and SRM) in Europe. Proper management of these waste types allows industries to mine the valuable materials present in these waste streams.

To address these challenges, researchers, industries, and projects are increasingly focusing on new technologies to extract materials from spent LiBs, moving away from traditional methods like pyrometallurgy. Consequently, novel hydrometallurgical routes have been developed at the laboratory scale to reduce the environmental impact of LiB recycling. However, the economic performance of these methods is often overlooked. The lack of economic analysis for such recycling routes creates uncertainties regarding their real-life applications. This research study aims to evaluate the economic performance of conceptualized recycling routes derived from literature analysis.

Keywords: Circular Economy, Economic evaluation, Life Cycle Costing, Li-ion battery recycling, Net Present Value
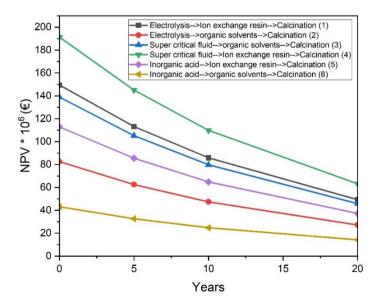
Methodology

A thorough literature review was conducted to evaluate the trending hydrometallurgical technologies used at the laboratory scale. Identified technologies were used to design six different hypothetical hydrometallurgical routes for recovering CRM from spent LiBs. The Life Cycle Costing (LCC) approach was then used to evaluate the economic performance of each route, taking 1 kg of spent NMC cathode materials as the functional unit. Assumptions were made to scale laboratory technologies to industrial levels, including high recyclability, higher efficiency, and lower waste treatment costs (Boulder County, 2024; Duarte Castro et al., 2022). After calculating the treatment cost for each process, the yearly cost was estimated assuming an industrial line processing 20 tons of cathode active materials per year. The Net Present Value (NPV) of each route was calculated for the next 5, 10, and 20 years, assuming the yearly cost equals the investment cost.

Results and discussion

Initial results indicate that the treatment cost of 1 kg of NMC cathode active materials varies between €2160 and €9570, depending on the technology used. Figure 1 shows the current investment cost for the yearly treatment facility of 2000 kg of cathode active materials, and the variation of future investment costs. A discount rate of 5.7%, which is the average rate for private sector investments in Europe, was applied for the evaluation (Andreas H. Hermelink & David de Jager, 2015).

Figure 1: NPV of investment costs under different technology routes for 5, 10, and 20 years.

As shown in Figure 1, route 6 is the most cost-effective over time. Route 4, which uses supercritical fluid-based leaching followed by ion exchange resins and calcination, has the highest initial cost. However, it also shows the greatest reduction in cost over time, though it remains the most expensive route throughout the studied period. All processes show a cost reduction over time due to the applied 5.7% discount rate. From an economic perspective, route 6, which involves inorganic acid-based leaching followed by organic solvent-based extraction and calcination, appears to be the best option. However, further analysis on the recovery rate, environmental performance, and scalability of the route would provide better insight into which process is optimal for recovering materials from spent LiBs.

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