Department of Economics and Statistics
Faculty of Arts, University of Peradeniya, Sri Lanka

9th Peradeniya International Economics Research Symposium

PIERS

PROCEEDINGS

Volume IX

1ST SEPTEMBER, 2023

CONFERENCE HALL, POSTGRADUATE INSTITUTE OF HUMANITIES AND SOCIAL SCIENCES (PGIHS), UNIVERSITY OF PERADENIYA, SRI LANKA

Joint Partner

Faculty of Economic Sciences and Business Administration
Transilvania University of Brasov, Romania

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The World Bank

PIERS 2023

PIERS - 2023

PROCEEDINGS

Volume IX

9TH PERADENIYA INTERNATIONAL ECONOMICS RESEARCH SYMPOSIUM (PIERS) – 2023

Jointly Organized by
Department of Economics and Statistics, Faculty of Arts
University of Peradeniya, Sri Lanka
and
Faculty of Economic Sciences and Business Administration
Transilvania University of Brasov, Romania

Supportive Partner
The World Bank

on
1st September 2023

at
Conference Hall
Postgraduate Institute of Humanities and Social Sciences (PGIHS)
University of Peradeniya
Sri Lanka

.

Transilvania University of Brasov

WORLD BANK GROUP

DEPARTMENT OF ECONOMICS AND STATISTICS
FACULTY OF ARTS, UNIVERSITY OF PERADENIYA
SRI LANKA

PROCEEDINGS OF THE PERADENIYA INTERNATIONAL ECONOMICS RESEARCH SYMPOSIUM (PIERS) – 2023

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Ms. J.D.H. Angel
Department of Economics and Statistics

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9TH PERADENIYA INTERNATIONAL ECONOMICS RESEARCH SYMPOSIUM - 2023

PIERS - 2023

PROCEEDINGS

Volume IX

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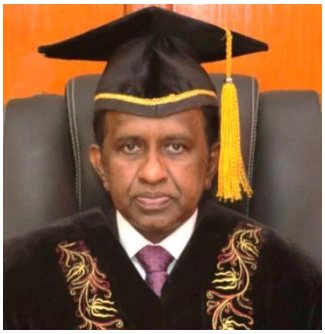

MESSAGE FROM THE VICE CHANCELLOR

University of Peradeniya

I am delighted to send this message for the 9th Peradeniya International Economics Research Symposium (PIERS) – 2023, organized by the Department of Economics and Statistics, Faculty of Arts, University of Peradeniya. This gathering marks a momentous opportunity for us to probe into the prevailing trends and advancements in economics, both on a national and international scale. The insights gathered here will undoubtedly play a key role in shaping our national policies.

As we take part in this event, I am filled with pride for the University of Peradeniya, an institution that has earned a well-deserved reputation for excellence in research and higher education in Sri Lanka. We have produced distinguished experts, each contributing significantly to various fields of study.

I firmly believe that this symposium serves as an invaluable platform for economists, specialists, and researchers alike to engage in meaningful discussions present their findings, and share newly acquired knowledge. The exchange of perspectives and ideas among our colleagues and students, both local and international, will foster growth and progress in economics.

As the Vice Chancellor of the University of Peradeniya, I take this moment to extend my heartfelt wishes for the 9th Peradeniya International Economics Research Symposium to succeed. May this event lead to fruitful discussions and a collaborative spirit that will contribute to the advancement of knowledge!

Professor M.D. Lamawansa
Vice-Chancellor
University of Peradeniya
Sri Lanka

MESSAGE FROM THE
DEPUTY VICE CHANCELLOR
University of Peradeniya

It is with great pleasure that I extend my message for the 9th Peradeniya International Economics Research Symposium. Despite the challenges posed by the economic crisis in Sri Lanka, I commend the organizing committee's efforts and dedication in making this event possible. It is indeed inspiring to observe the 2023 edition of this annual event, a prominent highlight on the Faculty of Arts, University of Peradeniya's calendar.

The University of Peradeniya's reputation for research quality and global impact is well-established. This symposium provides a valuable platform for both local and international researchers to present their findings and engage in enriching discussions, disseminating their knowledge.

I sincerely congratulate the Head of the Department of Economics and Statistics and the organizers for their exceptional work. Let us take this opportunity to learn from fruitful intellectual interactions and advance academic excellence.

Thank you.

Prof. W.M.T. Madhujith
Deputy Vice Chancellor
University of Peradeniya
Sri Lanka

MESSAGE FROM THE DEAN

Faculty of Arts

University of Peradeniya

I am pleased to extend my warmest congratulations on the occasion of the PIERS-2023, organized by the Department of Economics and Statistics, University of Peradeniya. The PIERS has consistently held a significant place as an annual event within the Faculty of Arts, offering a dynamic platform for both national and international scholars to present their research findings across diverse economics fields, with a particular focus on contemporary issues.

The influence of national and international experts in the organizing of this conference sets the stage for new partnerships, which leads to elevating the quality of research. I firmly believe that this symposium will yield invaluable insights with both national and global relevance, addressing some of the most pressing challenges faced by Sri Lanka.

With my sincerest wishes, may this PIERS-2023 be a resounding success, sparking new collaborations and inspiring innovative research.

Dr. E.M.P.C.S. Ekanayake
Dean
Faculty of Arts
University of Peradeniya

MESSAGE FROM THE DEAN

Faculty of Economic Sciences and Business Administration

Transilvania University of Brasov

As the Dean of the Faculty of Economic Sciences and Business Administration, Transilvania University of Brasov, it is a great pleasure for me to send a message on the occasion of the 9th Peradeniya International Economics Research Symposium (PIERS) – 2023 with the theme: "Economic Crisis in Sri Lanka: Causes, Consequences and the Way Forward".

In November 2018 I participated in the PIERS 2018 conference with a sizeable delegation from the Faculty of Economic Sciences and Business Administration of Transilvania University of Brasov. At this occasion, we met wonderful colleagues from Sri Lanka, India, Pakistan, USA and other countries, with whom we became friends. The same happened in the 2019 edition.

Also, we were extremely impressed by the way you organized PIERS-2018 and PIERS-2019, by the professionalism and the friendliness of your colleagues from the University of Peradeniya.

I am convinced that through our participation this year, as co-organizers, we will contribute to the strong development of the current partnership between our universities and faculties.

I wish good luck to the PIERS-2023 conference!

Prof. Gabriel Brătucu
Dean
Faculty of Economic Sciences and Business Administration
Transilvania University of Brasov
Romania

MESSAGE FROM THE HEAD

Department of Economics and Statistics

University of Peradeniya

It is with great pleasure and pride that I write this message for the 9th conference of the Peradeniya International Economic Research Symposium (PIERS – 2023) collaboratively organized by the Department of Economics and Statistics, University of Peradeniya, Sri Lanka and Transilvania University of Brasov in Romania under the theme of 'Economic Crisis in Sri Lanka: Causes, Consequences and the Way Forward' held on the 01st of September 2023. Being a pioneering and leading department in teaching Economics and conducting research, we are proud to say that the Department of Economics and Statistics at Peradeniya has regained its momentum during the post COVID-19 period to continue research activities and organize the annual PIERS conference successfully.

The theme of this year's conference is very much relevant to discuss the prevailing economic crisis situation in Sri Lanka and to find feasible solutions as well as choices available to face future challenges. Hence, the aim of PIERS 2023 is to provide a platform for researchers and scholars in Economics and other related disciplines to present their research findings and new knowledge to a wider audience to engage in intellectual discussions with eminent scholars, academics, peer researchers and students. I hope that the outcomes of this conference will effectively contribute towards finding remedial measures and to formulate economic development policies for exploring the way forward.

The success of a conference of this nature requires commitment, contribution and dedication of many partners at various levels both locally and internationally. I would like to express my sincere thanks and deep appreciation to our partners for their support and commitment shown to make this effort a success. While warmly welcoming the foreign and local delegates, I congratulate authors of abstracts, presenters and organizing committee members for their accomplishments and contribution to the conference.

I wish you every success with pleasant memories of PIERS 2023!

Prof. J.G. Sri Ranjith
Head
Department of Economics and Statistics
Faculty of Arts
University of Peradeniya

MESSAGE FROM THE CHAIRPERSON

Department of Economics and Statistics

University of Peradeniya

It is a great honour to convey this message of congratulations and appreciation to the 9th Peradeniya International Economics Research Symposium (PIERS 2023) organized by the Department of Economics and Statistics, Faculty of Arts, University of Peradeniya with the collaboration of the Faculty of Economic Sciences and Business Administration, Transilvania University of Brasov, Romania.

The PIERS is an important academic event at the University of Peradeniya that has provided a vital forum for local and foreign scholars to present and share their research findings in economics, and develop insights to shape policy to effectively confront the challenges faced by society.

The academic forum of the PIERS 2023 is arranged around the theme of "Economic Crisis in Sri Lanka: Causes, Consequences and the Way Forward" with panel discussions and technical sessions on related themes. The panel discussions and technical sessions will be facilitated by a number of eminent local and foreign scholars and researchers. The symposium, therefore, will provide an inspiring experience for young and emerging researchers to engage in a productive and flourishing academic dialogue on their research and findings.

I extend my heartfelt gratitude to all individuals whose unwavering dedication and invaluable contributions have been the key to making PIERS 2023 an overwhelming success. While warmly welcoming all of you to PIERS 2023, I hope this conference will provide an opportunity for scholars, researchers and development practitioners to engage in very meaningful dialogues and generate new insight that is useful for the advancement of humanity. I wish the conference to be a pleasant memory for everybody.

Snr. Prof. O.G. Dayaratna Banda
Chairperson, PIERS-2023
Department of Economics and Statistics
Faculty of Arts
University of Peradeniya

MESSAGE FROM THE COORDINATOR

Department of Economics and Statistics

University of Peradeniya

It is with great pleasure and enthusiasm that I write this message for the Proceedings of the 9th Peradeniya International Economics Research Symposium 2023. As the Conference Coordinator, I am honoured to have played a role in bringing together brilliant minds and researchers from around the world.

The journey from inception to the culmination of this conference has been one of collaboration and dedication. The Proceedings stand as a testament to our collective commitment to advancing knowledge in Economics, while also fostering interdisciplinary discussions. Within these pages, you will find a variety of research papers that reflect the insightful discussions taking place during our conference.

On behalf of the organizing committee, I extend my heartfelt gratitude to the Vice-chancellor, University of Peradeniya, the Deputy Vice-Chancellor, University of Peradeniya and the Dean, Faculty of Arts, University of Peradeniya and Dean, Faculty of Economic Sciences and Business Administration, Transilvania University Brasov, Romania for their fullest support and guidance to make this conference a success. I thank all the authors and presenters, both local and international, who have contributed their valuable work to PIERS-2023. Your dedication to research and interest in sending us your papers are what led us to succeed. I would also like to express my sincere appreciation to the organizing committee, keynote speaker, guest speakers, collaborative and supporting partners, university administration, the Director and staff members of the Postgraduate Institute of Humanities and Social Sciences, session chairs and discussants, reviewers, sponsors, and everyone who has contributed to making this conference a great success. Your hard work, expertise, experience, and support have been instrumental in making this conference a reality and a success.

I encourage you to engage deeply with the ideas presented today, to connect with fellow participants, and to nurture the collaboration that defines our academic community. Let PIERS-2023 serve as a source of inspiration, a platform for intellectual dialogue, and an encouragement for future research endeavours.

Thank you for being a part of this remarkable journey. I am confident that the insights shared within these pages and PIERS-2023 will have a lasting impact on the Department of Economics and Statistics, University of Peradeniya, and will pave the way for even greater achievements in the years to come.

I wish you a rewarding experience throughout PIERS-2023.

Dr. S.S.K.B.M. Dorabawila
Coordinator, PIERS - 2023
Department of Economics and Statistics
Faculty of Arts
University of Peradeniya

9th Peradeniya International Economics Research Symposium PIERS – 2023

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Head, Department of Economics and Statistics, University of Peradeniya, Sri Lanka

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9th Peradeniya International Economics Research Symposium
PIERS – 2023

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PROGRAMME AGENDA

PIERS - 2023

Inauguration

Date: 1st September, 2023

Venue: Conference Hall, Second Floor, PGIHS

08.30 a.m.	*Registration of Participants*
09.00 a.m.	*Arrival of the Chief Guest*
09.05 a.m.	*Lighting of the Oil Lamp*
09.10 a.m.	*University Anthem*
09.15 a.m.	*Welcome Address by **Snr. Prof. O.G. Dayaratna Banda***
	Chairperson, PIERS 2023
09.20 a.m.	*Opening Remarks by **Prof. J.G. Sri Ranjith***
	Head, Department of Economics and Statistics, University of Peradeniya, Sri Lanka
09.25 a.m.	*Address by **Dr. E.M.P.C.S. Ekanayake***
	Dean, Faculty of Arts, University of Peradeniya, Sri Lanka
09.35 a.m.	*Address by **Prof. W.M.T. Madhujith***
	Deputy Vice Chancellor, University of Peradeniya, Sri Lanka
09.45 a.m.	*Address by **Prof. Codruta Adina Baltescu***
	Faculty of Economic Sciences and Business Administration, Transilvania University of Brasov, Romania
09.55 a.m.	*Address by **Mr. Asela Dissanayake***
	Acting Country Manager/ Senior Economist, The World Bank
10.05 a.m.	*Highlights and Releasing of the Proceedings of PIERS – 2023*

10.10 a.m. *Address by Chief Guest* ***Prof. M.D. Lamawansa***
Vice Chancellor, University of Peradeniya, Sri Lanka

10.20 a.m. *Keynote Address by* ***Dr. W.A. Wijewardena***
Former Deputy Governor of the Central Bank of Sri Lanka

10.40 a.m. *Vote of Thanks by* ***Dr. S.S.K.B.M. Dorabawila***
Coordinator, PIERS – 2023

10.45 a.m. *Refreshments*

TECHNICAL SESSIONS: SESSION SUMMARY

11.30 a.m. - 01.00 p.m. **Technical Sessions I – V**

Session I	- Theme :	Inequality and Gender
Session II	- Theme :	Growth and Development
Session III	- Theme :	Health, Nutrition, and Food Security
Session IV	- Theme:	Entrepreneurship, Technological Change, and Business Management
Session V	- Theme :	Natural Resources and Environment

01.00 p.m. *Lunch*

02.00 p.m. - 03.30 p.m. **Technical Sessions VI – IX**

Session VI	- Theme :	External Sector, Banking and Finance
Session VII	- Theme :	Sectoral Challenges and Policies
Session VIII	- Theme :	Land, Labour, and Capital Markets
Session IX	- Theme :	Crisis and Fiscal Policy

03.45 p.m. - 04.45 p.m. **Closing Session**

Technical Session I: Inequality and Gender

Time: 11.30 a.m. – 12.45 p.m.

Venue: Room No. 207, First Floor, PGIHS

Chairperson: Prof. D.N.B. Gunewardena
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

Discussant: Ms. S. Rajendran
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

11.30 a.m. – 11.35 a.m. Opening Remarks by Chairperson

11.35 a.m. – 12.20 p.m. Presentations:

1. Factors Influencing Female Employment among Graduates vs Non-graduates During the Economic Crisis Period in Sri Lanka
   J.M.H.N. Jayasinghe and H.M.A.E. Herath
2. Impact of Economic Growth, Poverty and Female Employment on Global Crime Rates
   R. Theneshiya, S. Thanikan, L.S. Gomez, M.D.R.K. Jayathilaka, and C.N. Wickramaarachchi

12.20 p.m. – 12.35 p.m. Remarks by the Discussant

12.35 p.m. – 12.45 p.m. Closing Remarks by the Chairperson

Technical Session II: Growth and Development

Time: 11.30 a.m. – 1.00 p.m.
Venue: Room No. 208, First Floor, PGIHS

Chairperson: Snr. Prof. A.S.P. Abhayarathne
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

Discussant: Dr. T. Vinayagathasan
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

11.30 a.m. – 11.35 a.m. Opening Remarks by Chairperson

11.35 a.m. – 12.35 p.m. Presentations:

1. The Impact of External Debt and other Macroeconomics Variables on Economic Growth in Sri Lanka
   A.P.G.H. Wickramathilaka and M.H.F. Afriha
2. Do Domestic and External Public Debt Enhance Economic Growth? Short-term and Long-term Evidence from Sri Lanka
   U.L. Milhana and J.M.A. Jayawickrama
3. The Impact of Monetary Policy Transmission Mechanism (MPTM) Variables on Economic Growth in Sri Lanka
   W.H.A. Sandaruwan
4. Impact of Public Education Expenditure on Economic Growth: Sri Lankan Experience
   P. Anusha and J.G. Sri Ranjith

12.35 p.m. – 12.50 p.m. Remarks by the Discussant

12.50 p.m. – 1.00 p.m. Closing Remarks by the Chairperson

Technical Session III: Health, Nutrition, and Food Security

Time: 11.30 a.m. – 1.00 p.m.

Venue: Room No. 105, Ground Floor, PGIHS

Chairperson: Dr. S.S.K.B.M. Dorabawila
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

Discussant: Dr. A.D.H.K. Kankanamge
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

11.30 a.m. – 11.35 a.m. Opening Remarks by Chairperson

11.35 a.m. – 12.35 p.m. Presentations:

1. The Factors Influencing Malnutrition of School Children in Nuwara-Eliya District, Sri Lanka.
   S.K. Nandajeewa, A.A.S.K. Aluthwatta, W.M.N.D. Wijesinghe, M.L.T.G. Liyanaarchchi, R.M.N.M. Rathnayake, and R.S. Weerarathna
2. Experimenting the Role of Pro-sociality on the Effort and Engagement of Nursing Professionals in Sri Lanka
   A. Mithursan and D.I.J. Samaranayake
3. Global Alcohol Consumption and its Association with Stroke
   K.A.T.V. Kolonne, K.K. Mudalige, K.V.R.K.M. Rathnayake, D.M.K.G. Dissanayaka, M.D.R.K. Jayathilaka, L.P. Rajamanthri, C.N. Wickramaarachchi, and R.P.U.S. Pathirana
4. Cardiovascular Disease Mortality due to Tobacco Smoking Prevalence: The SAARC Experience
   M.D.L Silva, W.A.D.I.S. Abeysekera, R.C. de Silva, W.A.L. Piumika, M.D.R.K. Jayathilaka, and L.P. Rajamanthri

12.35 p.m. – 12.50 p.m. Remarks by the Discussant

12.50 p.m. – 1.00 p.m. Closing Remarks by the Chairperson

Technical Session IV: Entrepreneurship, Technological Change, and Business Management

Time: 11.30 a.m. – 12.45 p.m.

Venue: Room No. 106, Ground Floor, PGIHS

Chairperson: Prof. H.M.W.A. Herath
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya Sri Lanka

Discussant: Prof. J.G. Sri Ranjith
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya Sri Lanka

11.30 a.m. – 11.35 a.m. Opening Remarks by Chairperson

11.35 a.m. – 12.20 p.m. Presentations:

1. The Application of Conflict of Interest for Value Creation in Family Businesses
   Piyumi Seneviratne and R.H. Kuruppuge

2. The Impact of Fission Marketing on Online Consumer Buying Behavior in Sri Lanka
   N.U. Jayasuriya, K.H.S.M. Ehalapitiya, and N.A. Jayasuriya

3. Study on the Influence of Service Quality Towards Patient Satisfaction of Private Hospitals in Western Province of Sri Lanka
   J.H.R.M. Tissera, W.L.P.D.M.P. Wijethunga, S.S.R. Rajapaksha, and D.M.K.D. Manaruwan

12.20 p.m. – 12.35 p.m. Remarks by the Discussant

12.35 p.m. – 12.45 p.m. Closing Remarks by the Chairperson

Technical Session V: Natural Resources and Environment

Time: 11.30 a.m. – 1.00 p.m.

Venue: Room No. 301, Conference Hall, Second Floor, PGIHS

Chairperson: Prof. P.P.A.W. Athukorala
Department of Economics and Statistics, Faculty of Arts, University of Peradeniya, Sri Lanka

Discussant: Ms. L. Weragoda
Department of Economics and Statistics, Faculty of Arts, University of Peradeniya, Sri Lanka

11.30 a.m. – 11.35 a.m. Opening Remarks by Chairperson

11.35 a.m. – 12.35 p.m. Presentations:

1. Unveiling the Dynamics of Gross Domestic Product, Energy Consumption, and Trade Openness on Carbon Emissions in Sri Lanka: A Longitudinal Analysis from 1990 to 2019
   V.R.D. Methmini, E.A.S.L. Edirisinghe, W.D.N.M. Dharmapriya, V.G. Gunawardena, M.D.R.K. Jayathilaka, R.M.N.M. Rathnayake, and C.N. Wickramaarachchi
2. Protected Area Declaration and Changes of Livelihood: A Case Study in Bundala
   D.M.S.C.D.M. Jayathilaka
3. Assessment of Domestically Produced Energy Impact on Total Energy Use: SAARC Experience
   M.A.D.P. Dias, K.M.C. Rajapaksha, M.D.R.K. Jayathilaka, R.M.N.M. Rathnayake, R.P.U.S. Pathirana, and C.N. Wickramaarachchi
4. For a Greener and Sustainable Revival: A Panel Granger Causality Analysis on Tourism and Renewable Energy
   K. O. Attanayake, U.H.A. Samarasinghe, P.G.Y. Ranmini, I.S. Wickramage, M.D.R.K. Jayathilaka, and S.R. Yapa

12.35 p.m. – 12.50 p.m. Remarks by the Discussant

12.50 p.m. – 1.00 p.m. Closing Remarks by the Chairperson

Technical Session VI: External Sector, Banking and Finance

Time: 02.00 p.m. – 03.15 p.m.

Venue: Room No. 301, Conference Hall, Second Floor, PGIHS

Chairperson: Snr. Prof. O.G. Dayaratna Banda
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

Discussant: Dr. T.N. Vidanage
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

02.00 p.m. – 02.05 p.m. Opening Remarks by Chairperson

02.05 p.m. – 02.50 p.m. Presentations:

1. Assessing the Effect of Trade Agreements on Export Performance of Sri Lanka: A Gravity Model Approach
   G.R.P. Hettiarachchi and I.V. Kuruppu

2. An Investigation of Factors Affecting the Balance of Trade in Sri Lanka
   T.M.H.U. Thennakoon and Y.S. Weerakkody

3. Measuring the Impact of Logistic Performance, Foreign Direct Investment, Gross Domestic Product and Corruption Perception on Global Competitiveness
   Naduni Kalansuriya, Shara de Silva, and Ruwan Jayathilaka

02.50 p.m. – 03.05 p.m. Remarks by the Discussant
03.05 p.m. – 03.15 p.m. Closing Remarks by the Chairperson

Technical Session VII: Sectoral Challenges and Policies

Time: 02.00 p.m. – 03.30 p.m.

Venue : Room No. 207, First Floor, PGIHS

Chairperson: Prof. S. Vijesandiran
Department of Economics and Statistics, Faculty of Arts
University of Peradeniya, Sri Lanka

Discussant : Prof. K.M.R. Karunarathna
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

02.00 p.m. – 02.05 p.m. Opening Remarks by Chairperson
02.05 p.m. – 03.05 p.m. Presentations:

1. The Impact of Quality Assurance Practices on Employee Productivity: Special Reference to Sri Lankan Apparel Sector in Sri Lanka
   K.M.G.C. Bandara and N.A. Jayasuriya
2. Fire Briquettes as a Substitute to Fuelwood: With Reference to the Tea Industry of Sri Lanka
   J.D.H. Angel
3. Determinant Factors Affecting Agriculture Labour Supply in Kurunegala District: A Case Study in Polpithigama DS Division.
   N.G. Manorathna, C.R. Nakandala, D.G.C.S.B. Bandara, D.M.C.N. Kumara, and M.B. Ranathilaka
4. Household Demand for Rice Consumption in Sri Lanka
   A.S.G.S. Bandara

03.05 p.m. – 03.20 p.m. Remarks by the Discussant
03.20 p.m. – 03.30 p.m. Closing Remarks by the Chairperson

Technical Session VIII: Land, Labour, and Capital Markets

Time: 02.00 p.m. – 03.30 p.m.

Venue: Room No. 208, First Floor, PGIHS

Chairperson: Prof. M.B. Ranathilaka
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

Discussant: Dr. R.K.M. Rajapaksha
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka.

02.00 p.m. – 02.05 p.m. Opening Remarks by Chairperson

02.05 p.m. – 03.05 p.m. Presentations:

1. The Impact of Internship on Academic Performance of Non-State Undergraduate Management Students
   E.A.T. Wishvamali, A.B.C.J. Wimaladasa, G.A.D.M. Gangodawila, D.M.V.P. Dissanayaka, L.P. Rajamanthri, and R.S. Weerarathna

2. Exploring the Determinants of Migration Intention of IT Professionals: Evidence from Sri Lanka
   K.K.T.Y. Amarasinghe, R.M.A.U. Rathnayake, G.L.T.Y. Jithmini, A.M.S.S. Alahakoon, V.R. Dunuwila, and Kethaka Galappaththi

3. The Economic Implications of Brain Drain and Migration in Sri Lanka
   M.A.C.A. Wijerathne, G.D. Maussawa, R.A.D. Maduranga, M.W.G.J. Gunasekara, S. Thelijjagoda, and C.N. Wickramaarachchi

4. Does Player Attitude Mediates the Effect of Pop-up Advertisements on Players' Intention to Download New Games
   J.K.D.N. Thilakarathne, S.I. Vidanagama, K.M.N.D.B. Ulapane, W.M.Y.C.B. Wijekoon, and K. Wisenthige

03.05 p.m. – 03.20 p.m. Remarks by the Discussant

03.20 p.m. – 03.30 p.m. Closing Remarks by the Chairperson

Technical Session IX: Crisis and Fiscal Policy

Time: 02.00 p.m. – 03.15 p.m.

Venue: Room No. 106, Ground Floor, PGIHS

Chairperson: Snr. Prof. J.M.A Jayawickrama
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

Discussant: Prof. R. Jayathilaka
SLIIT Business School, Sri Lankan Institute of Information and Technology,
Malabe, Sri Lanka

02.00 p.m. – 02.05 p.m. Opening Remarks by Chairperson

02.05 p.m. – 02.50 p.m. Presentations:

1. Socio-Economic Impact of Economic Crisis 2021 on Fisheries Community: Evidence from Devinuwara Divisional Secretariat Division of Matara District, Sri Lanka
   P.K. Dewapura and H.R.A.C. Thilanka
2. Risks for Start-up Managers During Crises: Recent Romanian Experience
   A.S. Tecău, T. Foriș, C.A. Băltescu, E.Nichifor, and M.M. Băltescu
3. Innovative Business Strategies During the Economic Crisis: A Study based on Star Hotels in Kandy District
   K. Selvanayagam and B.A.N. Eranda

02.50 p.m. – 03.05 p.m. Remarks by the Discussant

03.05 p.m. – 03.15 p.m. Closing Remarks by the Chairperson

CLOSING SESSION

Time: 03.45 p.m. – 04.45 p.m.
Venue: Room No. 301, Conference Hall, Second Floor, PGIHS

Chairperson: Snr. Prof. O.G. Dayaratna Banda
PIERS - 2023
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

03.45 p.m.	Opening Remarks by Chairperson
03.50 p.m.	Awarding of Certificates
04.10 p.m.	Concluding Remarks and Evaluation ***Prof. S. Vijesandiran*** *Department of Economics and Statistics, Faculty of Arts,* *University of Peradeniya, Sri Lanka*
04.20 p.m.	Vote of Thanks ***Prof. J.G. Sri Ranjith,*** *Advisor, PIERS – 2023* *Head, Department of Economics and Statistics, Faculty of Arts,* *University of Peradeniya, Sri Lanka*
04.30 p.m.	Refreshments
04.45 p.m.	End of Symposium

KEYNOTE ADDRESS

Sri Lanka's Planned March Toward Richness by 2048: Difficult, But Not Impossible With Suitable Policies

By Dr. W.A. Wijewardena

(waw1949@gmail.com)

Sri Lanka's Avowed Goal for 2048

Sri Lanka's avowed goal has been to become a rich country by 2048 as pronounced by President Ranil Wickremesinghe to Parliament in August 2022.[1] The details of the policy strategy to be followed by Sri Lanka to attain this goal were not disclosed by him at that stage. However, in June 2023, addressing the nation, Wickremesinghe revealed an outline of the strategy to be followed by his government in 2023 and beyond for attaining this goal.[2] Accordingly, the government will assemble the leaders in the private sector, bureaucracy, and the Cabinet in a policy lab for 6 weeks with the task to prepare a detailed policy plan and sign it off as a joint program to be adopted. This policy lab approach is a technique developed by the Growth Lab of the Centre for International Development of the Kennedy School of Government, an outfit of Harvard University.[3] The Growth Lab will have a six-pronged approach to supporting developing nations to attain their development objective, namely, conducting academic research on issues, specific policy research relating to issues in developing countries, communication of policy findings via digital platforms, teaching to and training of policymakers, publication of results in peer reviewed journals, and outreaching the target groups via media events. Though it has not been spelled out, it is presumed that Sri Lanka will enlist the services of Harvard's Growth Lab to design its development strategies.

Growth Lab, Social Market Economy, and Four Pillars of Economic Reforms

The choice of 2048 as the target year of becoming a rich country by Sri Lanka has some sentimental value. That is the year in which the country will celebrate the centenary of independence from Britain. However, this goal seems to be an offshoot of a similar goal announced by India in August 2022 to become a rich country by 2047 when it celebrates the centenary of its independence from Britain.[4] This goal was reiterated by Prime Minister

[1] https://economynext.com/sri-lanka-president-wickremesinghe-parliament-address-full-text-98156/ (accessed on 10.8.2023).
[2] https://economynext.com/sri-lanka-president-explains-economic-policy-future-plans-122121/ (accessed on 10.8.2023)
[3] For details, visit: https://growthlab.hks.harvard.edu/home (accessed on 10.8.2023)
[4] See: https://timesofindia.indiatimes.com/business/india-business/pms-call-for-making-india-a-developed-nation-by-2047-inspirational-doable-industry-bodies/articleshow/93574111.cms (accessed on 10.8.2023)

Narendra Modi one year after the initial announcement when he addressed the nation on the Independence Day in 2023.[5] Neither country has come up with a long term policy strategy to reach this target by late 2040s. In the case of India, Modi will do so if he is reelected for another term at the general elections set for 2024. In Sri Lanka, Wickremesinghe has assigned this task to the policy lab to be set up before the end of the 3rd quarter of 2023. He has however given some broad guidelines for the growth lab to follow when it meets in its proposed policy retreat. Accordingly, his government will follow the ideology of social market economy to deliver prosperity to all the citizens of the country. This social market economy ideology, borrowed from the post war Germany, highlights the adoption of the middle path in policy development and implementation avoiding both the extreme capitalism and the extreme socialism.[6] He also pronounced four pillars on which the new policy development should be made: disciplining the budget, investment promotion, provision of social safety nets for vulnerable groups, and reforming the state-owned enterprises. These four policy pillars are what has been agreed with IMF for securing the extended fund facility in March 2023.[7]

Given the present economic structure and the country's installed capability, attaining this goal is quite challenging. It is difficult but not impossible if Sri Lanka identifies the constraints correctly and introduces suitable remedial measures to overcome them. I will focus on some of the important challenges.

Minimum Growth Needed

In terms of the World Bank classifications, a country becomes a high-income country in 2023 if it passes the threshold of a minimum of US$ 13205 as its per capita gross national income calculated according to the World Bank's Atlas methodology.[8] Assuming that this level will remain around $ 13000 even by 2048, the size of Sri Lanka's economy to beat this target will depend on its population level. There are two demographic projections made for Sri Lanka over the period under consideration. According to the World Population Review, Sri Lanka's population now growing at 0.35% per annum is to peak in 2035 and then it will begin to fall continuously. In 2048, its population will be 22 million, same as its

[5] See: https://www.hindustantimes.com/india-news/new-delhi-india-to-become-developed-country-by-2047-says-prime-minister-modi-in-independence-day-speech-101692120892600.html (accessed on 16.8.2023)
[6] For an analysis of this policy ideology see: Wijewardena, W.A (2023) at https://www.ft.lk/columns/Target-2048-Part-V-Social-market-economy-ideology-need-be-clarified-and-signed-off/4-751744 (accessed on 16.8.2023)
[7] For details of the conditions agreed with IMF, read: https://www.imf.org/-/media/Files/Publications/CR/2023/English/1LKAEA2023001.ashx (accessed on 18.8.2023)
[8] https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2022-2023 (accessed on 17.8.2023)

population in 2023.[9] If the same threshold per capita GNI of $ 13000 is used to classify a country as a high-income country, Sri Lanka's economy should expand from its size of $ 75 billion in 2022 to $ 286 billion in 2048. This requires Sri Lanka to grow at a minimum compound annual rate of 5% over the next 26 years. If the present annual population growth rate of 0.35% is assumed to continue till 2048, the population in 2048 will be 24 million. It will require the economy to expand to $ 312 billion in 2048 if it is to meet the minimum gross income per capita level of $ 13000 to be classified as a high-income country. But it requires Sri Lanka to maintain a minimum annual compound growth rate of 6%. Since according to current growth projections, Sri Lanka will have, on average, an annual growth rate of around 2% till 2027, Sri Lanka will have to grow faster than these minimum rates to reach the state of richness by 2048.

An Aging Population is a Constraint

This demographic development associated with a contraction, or a very low growth will throw another hurdle in Sri Lanka's growth path. That is the gradual aging of the population which is already at a very high level compared to India. Sri Lanka's median age in 2022 is 34, compared to India's average age of 27. With the anticipated developments, its median age will rise to a level between 42 and 44. This will be further complicated by the current high flow of migration of skilled labour in search of greener pastures elsewhere. It is clear that Sri Lanka will face a serious labour shortage in its march toward richness unless it tackles the aging of population and anticipated labour shortage. In the past, this was tackled by allowing free labour immigration policy. Singapore which also faced the same problem in the early years of economic transformation allowed foreign workers, especially the skilled categories of workers, to enter the country.[10] In addition, as an incentive for those workers, the city state was converted to a First World Oasis with respect to law and order, rule of law, environmental conditions, transportation and healthcare services, and education.[11] What this means is that a country cannot encourage people to stay and work by using coercive laws but by offering a conducive living environment.

Female Entry to Labor Force is not a Solution

It has been suggested that Sri Lanka can tackle the aging problem of population and the consequential depletion of the quality of the labour force by encouraging females to

[9] https://worldpopulationreview.com/countries/sri-lanka-population (accessed on 18.8.2023)
[10] Pan, Jessica and Theseira, Walter, 2023, Immigration in Singapore, Background paper to the World Development Report 2023, (available at: https://thedocs.worldbank.org/en/doc/080a4bc64cc8a9eb8a2a0e98d97a260a-0050062023/original/WDR-Immigration-in-Singapore-FORMATTED.pdf) (accessed on 18.8.2023)
[11] Kuan Yew, Lee, 2008, From Third World to First, Singapore Press Holdings and Marshal Cavendish Editions, Singapore, pp 76-7.

enter the labour market. This suggestion has some merit because despite the high literacy rate among women in Sri Lanka, the female labour force participation has been at about 33% in 2022 down from 45% in 1990.[12] However, this is a short-term solution since the whole population is to shrink or grow slowly in the period ahead and even with higher female participation in the labour force, the aging problem and worker migration problem cannot be resolved. Both these issues need a separate approach.

Decline in Productivity

The aging of the labour force affects the output and the growth rate adversely via a decline in productivity. This problem should be tackled by Sri Lanka by retraining its work force continuously, on one side, and introducing technology and automation to production processes, on the other. The popular belief that old hands cannot be retrained to make them tech savvy is always not true. The Dompe e-Hospital could retrain its old hands in the use of advanced ICT successfully to transform its patient management system to an ICT platform.[13] When the fuel distribution was rationed in 2022 in Sri Lanka via a QR code, both the motorists and the pump operators picked up the new technology quite easily. Hence, continuous retraining of the workforce is a must.

Loss of Skilled Workers and Professionals

The migration problem has been largely misunderstood by many policymakers in Sri Lanka. In the recent few months, Sri Lanka has witnessed many skilled workers and professionals leaving its shores for greener pastures elsewhere. The ICT sector, healthcare services, and educational institutions have been very badly hit by this sudden upsurge of Sri Lankans moving out for foreign jobs. Angered by this sudden adverse development, President Wickremesinghe is reported to have remarked that compensation should be sought from countries which recruit Sri Lankan doctors.[14] The basis of this argument is that these doctors have been trained by Sri Lanka under its non-fee charging education system and, hence, their moral obligation has been to serve the people who have financed their education. This is an erroneous argument since it is those who have received education in Sri Lanka that have met the cost of their education. This is because it is the whole population, including the students and their parents, that has funded the government's total gross expenditure through taxes paid in the current period, taxes to be paid in the future if the government has financed it by borrowing, and foregoing the real value of their assets due to

[12] https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=LK (accessed on 18.8.2023).
[13] Kulathilaka, Sampath, 2013, "eHospital Dompe project-the story of the transformation of a district hospital in Sri Lanka", Sri Lanka Journal of Bio-medical Informatics, Volume 4.
[14] https://www.newswire.lk/2023/08/04/compensation-to-be-sought-from-countries-taking-sri-lankan-doctors/ (accessed on 18.8.2023)

inflation if the government has printed money for financing it.[15] Hence, the free education argument to restrict those who seek foreign employment is erroneous. If education has been funded by them by financing the total gross expenditure of the government, they should have the right to get the maximum return on their investment.

High Taxes

It is, therefore, useful to find why these professionals are leaving Sri Lanka. The most recent cause, as has been presented, has been the high taxes which Wickremesinghe government has imposed on professionals. They had been given free bonus by the previous Gotabaya Rajapaksa administration by reducing the taxes which they should pay drastically. They indeed enjoyed this bonus during 2020 to late 2022. Wickremesinghe administration, faced with a massive fiscal deficit, reversed the Gotabaya tax concessions by returning to a tax regime more stringent than the one that had prevailed prior to 2020. It was also delivered as a sudden shock to the target taxpayers. By the time these taxes have been imposed, the real earnings of all Sri Lankans had fallen nearly by a half due to the increase in the cost of living by about 92% between January 2021 and December 2022. Therefore, with high taxes imposed, the professionals had been hit by a double whammy, an inflation tax, and an actual income tax. Since there was no prospect of increasing earnings to compensate for these two whammies, the available way out in the form of seeking employment elsewhere has been used by Sri Lanka's professionals.

Elimination of Trust Deficit

However, an argument presented by the critics of those who are leaving Sri Lanka is that in their new host countries they are subject to higher tax rates than the rates imposed in Sri Lanka. This is factually correct. But what is omitted by the critics is that in their new host countries, they pay a higher tax on an income significantly higher than what they get back at their home country. Hence, on a net basis, their welfare level is higher. In addition, in those countries, those taxpayers have an assurance that what they pay to the government is prudently used and returned to them by way of government expenditure programs. This trust is a must between the citizens and the rulers. In Sri Lanka, there is a significant trust deficit between the two parties. This deficit has been created by imprudent, illogical, and irresponsible behavior of the rulers. Hence, the critics should attack not the fellow citizens who leave the shores of the country for employment elsewhere but those rulers who have been responsible for creating the present trust deficit between the citizens and the rulers.

[15] For details, see Wijewardena, W.A., 2022, at https://www.ft.lk/columns/Child-s-guide-to-Ranilnomics-VI-Actual-tax-payment-is-not-what-one-pays-today/4-741006 (accessed on 18.8.2023)

Encourage Reverse Migration

Therefore, what is to be done is not the restriction of the flow of foreign employment by coercive laws. Those people who leave the shores of the country will get experience, accumulate capital, learn of business knowhow, and build valuable social capital. Sri Lanka should tap these resources by encouraging reverse migration for the continued economic advancement of the country. In Vietnam, the migrant boat people have not only promoted trade but also investment by returning to their original home country with capital, experience, business acumen and market access.[16] Sri Lanka should encourage those who leave its shores now to return to the country soon with the same resource base. But to do that, an essential prerequisite is the elimination of the present trust deficit between the citizens and the rulers.

Investment Promotion

Investment promotion is one of the pillars on which Wickremesinghe government is relying for bringing richness to Sri Lankans. Though the detailed strategy that should be followed is to be determined at the growth lab to be formed, given the present low economic performance in Sri Lanka, the strategy should necessarily involve integrating the economy with the global economy. Wickremesinghe while presenting the economic policy statement of the previous good governance government in November 2015, highlighted four policy strategies to accelerate the country's economic growth.[17] They were: creating the background needed to enter the global value system, encouraging the small and large scale farmers and entrepreneurs to participate in the global economy, encouraging competitive international organizations to invest in Sri Lanka, and digitalizing the Sri Lanka economy. None of these strategies were pursued by his government of 2015 to 2019 and they remain even as at date unfulfilled.

Promotion of the Export of Both Goods and Services

This is the point at which the Wickremesinghe government should start its development strategy. Today, the policymakers should focus on promoting the export of both goods and services since Sri Lanka has now reached its saturation point with respect to the traditional exports, namely, tea and apparels. Tea cannot be promoted anymore due to the constraint of lands and the competition from soft drinks.[18] Apparels face new

[16] See: Vezina, Pierre-Louis and Parsons, Christopher, 2014, Migrant networks and trade: The Vietnamese boat people as a natural experiment, at https://cepr.org/voxeu/columns/migrant-networks-and-trade-vietnamese-boat-people-natural-experiment (accessed on 18.8.2023)
[17] See: https://www.news.lk/fetures/item/10674-economic-policy-statement-made-by-prime-minister-ranil-wickremesinghe-in-parliament (accessed on 18.8.2023)
[18] Wijewardena, W.A., 2016, at https://www.colombotelegraph.com/index.php/what-is-wrong-with-our-ailing-tea-industry-where-does-its-cure-lie/ (accessed on 18.8.2023)

challenges due to the entry of newcomers to the sector, on one side, and the measures being taken by the importing countries to on-shore and near-shore the production processes.[19] Hence, new production lines should be developed and Sri Lanka should endeavor to produce parts of a product and not the whole product in Sri Lanka. Sri Lanka-born economist Prema-Chandra Athukorala has termed this strategy as 'joining the global production sharing networks'.[20] Sri Lanka should as its policy strategy join this network to enhance its wealth and foreign exchange earnings.

Need of a Critical Mass of Entrepreneurs

Two Sri Lanka manufacturers have successfully joined the global production networks by supplying vital components to global assemblers. One is the Lanka Harness which supplies sensors for the activation of air bags in motor vehicles.[21] The other is MAS Matrix that supplies the canvass for the Nike sports shoes, assembled in a factory in Vietnam.[22] This is an encouraging development but for a country to get the full benefit from global production sharing networks, there should a critical mass-a sufficiently large number to change the characteristic of the process-of such producers engaged in this production process. This is the biggest challenge which Sri Lanka faces in its march toward richness by 2048. The growth lab to be organized by Wickremesinghe administration should come out with a suitable policy strategy with time bound targets to develop such a critical mass within Sri Lanka's economy.

Goal Should be Elevated from a Mere Wish List to Ground Level Action

In the past, Sri Lanka has made the bold pronouncement that it will adopt suitable policy strategies to become a rich country within a specified timeframe. However, there were not any concrete measures taken at the ground level to realize that goal. Hence, they just became wish lists rather than realized policy goals. This was specifically valid for the

[19] Wijewardena, W.A., 2018, "The problem of overcoming middle-income trap: Getting integrated to the global economy is the way-out" APB Annual Sessions, (available at: https://apbsrilanka.com/wp-content/uploads/2021/01/2018_30th_conv_a_1_Dr.W.A._Wijewardena.pdf) (accessed on 18.8.2023)

[20] Athukorala, Prema-Chandra, 2015, Global Production Sharing and Trade Patterns: Implications for Trade and Investments, IPS, Public Lecture, available at: https://www.ips.lk/wp-content/uploads/2017/03/IPS-Lecture-3-February-b-2016.pdf (accessed on 18.8.2023)

[21] Wijewardena, W.A., 2018, Rohan Pallewatta: Man who has proved that Sri Lanka can also do, available at: https://www.ft.lk/w-a-wijewardena-columns/Rohan-Pallewatta-Man-who-has-proved-that-Sri-Lanka-can-also-do/885-654568 (accessed on 18.8.2023)

[22] Wijewardena, W.A., 2019, Industry 4.0, Disruptive Technology ad MAS Matrix: An example for way forward in Sri Lanka, available at: https://www.colombotelegraph.com/index.php/industry-4-0-disruptive-technology-mas-matrix-an-example-for-way-forward-in-sri-lanka/ (accessed on 18.8.2023)

good governance government of 2015-19 during which the pronounced goal was to make Sri Lanka a rich country by 2025. The present goal of becoming a rich country by 2048 should also not fall into this category. It behooves the Wickremesinghe administration to take effective measures to transform the goal from being a mere wish to a realizable target. This is the biggest challenge which the administration presently faces. As mentioned earlier, it is difficult but not impossible. Since it is a target to be realized over the next two and a half decades, the pursuit of the target by the present administration is not sufficient. It should be signed off by all the parties involved that they will pursue the goal until the country reaches the expected rich country state by 2048.

EXTENDED ABSTRACTS

Experimenting the Role of Pro-sociality on the Effort and Engagement of Nursing Professionals in Sri Lanka

A. Mithursan and D.I.J. Samaranayake

Department of Management Studies, Faculty of Management, University of Peradeniya, Sri Lanka

***Keywords*:** *Dictator Game; Real Effort Task; Video Vignette; Probit Regression Model; Lab-in-Field Experiment*

Introduction

The successful performance of the service sector is highly determined by its labour force due to its extreme dependency on human capital. Nursing professionals are the backbone of the entire health system (Banuri and Kefeer, 2016). The prevailing economic crisis has negatively influenced health workers in terms of social and economic aspects (Hu et al., 2020). With the trend of brain drain and existing nursing shortages, public employees often fail to see the prosocial impact of their jobs and many employees are demotivated, burned out, and emotionally fatigued, which had a negative impact on nursing professionals' engagement in hospitals during the prevailing economic crisis in Sri Lanka. The pro-social motivation was a key factor in the pandemic encouraging employees to be mentally and physically prepared for work, particularly in the health sector (Hu et al., 2020). The problem is whether the effort and engagement of nursing professionals depend on the reward-based objective or pro-social-based objective in an economic crisis or turbulent situations (Banuri and Keefer, 2016; Zarychta et al., 2022). For the first time in the Sri Lankan context, a real effort (envelope-stuffing) task was conducted in the hospitals (Lab-in-Field) to measure the effort level of nursing professionals across three different levels of treatments (Zarychta et al., 2022). Also, the video vignette of a patient considering the social status (Poor vs. Non-poor) was used to investigate the significant difference in terms of treatment. The quality of health care is crucial to derive good health outcomes (Banuri et al., 2018) and it can be reliably measured through this experiment.

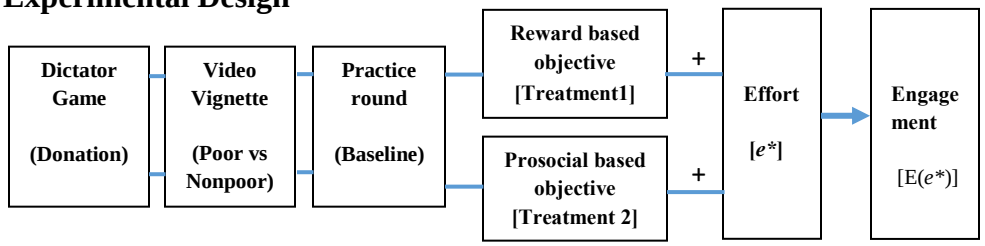
Objectives

One objective was to analyze the degree of pro-sociality among nursing professionals in Sri Lankan hospitals. It is a core objective of the study and is being analyzed from different angles. Another objective was to measure the significant differences in the regular treatment of patients considering their social status. The last objective was to investigate the differences between effort yield when nursing professionals were given reward-based and Pro-sociality based tasks.

Methodology

The Lab-in-Field experiment was conducted in Sri Lankan General (public) hospitals to measure the pro-sociality of the nursing professionals and its impact on effort level and engagement. Pro-sociality was measured using a dictator game and it is about donations for the jobless vulnerable people. Also, a highly reliable standard Likert scale was used to measure the perception of pro-sociality. The treatment differences based on social status were measured using a video vignette survey whereas an experimental act was performed on the lines of a poor patient and a non-poor patient. Nurses were given the record sheet and information sheet consisting of the patient's vital signs, and additional notes along with the patient's history. Then, Nurses could treat the patient with that information and with the video vignette in terms of identifying the correct diagnosis, recommending relevant treatment, follow-up schedule, and alternative treatment if the prior recommendation did not work well. Also, those two different video vignettes were played to different groups of nursing professionals daily. At the final stage, a real effort task was conducted to measure the effort level differences among reward and pro-sociality across nursing professionals belonging to different generations. The first round was a practice round, the second round was treatment-1 which is performed for reward and the final round was treatment-2 which is performed for pro-sociality. The subject in the reward task who completed the maximum number of stuffed envelopes as demonstrated would get a golden star and the picture of a poor family who faced hardship in this economic crisis was shown in the pro-sociality base task. There are 131 nursing professionals selected using a stratified random sampling technique, as the subjects were assigned randomly.

Experimental Design



Source: Author's compilation adapting Samaranayake and Banuri (2020).

This model was estimated in treatments 1 and 2 compared to the baseline. BTC=1; effort level changes compared to the baseline with the introduction of the reward-based task for treatment 1 and with the introduction of pro-social motivation for treatment 2. "x" is a binary dependent variable measuring the relationship between baseline and treatments. The value categories of independent variables are attached in Annexture 1.

$$\Pr(BTC_i = 1|x_i) = G(\beta_0 + \beta_1 F + \beta_2 Ag2 + \beta_3 Ag3 + \beta_4 Ag4 + \beta_5 Ag5 + \beta_6 Ag8 + \beta_7 Edu2 + \beta_8 Edu3 + \beta_9 Edu4 + \beta_{10} I2 + \beta_{11} I3 + \beta_{12} HP + \varepsilon)$$

Results and Discussion

Tables: Probit regression results for treatments 1 and 2

BTC1	COEF	P>Z
APP	0.350	0.008
GDR	-0.041	0.906
AGE		
2	1.762	0.009
3	1.419	0.044
4	0.332	0.671
5	1.587	0.133
8	1.850	0.079
EDU		
2	-0.943	0.241
3	-0.122	0.875
4	-0.348	0.688
INC		
2	-0.008	0.984
3	-0.242	0.718
4	-1.202	0.359
HP	0.111	0.771
CONS	-2.784	0.033

BTC2	COEF	P>Z
APP	0.596	0.000
GDR	0.029	0.938
AGE		
2	1.863	0.003
3	1.719	0.013
4	1.641	0.039
5	-0.579	0.635
8	0.752	0.449
EDU		
2	0.304	0.687
3	0.725	0.322
4	1.981	0.040
INC		
2	0.990	0.019
3	0.930	0.218
HP	-0.093	0.823
CONS	-5.663	0.000

Note: The co-efficient and probability values of variables are given in the Tables, and statistically significant under 95 percent confidence level (Refer to value categories in Annexure 1).

The interpretation of probit regression is a predictive margin change when a predictor changes by a unit, or for a one-unit increase in the effort level, what the changes in z-score value are, compared to the reference level. *BTC 1* represents baseline treatment comparison 1, $\beta_1 F$ represents female nursing professionals, $\beta_n Ag2..$ represents different age groups, $\beta_n Edu2..$ represents educational qualifications, $\beta_n I2..$ represents income categories, and $\beta_n PP$ represents the perception of pro-sociality. Respectively, *BTC 2* stands for baseline treatment comparison 2 and the categorical variables are included in annexture1. The real effort task of pro-sociality when considered through gender-wise analysis revealed that nursing professionals are pro-socially motivated to work hard to help a poor family facing difficulties in this economic crisis. Nursing professionals helped them in terms of completing the maximum number of enveloping tasks and collecting funds from the posting agencies according to the simulation technique. The results of the modified dictator game show that there are significant differences in terms of pro-sociality among nursing professionals in Sri Lanka. Nursing professionals who participated in the non-poor group donated a higher amount of Experimental Currency Unit than the poor group in the dictator game. There is a positive relationship between pro-sociality and the effort and engagement of nursing professionals in Sri Lanka. Nursing professionals with high rewards and pro-social motives put in high effort and engagement in both treatments. However, pro-social motivation yields a greater level of effort and engagement than reward motivation. The video vignette results show that nursing professionals with pro-sociality recommended all relevant medicine to the poor rather than non-poor patients. A significant difference was identified. However, there is no discrimination across social status in recommending the most appropriate treatment. Nursing professionals in Sri Lanka exhibit organizational citizenship or workaholic behaviors in the hospitals.

Conclusion and Policy Recommendations

Pro-social motivation yields a greater level of effort among nursing professionals than the reward motivation. Nursing professionals in their routine work treat all patients equally without any social status bias most of the time. However, treatment recommendations significantly vary between Poor and Non-poor patients in terms of distributing all relevant medicines with reference to this economic crisis. The different treatments for social status can

affect the quality of the health care service. It can be concluded that higher intrinsic (pro-social) motivation or extrinsic (reward) motivation yields a higher level of effort and engagement of the nursing professionals in Sri Lanka. Therefore, the externalities or crisis can affect the personal conditions of the nursing professionals but, it does not impact their professional identity in terms of their routine work. The Government Medical Association and the Ministry of Health can increase awareness of the engagement and effort level of nursing professionals in this economic crisis. The special consideration of generational wise nursing professionals will be beneficial to provide quality service without any social status bias. Also, understanding the mental health status of nursing professionals is beneficial during this economic crisis, which will determine the pro-sociality of the nursing professionals.

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Annexture1 consists of data analysis, value categories & results of probit regression & experimental evidences: https://drive.google.com/drive/folders/11gYK3gOqDM6R7LyMI6AcrWpcxeRpU8gE?usp=sharing

The Application of Conflict of Interest for Value Creation in Family Businesses

Piyumi Seneviratne
University of Sri Jayawardenapura, Colombo, Sri Lanka

R.H. Kuruppuge
Faculty of Management, University of Peradeniya, Sri Lanka

Keywords: *Family-oriented; Value Creation; Value Orientation*

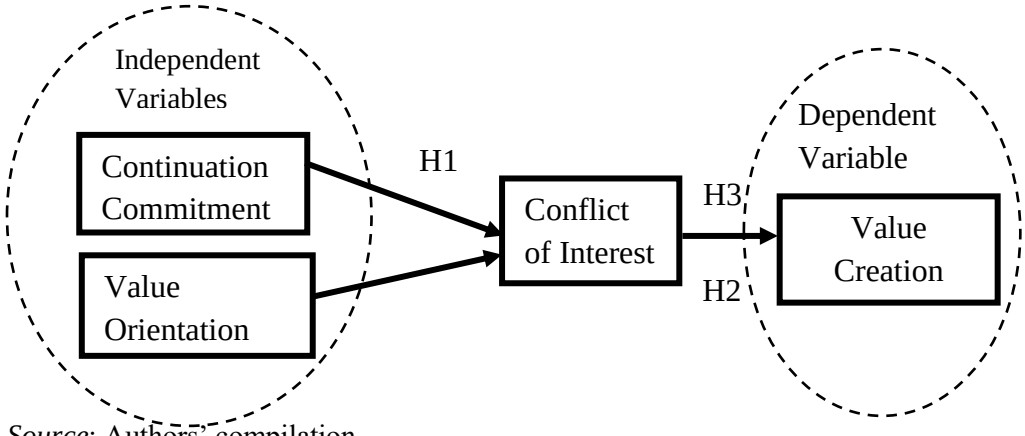
Introduction

Family-oriented small and medium businesses have a greater contribution to the economy of Sri Lanka as they account for approximately 80 percent of all businesses. Murzina et al. (2020) have elaborated that there are two types of values namely terminal values (preferred, ideal states of existence, end-state of existence) and instrumental values (preferred mode of conduct). Cross-cultural studies are integrated to identify the value orientation (VO) of family businesses in various countries (Iaia et al., 2019). The preferences of the next successor in line to get engaged with the family business and the capability of the founder and successor to avoid conflicts are considered the catalysts for the business continuity of family businesses (Merchant et al., 2018). The triumph of family businesses is dependent on the strategic planning articulated to achieve value creation. Family involvement stimulates conflicts at three interfaces, namely family business, family ownership, and family business ownership, and in the overall context, they are defined as family-related conflicts (Qiu and Freel, 2020). Deep insights into family values and how they stimulate value creation are extremely important for family businesses (Pradhan and Ranajee, 2012).

Objectives

The key objective was to study the behavior of conflict of interest along with continuation commitment and value orientation to achieve the optimum level of value creation in family businesses.

Figure 2: Conceptual Framework



Source: Authors' compilation

The hypotheses to be tested through the research can be implied as below.

H1: There is a positive association between continuation commitment and conflict of interest.

H2: There is a negative association between value orientation and conflict of interest.

H3: There is a negative association between conflict of interest and value creation.

H4: Conflict of interest mediates the association between continuation commitment and value creation.

H5: Conflict of interest mediates the association between value orientation and value creation.

Methodology

The quantitative approach was adapted to conduct the research. The population includes all family-oriented small and medium businesses and a sample of 111 family businesses was selected using a stratified random sampling technique. Data was collected through a survey method with the adaptation of a semi-structured questionnaire. The validity of the questionnaire was determined using a pilot study conducted among 5 family businesses. The medsem package of Stata 14 software was used to evaluate

the mediating effect of conflict of interest and to perform other analyses regarding the research study.

Results and Discussion

Cronbach's alpha coefficient was adapted to determine the reliability of the constructs developed in the research. The value obtained for Cronbach's alpha which is 0.5444 illustrates that it is lower than the reliability threshold of 0.7.

It can be interpreted according to the frequency distribution that the highest numbers of businesses are operating in the first generation and the minimum numbers of businesses are prevailing in the 3rd generation.

Table1: Determination of correlation coefficients between variables

	Total_cc	**Total_vo**	**Total_ci**	**Total_vc**
Total_cc	1.0000			
Total_vo	0.2720	1.0000		
Total_ci	0.4249	0.3896	1.0000	
Total_vc	0.0232	0.1465	0.1240	1.0000

According to Table 1 above, continuation commitment has a positive relationship with the conflict of interest and proves H1. Based on value orientation and conflict of interest correlation coefficient, H2 should be rejected. The results posit that there is a weak positive relationship between conflict of interest and value creation, but H3 is not satisfied. The alternative hypothesis cannot be accepted as the t-value is less than the critical t-value.

Table 2: The Mediating effect of conflict of interest continuation commitment and value creation

	Coefficients	**Z**	**P>|z|**	**95% Conf.Interval**	
Structural					
Total_vc<-		.			
Total_ci	0.14043	1.34	0.180	-0.06494	0.34581
Total_cc	-0.0318	-0.35	0.729	-0.21201	0.14827
_cons	2.32247	7.37	0.000	1.704667	2.94028
Total_ci<-					
Total_cc	0.37264	4.94	0.000	0.224932	0.52036
_cons	1.99285	9.32	0.000	1.573649	2.41205
Var (e. total_vc)	0.57587			0.442658	0.74917
Var (e. total_ci)	0.47250			0.363202	0.61470

Table 2 above implies that coefficients for both indirect paths are not significant, which posits according to Baron and Kenny's approach to testing mediation that conflict of interest does not have a mediating effect for the correlation between continuation commitment and value creation where alternative hypotheses H4 should be rejected and accept the null hypothesis. The existence of value zero in the confidence interval represents that there is no influence of indirect effect.

Table 3: The mediating effect of conflict of interest - value orientation and value creation

	Coefficients	**Z**	**P>|z|**	**95% Conf.Interval**	
Structural					
Total_vc<-					
Total_ci	0.079560	0.78	0.437	-0.121246	0.280367
Total_vo	0.093811	1.14	0.255	-0.067695	0.255317
_cons	2.098667	6.29	0.000	1.444534	2.752800
Total_ci<-					
Total_vo	0.313331	4.46	0.000	0.175529	0.451132
_cons	1.930158	7.75	0.000	1.441992	2.418325
Var (e. total_vc)	0.569842			0.438023	0.741331
Var (e. total_ci)	0.489069			0.375935	0.636251

Table 3 above implies that coefficients for both indirect paths are not significant, which posits according to Baron and Kenny's approach to testing mediation that conflict of interest does not have a mediating effect on the correlation between value orientation and value creation where alternative hypotheses H5 should be rejected and accept the null hypothesis. The existence of value zero in the confidence interval represents that there is no significant influence of indirect effect.

Conclusion and Policy Recommendations

Through the research study, it can be concluded that the continuation commitment level of the successor leads to an increase in the frequency of conflict of interest as the H1 hypothesis is satisfied. According to the results, as the H2 hypothesis is satisfied it can be posited that more value orientation efforts can generate more conflicts. In contrast to the H3 hypothesis in the conceptual framework of the research study, the existence of more conflicts pertaining to decision-making in family businesses can optimize value creation. But this is not very significant and has a weak positive correlation. As the mediating effect of conflict of interest was rejected for both continuation commitment and value orientation, it can be recapitulated that both continuation commitment and value orientation can directly influence value creation capacity. This study posits that when family owners are more focused on succession planning or in other words continuation commitment, they suggest diversified plans and strategies for the continuation of the business which leads to family conflicts and ultimately more conflicts exhort more creative ideas where the final result is value creation. Through value orientation, the values pertaining to the business sphere and family spheres can be differentiated to clearly understand what they intend to achieve. When more value orientation is activated, many family owners share their perspectives on operating businesses which can generate conflicts in decision-making. The adaptation of more value orientation creates opportunities for family businesses to evaluate what goal or objective is important to them which can generate many innovative plans for the revitalization of the business. There can be situations where some family owners are more focused on the costs pertaining to various investments to benefit their family portfolio while others are more emphasized on reaching creativity of conducting business to satisfy their customers. But these conflicts positively impact businesses as more avenues for value creation can be created through idea conflicts which help to identify the best solution. The research study provides an overview of the behavior of continuation commitment, value orientation, and conflict of interest with value creation and this can support family businesses in Sri Lanka to align their strategical directions according to the behavior of these variables to achieve optimum value creation.

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Study on the Influence of Service Quality towards Patient Satisfaction of Private Hospitals in Western Province of Sri Lanka

J.H.R.M. Tissera, W.L.P.D.M.P. Wijethunga, S.S.R. Rajapakshe, and D.M.K.D. Manaruwan

Information Management Faculty of Business, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

Keywords: *Hospitals; Service Quality; Patient Satisfaction; SERVQUAL*

Introduction

Healthcare has become one of the most important and rapidly expanding service sector industries in Sri Lanka, comprising private and public sector healthcare service providers. The attention given to qualitative studies on understanding how patient satisfaction is influenced by service quality is very rare, especially in the Sri Lankan healthcare sector. According to the Private Health Services Regulatory Council (PHSRC) directed under the Ministry of Health (MOH), there are fifty (50) hospitals identified and related to the private sector located in the Western province of Sri Lanka (MOH, 2022). The study focuses on the adoption of SERVQUAL (reliability, tangibility, assurance empathy, and responsiveness) to assess how service quality influences patient satisfaction. Enhanced service quality will help retain existing customers as well as attract potential customers, improve the business image of the business, create positive word-of-mouth recommendations, and will lead to improved profits.

Researchers have utilized the following SERVQUAL model factors which affect service quality (Duggirala, Rajendran, and Anantharaman, 2008; Aynul Sowmiya Badhurudheen, 2018; Team, 2022). Reliability refers to the organization's ability to perform the services to satisfy their customer needs and maintain customer satisfaction consistently. It involves all the instances from customer interaction to the delivery of final products, grievance handling, and competitive pricing. An organization’s success will depend on its capability to meet customer expectations of reliability. Tangibility means the company’s ability portrays service quality through tangible quality. Maintaining the physical facilities, employee appearance, and organization of the facility is important. Empathy is an organization’s ability to deliver

services by being empathetic towards the customers. When the customers trust the organization as a party that is empathetic and truly cares about their demands and desires, they tend to be more loyal to the organization. Responsiveness means the company's ability and willingness to help its customers promptly. Responsiveness can be stated as the quick and consistent response to customer requests, feedback, questions, and issues as it shows how the organization values its customers. Assurance refers to the organization's ability to create confidence and trust among customers. Gaining the trust of the customers is important for a company when retaining customers.

Objectives

The study aims to investigate the influence of service quality (SERVQUAL model) on patient satisfaction in the Sri Lankan private healthcare sector with reference to the Western Province.

Methodology

The study intended to achieve the objectives via a qualitative approach by a theoretical thematic analysis, using convenience and purposive sampling. The researchers identified two main constructs as service quality - the independent construct - and patient satisfaction as the dependent construct. Service quality is determined by referring to the SERVQUAL framework with reliability, tangibility, assurance empathy, and responsiveness. Data collection was done by interviewing the people who have been admitted and received treatments from six (06) leading private hospitals located in the Western province of Sri Lanka, for not less than five days (purposive sampling) and respondents were identified from the researchers' contacts as per the convenience sampling technique. Fifteen (15) interviews were conducted until the saturation was met. Saturation is the stage of data collection where there cannot be any additional issues or insights that could be identified from data and all relevant conceptual categories have been identified and explored. After the data collection, the analysis was done with the technique of theoretical thematic analysis. According to the study conducted by Braun and Clarke in 2006, thematic analysis is a method for analyzing qualitative data and is used to search across a data set to identify, analyze and report repeated patterns (Braun and Clarke, 2006). The goal of this approach is to identify themes of patterns

in a data set and to use those themes to address research objectives or to say about any issues identified.

Results and Discussion

As per the study, six themes were derived from the conducted thematic analysis, which confirms that the private sector hospitals have been providing positive experiences to their customers that cover the five dimensions indicated on the SERVQUAL model, which ultimately leads to satisfied customers. Hence the private sector hospitals provided high-quality service for their customers, and there is a positive influence of service quality towards patient satisfaction in the private sector hospitals of Western, Province Sri Lanka.

Table 1: Analysis of the private hospitals (SERVQUAL*)*

Quotes	Codes	Theme
"No additional charges were added to the bill"	Clear indication of prices	Reliability
"Admission fee was deducted from the final bill"		
"No issues encountered"	Convenient payment options	
"Very kindly and carefully addressed and treated"	Attentive medical staff	Responsive ness
"Checked the health conditions daily"		
"Immediate treatments were given without any delays"	Efficiency of treatments	
"Accurate and efficient treatments were received"		
"All necessary information was given once the critical condition was overcome"	Factual information	Empathy
"Even informed about delays if there were any"		
"Addressed very friendly and empathetically since the patient was a two-year-old"	Courtesy addresses	
"All necessary information was given once the critical condition was overcome"	Factual disclosure	Assurance
"Listened very well to the suggestions and information provided by the caretaker"	Supportive response	

"Hospital staff was very supportive"		
"A very clean environment that was suitable for children with fancy pictures"	Maintain cleanliness	Tangibility
"A very calm and clean surrounding"	Alluring peaceful atmosphere	

Source: Developed by authors

Conclusion and Policy Recommendations

The purpose of this study was to determine how patient satisfaction was influenced by service quality at private hospitals in Sri Lanka's Western province. In order to reach the intended objective, this study was done qualitatively, and the data needed for it was collected from patients who have received care in private hospitals using the techniques of convenience sampling and purposive sampling. After transcribing the data, thematic analysis was used to generate accurate codes and themes, which were then presented in detail. As a result, the researchers concluded that private hospitals have been able to maintain a high level of patient satisfaction by upholding good service quality.

The Sri Lankan private sector healthcare industry is operating in a state where the hospitals provide high-quality service to meet their customer satisfaction. Highly facilitated hospitals and high-quality medical services can be utilized to attract foreigners to receive their medical treatments from Sri Lanka. The foreigners receiving treatments from local healthcare providers will get the benefit of receiving a high-quality healthcare service, despite the expectation of the foreigners; they will receive medical treatments for a comparatively very low cost from hospitals that have exceeded the quality expectations of the locals. Sri Lanka will get the benefit of the dollar inflow to the country, which will be an effective approach to facing the economic crisis.

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Socio-Economic Impact of Economic Crisis 2021 on Fisheries Community: Evidence from Devinuwara Divisional Secretariat Division of Matara District, Sri Lanka

P.K. Dewapura and H.R.A.C. Thilanka

Department of Economics, Faculty of Humanities and Social Sciences, University of Ruhuna, Sri Lanka

Keywords: *COVID-19 Pandemic; Economic Crisis; Fisheries Community; Cost and Expenses; Socio-economic Impact*

Introduction

The COVID-19 pandemic created devastating effects, thereby leading to an economic crisis, and this was particularly evident in the Sri Lankan context from the end of 2021. The crisis was triggered by a global inflationary situation, devaluation of the rupee, and deteriorated dollar reserves in the country, thereby leading to declining economic activities, rising unemployment rates, and financial losses. Since this scenario required policy-level solutions, Sri Lanka used both monetary and fiscal policy measures to address the economic shock, exacerbated by the pandemic, including reducing key policy interest rates, introducing fiscal stimulus, etc. However, the economic recovery has taken place at a slow pace, while most of the challenges experienced by the vulnerable groups have remained unchanged. Notably, the subdued economic condition led to an increase in fuel prices, along with creating other socio-economic effects on input prices, borrowing, education, and health expenses on the fishers' livelihoods – one of the most vulnerable groups to the recent economic downturn. In particular, the fisheries community in Matara District - a historically significant fishing area - experienced rising input costs and increasing loan interest rates, facing hardships in maintaining their standard of living.

Recent academic discourses reveal the socio-economic aspects of the fisheries community and possible effects triggered by the COVID-19 pandemic from the Sri Lankan context and global context. As such, a study on the socio-economic and educational status of fisheries in the Southern Province of Sri Lanka reveals that the fishery is vital to the country's economy, but many fishing families have low socioeconomic status (Dayalatha, 2020). Moreover,

from the context of the Philippines, the COVID-19 pandemic created various macroeconomic and microeconomic effects, including inflation, raw material shortages, credit market collapse, and supply chain disruptions. These factors affected the fisheries community significantly, which were assessed by the impact of COVID-19 restrictions on the catch per unit effort of small-scale fishermen (Macusi et al, 2022).

With this scenario, it is timely and important to investigate the impact of the current economic crisis, triggered by the pandemic on the socio-economic aspects of the fisheries community in Sri Lanka, with a focus on Matara district in order to direct relevant policy formulations and interventions to sustain the fisheries community and mitigate the effects of the economic crisis in Sri Lanka. As such, this research provides a comprehensive understanding of the challenges faced by the fisheries community during the economic crisis, and it can inform policy decisions aiming at addressing the needs of the community and supporting their economic recovery, while contributing to the existing literature on the impact of economic crises on vulnerable segments – fisheries community, particularly in developing countries like Sri Lanka.

Objectives

This study mainly aims to examine the impact of the current economic crisis on the fisheries community in Devinuwara DS Division, Matara District Sri Lanka. It is expected to provide recommendations for policymakers and other relevant stakeholders to support the fisheries community in the face of economic crises.

Methodology

The study analyzes the differences in fishing input cost, borrowing, education expenditure, and health expenditure of the fisheries community before and after the economic crisis in 2021, using a paired sample t-test analysis and Cohen's d and Hedges' Correction. This method has also been used to examine the socioeconomic effects of fisheries communities in other studies - e.g., Kulwijila et al (2012).

The study utilized simple random sampling - a probability sampling technique, to select a representative sample of fishing households in the Welegoda Grama Niladhari Division of the Devinuwara Divisional Secretariat Division in the

Matara District, Sri Lanka. The sampling frame consisted of 190 fishing households, from which 139 households were randomly chosen. This approach ensured the inclusion of diverse subgroups and improved the generalizability of the findings to the larger population. Paired sample t-test analysis was used to assess the impact of the economic crisis of 2021 on the input costs, borrowing, education expenses, and health expenses of the fisheries community in the Devinuwara DS division. In particular, it compared the impacts of the above-mentioned factors before and after the economic crisis – 2021. The sample selection was made due to the Welegoda GN division's significant contribution to fish supply in the Devinuwara DS division, the majority of its people engaging in the fishery, and the location of the Dondra fisheries harbor in the village.

Hypotheses

H_1: The input cost of fisheries before 2021 is less than the input cost of fisheries after 2021.

H_2: The borrowing of fisheries before 2021 is less than the borrowing of fisheries after 2021.

H_3: The education expense of fisheries before 2021 is less than the education expense of fisheries after 2021.

H_4: The health expense of fisheries before 2021 is less than the health expense of fisheries after 2021.

Results and Discussion

Table 1: Paired samples statistics for all variables

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	InpCostbefore2021 - InpCostafter2021	-252.00365	306.22385	25.97357	-303.36128	-200.64603	-9.702	138	.000
Pair 2	BorrowingsBe2021 - BorrowingsAf2021	-263.90072	320.28113	27.16589	-317.61593	-210.18551	-9.714	138	.000
Pair 3	EDUBef2021 - EDUAft2021	-32.12072	31.07235	2.63552	-37.33195	-26.90949	-12.188	138	.000
Pair 4	MediCostBe2021 - MediCostAf2021	-33.38755	20.23229	1.71608	-36.78077	-29.99434	-19.456	138	.000

Table 1 presents the results of four pairs of variables, comparing the data before and after 2021. All four pairs show statistically significant differences between the two time periods, as evident by p-values (<.001) and t-values. All types of costs and expenses considered in this analysis (Pairs 1, 2, 3 and 4) are less before 2021 compared with the period after 2021 since there are mean differences. Thus, all variables, namely input cost, borrowing, and education and health expenses, show an increase in terms of cost and expenses after 2021 when compared with the period before 2021, incurred by the fisheries community. This increase in cost and expenses is characterized and caused by the subdued economic indicators which illustrate the severity of the crisis, including depreciation of the exchange rate, rise in fuel prices, high inflation rate, and a contraction in the economy in 2021. As such, this indicates that the economic crisis has made the fisheries community more vulnerable in terms of financial aspects, which ultimately leads to the deterioration of their standard of living.

Table 2: Paired samples statistics of Cohen's d and Hedges' correction for all variables

			Standardizer[a]	Point Estimate
Pair 1	InpCostbefore2021 - InpCostafter2021	Cohen's d	306.22385	-.823
		Hedges' correction	307.90077	-.818
Pair 2	BorrowingsBe2021 - BorrowingsAf2021	Cohen's d	320.28113	-.824
		Hedges' correction	322.03503	-.819
Pair 3	EDUBef2021 - EDUAft2021	Cohen's d	31.07235	-1.034
		Hedges' correction	31.24251	-1.028
Pair 4	MediCostBe2021 - MediCostAf2021	Cohen's d	20.23229	-1.650
		Hedges' correction	20.34308	-1.641

According to Table 2, the effect size of pairs of all variables shows a large to very large effect size, indicating that the changes in input costs, borrowing, education expenses, and medical costs (health expenses) generate significant adverse effects on the fisheries community after 2021 due to the increase in costs and expense. As such, substantial financial challenges have made the fisheries community more susceptible. These findings are in line with the paired sample statistics given in Table 1.

Conclusion and Policy Recommendations

The economic crisis has adversely affected the Sri Lankan socio-economic status of fisheries, indicating increased costs and financial difficulties for businesses and individuals. Particularly, the input prices and borrowing increased, while expenses on education and health increased after 2021, implying that the economic crisis made the fisheries community more vulnerable, thereby requiring the need for targeted interventions to support their financial well-being.

As such, these adverse effects need to be addressed by formulating and implementing necessary policy measures to mitigate such effects. In order to provide a protective shield against such adverse effects, opportunities for cost-cutting, subsidies, tax breaks, and financial assistance should be offered to reduce the burden of increasing input costs. Financial literacy needs to be enhanced. Broadening the availability of funds for healthcare facilities and the availability of essential medicine can alleviate the rising healthcare expenses. Promoting sustainable fishing practices, technology adoption, and the formation of cooperatives can also enhance the community's overall well-being. Additionally, research and development can identify new market opportunities and ways to adapt to changing economic circumstances, particularly during economic downturns. Overall, this research emphasizes the need for effective measures for mitigating the socio-economic challenges faced by the Sri Lankan fisheries while highlighting the need to implement effective policies and strategies to address these issues amidst economic downturns.

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Assessing the Effect of Trade Agreements on Export Performance of Sri Lanka: A Gravity Model Approach

G.R.P. Hettiarachchi and I.V. Kuruppu

Department of Agribusiness Management, Wayamba University of Sri Lanka

Keywords**:** *Export Value; Gravity Model; Panel Data Regression; Random Effect model; Trade Agreements*

Introduction

The world has observed an increase in the number of Trade Agreements (TAs) in recent years. Exports are one of the best indicators to estimate the economic condition of a country and its global position in international trade. Exports can provide revenue that can be used to pay for imports and the country's economic development. Sri Lanka's export trade plays an important role in the success of Sri Lanka's economy. Sri Lanka has signed Bilateral Trade Agreements (BTA) with India and Pakistan and Regional Trade Agreements (RTA) such as South-Asian Free Trade Agreement (SAFTA), the South Asian Association for Regional Cooperation (SAARC), South Asian Preferential Trading Arrangement (SAPTA), and Asia-Pacific Trade Agreement (APTA). According to Kaushal (2021), the regulatory standards of importing countries have a substantial beneficial influence on the effectiveness of exports. Kelegama (2014) explained that Sri Lanka's economic goals were to expand its trade relations with the leading economic force in South Asia and to change the country's exports. Trade can stimulate economic growth by allowing developing countries to access large markets. Many Asian countries, including Sri Lanka, are parties to several kinds of TAs. There have been many changes from 2012 to 2021, and with the recent studies, there is limited knowledge in this area. The effect of these agreements on export performance is a research gap requiring investigation. Assessing the effect of trade agreements on export performance and identifying factors that affect implementation are valuable research areas.

Objectives

The study aims to evaluate the effect of TAs on the export performance of Sri Lanka from 2012 to 2021.

Methodology

A total of 42 countries out of 48 in the Asian Region were selected for the study based on the availability of data. The data was gathered from 2012 to 2021. Data are obtained from the Direction of Trade Statistics of the IMF, the World Development Indicators (WDI) database of the World Bank, and the United Nations Conference on Trade and Development (UNCTAD stat) database sources.

The simple version of the Gravity Model, taken from Newton's Law Formula 1 represents the standard Gravity Model of international trade (Deardoff, 1998).

$$T_{ij} = A.\frac{(Y_i.Y_j)}{D_{ij}} \quad (1)$$

where, T_{ij}: bilateral trade flows between country *i* and *j*, Y_i: Gross Domestic Product (GDP) of country *i*, Y_j: GDP of country *j*, Dij: Geographical distance between country *i* and *j*, and *A*: Constant.

Based on the characteristics of the study, the type of research is quantitative using a panel regression model. The variables used in this study are Gross Domestic Product (GDP), Per Capita Gross Domestic Product (PGDP), Population (POP), Exchange Rate (EXR), Distance between two countries (DIST), and availability of Trade Agreements (TAs). The extended gravity model of analysis is given as:

$$\ln EX_{ijt} = \alpha_0 + \alpha_1 \ln GDP_{it} + \alpha_2 \ln GDP_{jt} + \alpha_3 \ln PGDP_{it} + \alpha_4 \ln POP_{jt} + \alpha_5 \ln EXR_{ijt} + \alpha_6 \ln DIST_{ij} + \alpha_7 TA + U_{ijt} \quad (2)$$

where, EX_{ijt} : Total export value between Sri Lanka (country *i*) and trade partner (country *j*) for the year *t*, GDP_{it} (GDP_{jt}): Gross Domestic Product of country *i* and (*j*) year *t*, $PGDP_{it}$: Per capita GDP of Sri Lanka (Country *i*) for year *t*, POP_{jt}: Total population of partner country (*j*) in year *t*, EXR_{ijt}: Exchange rate between country *i* and country *j*, $DIST_{ij}$: Geographical distance between the country *i* and country *j*, Trade Agreements: assigned a value of one if Sri

Lanka has an active TAs with country *j* during the period *t* (dummy variable), U_{ijt}: error term; *t*: period, α_s: parameters. Stata statistical software (version 16.0) is used to analyze this secondary data.

Results and Discussion

The study adopted the Hausman test to determine the appropriate method from the fixed effect and random effect methods. Based on the Hausman test results in Table 1, the author accepted the null hypothesis and determined that the random effect model is better than the fixed effect model.

Table 1: Hausman specification test

	Coef.
Chi-square test value	1.017
P-value	0.961

According to the comparison test using the Hausman Test, the random effect is the best model to explain the impact of independent variables on the dependent variable.

Table 2: Results of panel data regression

Variables	**Coefficient**	**St.Err.**	**t-value**	**p-value**
GDPit	0.836	0.794	1.050	0.293
GDPjt	1.007***	0.034	29.200	0.000
DISTij	-0.979***	0.142	-6.900	0.000
Constant	-10.165	9.092	-1.120	0.264

Note: F-Test = 287.290, Prob>F = 0.000, *** indicates variables are significant at 1% level of significance.

Table 2 provides the result of the panel regression by applying simple gravity variables. The GDP of the trading partner and the Distance between the two countries significantly affect the export value of Sri Lanka. Table 3 illustrates the panel regression model's findings by applying the random effect.

Table 3: Results of panel data regression

Variable	Coefficient	St. Err.	t-value	p-value
GDP_{it}	3.820	3.044	1.250	0.210
GDP_{jt}	1.037***	0.063	16.470	0.010
$PGDP_{it}$	-4.059	4.000	-1.010	0.311
POP_{jt}	-0.006	0.079	-0.080	0.940
EXR_{ijt}	0.009	0.026	0.350	0.728
$DIST_{ij}$	-1.219***	0.145	-8.440	0.010
TA_{ij}	0.050***	0.228	-4.790	0.010
Constant	-64.497	56.21	-1.150	0.252

Note: R-Squared=0.700, Prob>F = 0.000, *** indicates variables are significant at 1% level of significance, GDP_{it} (GDP_{jt}): Gross Domestic Product of country *i* (*j*), $PGDP_i$: Per capita GDP of Sri Lanka (Country *i*), $DIST_{ij}$: Geographical distance between country *i* and country *j*, POP_{jt}: Total population of partner country (*j*), TA_{ij}: Trade Agreements.

The GDP of the trading partner has a positive and significant effect on export value in Sri Lanka (p-value < 0.01, = 1.037). GDP has typically been used by economists to evaluate economic growth. The outcome demonstrates that trade with nations with larger GDPs is more successful since the export value rises proportionally to the GDP of the importing nation. This variable, which determines demand in Sri Lanka's export market, can be applied to show a nation's purchasing power. The distance had an inversely significant relationship with the export value (p-value 0.01 = -1.219). This means geographical distance influences deciding on the best trading partner. The availability of TAs had a significant (p-value < 0.01) and positive impact (7 = 0.05) on export value in Sri Lanka. Therefore, creating trade agreements is essential to entering the global market.

Conclusion and Policy Recommendations

Evaluation of the empirical data was obtained using a random effect model within a group estimator. The study also investigated cross-sectional country effects and the influence of time-invariant variables under the random effect model. The GDP value in Sri Lanka, the population of the partner country, the GDP per capita value, and the exchange rate between countries were not significant for export performance. Accordingly, gravity models for export value have a positive impact on the partner country's GDP and a negative impact on geographic distance. Previous studies also stipulated how GDP,

population, and distance affect international trade (Montanari, 2005; Braha *et al*., 2015). To further highlight the effects of trade agreements, it was discovered that Sri Lanka's export value was positively impacted. The study concludes that it is important to promote TAs with high-GDP countries since Sri Lanka's export value has increased. A study can recommend ways to enhance Export value in Sri Lanka. It is very effective to pay attention to building trade agreements with high-GDP countries that are located close to Sri Lanka. For the next study, the writers hope to consider all the trade agreements that Sri Lanka has already signed.

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Fire Briquettes as a Substitute to Fuelwood: With Reference to the Tea Industry of Sri Lanka

J.D.H. Angel
Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya, Sri Lanka

Keywords: *Fuelwood; Fire Briquettes; Energy Efficiency; Black Tea Factories; Fuel Substitution*

Introduction

The energy crisis and energy-related environmental issues have captured international attention. Many industries use firewood to generate thermal energy. Unfortunately, overconsumption of fuel wood in developing countries leads to extensive deforestation. The best approach to solving energy and environmental problems is to promote energy-efficient and environmentally active energy production processes (Saikia et al., 2013). In recent times the interest in biomass technologies is increasing significantly. The crisis in conventional energy systems encourages bio-energy options like gasification, biofuels, agro-residue utilization, and briquetting (Saikia et al., 2013). Using biomass briquettes as an alternative source of energy helps to prevent problems such as deforestation and climate change effects (Suryani et al., 2022).

Briquetting is a simple process that involves the decomposition of biomass, pressing the decomposed material, and drying the pressed briquettes that can be used as briquette fuel instead of wood (Saikia et al., 2013). This briquette fuel is especially recommended for steam generation in the boiler (Grover and Mishra., 1996). However, this potential is not yet widely used for now (Suryani et al., 2022).

The tea industry is the largest industrial consumer of fuel wood to produce thermal energy in Sri Lanka (Grover & Mishra., 1996). Agricultural residues are an important source of biomass (Lin et al., 2016). The process of tea production and consumption creates a lot of tea residues. The disposal of tea residues has not only caused an environmental issue but has also caused a great waste of biomass resources (Lin et al., 2016).

Tea waste fuel has suitable moisture content and a high calorific value of 11.23 MJ/kg, which is comparable to average coal (Lin et al., 2016). According to Grover & Mishra (1996), no briquetting projects have been implemented in Sri Lanka due to a lack of exposure to the technology. However, in recent times some tea factories in Sri Lanka have adopted this technology to generate thermal energy. In the Sri Lankan context, there are few studies carried out which are also limited to biomass briquetting and its economic benefits.

Objectives

This study aimed to find a close substitute for fuel wood in the tea industry, which is easily accessible, energy-efficient, and cost-effective.

Methodology

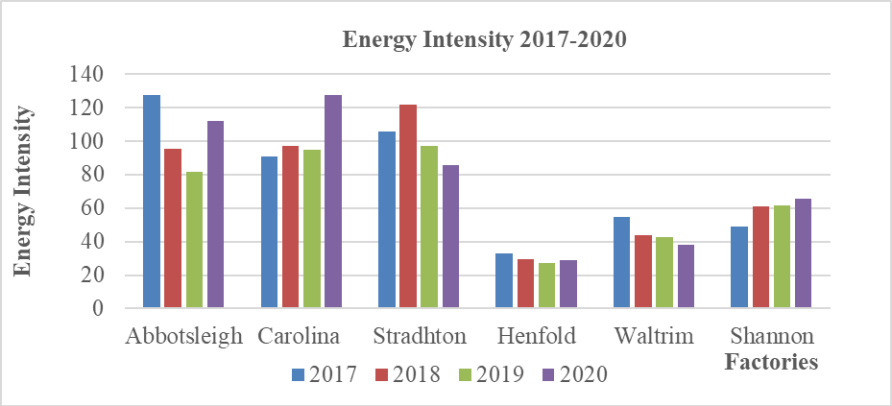
The study adopted a quantitative approach. The primary data for energy consumption and cost (2017 January to 2021 June) was collected from the sampled tea factories. The sample includes 6 black tea factories from 3 different regions in Nuwara Eliya which include orthodox and non-orthodox tea-producing factories. Among them, one tea factory is a self-generator of fire briquettes. The made tea (Kg), energy mix share (firewood, diesel, and electricity), energy intensity, and firewood cost are the key variables that have been analyzed and compared among the selected tea factories. First, all of the energy measures were converted into Mega Joules to ease the analysis to make comparisons among these resources. The conversion coefficients are electricity 1 kWh = 3.6 MJ; Diesel 1 Liter = 38 MJ; Firewood 1 Kg = 14.9 MJ (Energy conversion calculator, 2022).

Energy intensity is calculated to find the energy-efficient resource. It is calculated by dividing total energy consumption (MJ) by made tea (Kg). The energy mix cost ratio is calculated to find cost-effective resources. The data were analyzed using Excel software and used various graphs to evaluate and compare the energy outcomes among factories.

Results and Discussion

It is essential to understand the energy consumption patterns of selected tea factories. Among the traditional energy resources fuel wood covers 71.86% of energy generation. Generally, 63.9 MJ energy is needed to produce 1 kg of tea. The energy efficiency of a tea factory is inversely connected with energy intensity. Figure 1 shows the annual intensity change between 2017 and 2020.

Figure 1: Annual energy intensity (2017 -2020)

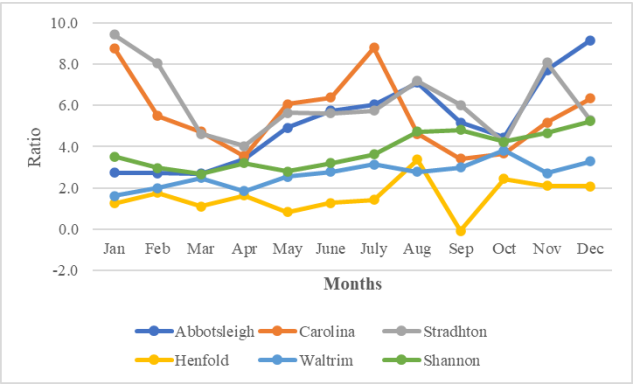


Note: *Abbotsleigh*, *Carolina*, and *Stradhton* are non-orthodox tea processing factories while *Henfold*, *Waltrim*, and *Shannon* are orthodox tea processing factories.

Non-orthodox factories' annual energy intensity ranges from 82-128 MJ, they have higher energy intensity than orthodox tea factories which range from 27-66 MJ. Comparatively Henfold Energy intensity is very low over this time. Henfold tea factory is the only self-producer of the fire briquettes among the sampled factories.

The energy mix cost ratio is calculated by comparing energy resources consumption cost and total made tea. The energy mix cost ratio of Fuelwood: Diesel: Electricity was respectively 58.2: 0.2: 5.5. Still firewood has the largest cost ratio among other energy resources. The Figure 2 shows the cost ratio of firewood consumption in 2019.

Figure 2: Monthly fuelwood cost ratio (2019)



Firewood usage among tea factories is uneven. However, in September 2019, the firewood consumption cost of Henfold reached a negative value. In 2019, firewood consumption was 55% replaced by fire briquettes. Other factories also used specific amounts of fire briquettes at that time but self-generation of fire briquettes gave profit to Henfold factory. In September, Henfold firewood cost for the dryer was Rs. -27957.23. It means the company earned all of its spending on firewood with an extra profit of Rs. 27957.

Conclusion and Policy Recommendations

Firewood consumption covers a large share of thermal energy production nearly 71.9%. The energy mix cost ratio of Fuel wood: Diesel: Electricity of 58.2: 0.2: 5.5 also proves that firewood consumption covers a large share of energy costs. Henfold tea factory is a self-generator of fire briquettes. Self-generation of fire briquettes utilizes the tea residues and reduces its environmental effects. In 2019, Henfold tea factory's energy intensity is the lowest, 55% of firewood was substituted by fire briquettes at that time. It shows the use of briquettes increases energy efficiency and requires little investment and has a quick payback period. In September 2019, the self-generation of briquettes created profits for the factory. Briquettes can be supplied at a lower cost than wood. Easy accessibility, energy efficiency, and lower cost make the fire briquette the best fuel substitute for fuel wood.

The tea industry should focus more on energy efficiency improvement in fuel management. Future in-depth studies on the potential of bioenergy utilization in the tea industry may produce some beneficial effects for the benefit of the tea industry.

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Protected Area Declaration and Changes of Livelihood: A Case Study in Bundala

D.M.S.C.D.M. Jayathilaka

PGIHS, University of Peradeniya, Sri Lanka

***Keywords**: Protected Area; Bundala; Livelihood Impacts; Access Rights*

Introduction

Bundala wetland ecosystem is the first Ramsar wetland of Sri Lanka. It consists of five shallow lagoons: Bundala, Malala, Koholankala, Embilikala, and Maha Lewaya which are on the boundary of Hambantota town. As a conservation step, the state declared Bundala as a sanctuary in 1969 under the Flora and Fauna Ordinance. The Department of Wildlife and Conservation (DWC) is the governing entity of the Bundala protected area.

Besides conservation, the upper catchment area of Bundala was developed with the introduction of new irrigation schemes, especially the Kirindi Oya Irrigation and Settlement Project (KOISP-1987). According to the community sources and the literature, they had access to the sanctuary area without restriction until the 1993- National Park (NP) declaration. The villagers occupied the Bundala lagoon system and surrounding jungle/ shrubs for different livelihoods such as Chena cultivation, dairy farming, lagoon fishing, shell mining, and non-wood forest resource gathering for generations (Matsuno, 1999). With the implementation of the NP, all human activities within the NP were restricted, which seriously affected people's livelihoods. Prior to the implementation of KOISP (1987) around 400 families sustained themselves by fishing in the park (Matsuno, 1999). But afterwards the drainage flow of KOISP and water alteration of the lagoons caused a reduction in fish and shrimp production. Pallemalala's Cooperative Fishing Society (CFS) was established in the 1980s; at present, there are about 511 registered members, of whom 350 actively fish. Some of the ancient settlement areas (like Pathirajaya) were abandoned due to environmental factors, epidemics, and social and political reasons. Around ten villages, including 5 Grama Niladari Divisions (GND) are located around BNP.

Protected areas offer a fundamental approach to conserving ecosystems, but they are also social-ecological systems whose ecological management and sustainability are heavily influenced by people (Cumming and Allen, 2017). Further, failure to understand the plurality (social, ecological, and economic) of the protected area has led to many conservation problems.

Objectives

The objective of this study is to identify the impacts of transforming a community forest into a protected area on people's livelihood changes and how they negotiate their livelihood in the context of Bundala.

Methodology

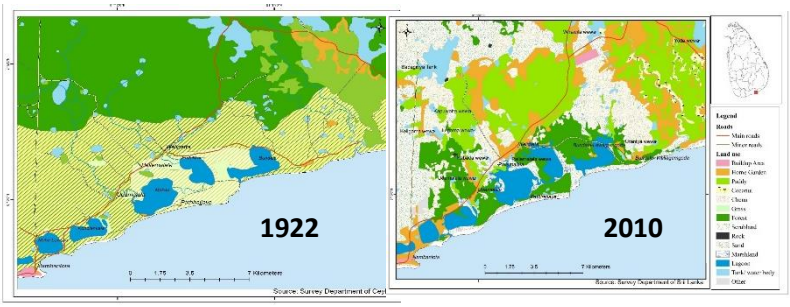
This research adopted a mixed-methods approach. The fieldwork was carried out in October 2022. The qualitative data collection methods included Focus Group discussions (2), in-depth interviews (18), and observations. In terms of the quantitative data collection method, the research included a questionnaire survey (45) carried out in the buffer zone which included Koholankala, Hambantota East, Pallemalala, and Bundala GN divisions. Collected qualitative data were analysed through content analysis, while the questionnaire survey data was analysed through Excel and SPSS software where necessary.

Results and Discussion

The major livelihood of the research area is agriculture and industrial labour (saltern). Most families carried out agricultural practices at least as a source of additional income or to ensure food security. Four major livelihoods (fishing, paddy farming, dairy farming, and non-timber resource collection), were impacted directly or indirectly by the protected area declaration.

The study results show that the community uses the declared areas for livelihoods which have caused the degradation of the wetlands and the ecosystem (after the 1990s). Chena cultivation was one of the dominant land uses in the vicinity of Bundala during 1922- 1970. Due to conservation efforts, chena cultivation has faced constraints and declined (Map 1-Land use maps in 1922 and 2010).

Figure 1: Land uses in 1922 and 2010



Source: Author's compilation

Further, the impact of cattle and buffalo rearing, uncontrolled firewood extraction, and other reasons that outsiders visit the BNP have created negative impacts on the ecosystem. These observations were made by Rajapakshe (1998); Bellio & Kingsford (2013) as well.

Subsistence fishing activities that relied on the BNP lagoon system faced restrictions parallel to the NP declaration in 1993 (Rathnaweera & Gunasekara, 2009). Despite the NP regulations' restrictions, they negotiated and managed access to fishing through the CFS, fishing day and night by their schedule. However, fishing is only permitted in the lagoons of Malala and Embilikala, with the rest of the lagoons dedicated to wildlife. However, the stronger were the management regulations and restrictions of DWC, the more intensive were the techniques utilized by fishermen to catch fish and prawns. This led to the over-exploitation of aquatic resources, and the wide use of illegal fishing nets (zero mesh-sized fishing nets). As observed during the field survey, even though all fishermen are entitled to a CFS, they have competition in fishing and the competition has led to conflicts with other fishers. Pallemalala fishers have a mounting conflict with migratory fishers as well as with DWC officers. During the field survey, there were several court cases ongoing against fishers in Pallemalala due to illegal fishing activities in Bundala Lagoon, where fishing is prohibited.

Next to fishing, farming is the prominent livelihood. Paddy is the most prominent crop in Pallemalala and Weligatta area which get irrigation from tracks 5 and 6 from the Lunuganwehera Right Bank water which was developed by the KOISP. These paddy fields are scattered around the Weligatta Ara. Drainage water of these channels flows directly to the Malala

Lagoon. During the flooding, paddy lands get submerged and partially salinized and abandoned. Due to the restrictions, farmers could not act on the decisions taken by DWC. Other than this few paddy lands were taken to the BNP area when the new electric fence was established recently, and those paddy fields abandoned.

The main purpose of cattle and buffalo raring was milk and curd production which the area was famous for. However, with the KOISP implementation, pasture lands that were used for generations have been converted into paddy lands and settlements. This is because KOISP planners did not consider dairy farming as a subsistence income generation activity. Considering the dairying systems in Hambantota three main systems could be identified: jungle-based feeding, village-based feeding, and jungle and village-based feeding (Abeywickrama, 2018).

After the implementation of KOISP, grasslands in BNP were the pasture lands for surrounding livestock. Buffer zone villagers used to release their cows and buffalos to the BNP area and the intensity of the grazing was increased. When the restrictions were imposed, dairy farming was further neglected and now only a few farmers depend on dairy farming.

Fuelwood is still the major energy source for cooking in the study area. Fuelwood collection in a NP is legally prohibited because fuelwood collection in a surrounding forest of the lagoon can damage the environment which could lead to the propagation of undesired species of plants (Matsuno, 1999). In early times, fuelwood was collected in BNP for household consumption and shell burning. Shell digging and burning happened inside the BNP to produce lime. As shell burning is strictly prohibited now, fuelwood collection is reduced considerably. It was observed that 35% of the interviewed families illegally accessed fuelwood in the park trespassing on the electric fence neglecting the life threat. They are forced to engage in such activities due to the current economic crisis.

Apart from fuelwood, Ranawara (*Senna auriculata*) and other medicinal plants were collected from the Park Forest/ shrubs and sold by villagers for a long time. But 41% of buffer-zone villagers of BNP claimed that they cannot enter the forest for Ranawara and other medicinal plants with restrictions. However, occasionally a few villagers have access to the forest for Ranawara

plucking, and as they explained they have access to the forest with the support of DWC officers. They can bargain with officers for fair access.

Conclusion and Policy Recommendations

With the NP declaration, buffer-zone villagers were challenged by the restrictions of the NP declaration. One direct impact of the NP declaration was the access denied to the resources extracted from the Bundala. As researchers highlighted villagers' resource extraction was not harmful to the ecosystem in the early days. But with the pressure of KOISP, demand on the land and grasslands was enhanced. Parallel to the pressure, encroachments to the NP area and resource extraction have exceeded its limit (especially by the dairy farmers). Further, restrictions of NP, uncertainty, and the low cost of fishing have enhanced the exploitation of aquatic resources in Malala and Embilikala lagoons. With the reduction of the harvest induced by exploitation, villagers have moved to alternative livelihoods such as lotus root digging, wage labour, and out-migration. However, the decaying/ disruption of livelihoods has made an immense negative impact on vulnerable groups during the economic crisis. Further, state rules and regulations aim to ensure and enhance community living standards. Nevertheless, reviewing the Bundala BNP buffer zone villages there is a severe contradiction between conservation and development priorities. Further, if the state fails to maintain proper communication and planning, living standards will not be raised in the BNP buffer zone.

Kothari (2008) emphasized that, failing to consider people when practising nature conservation does not promote sustainability of the landscape and, thus, community-driven and/or supported protected area establishment and administration has become a new global trend. To eliminate the fundamental inconsistencies of policy and practice in Bundala and ensure sustainability, the researcher recommends comprehensive planning and active participation of the community in conservation as a mandated requirement in the Sri Lankan context.

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An Investigation of Factors Affecting the Balance of Trade in Sri Lanka

T.M.H.U. Thennakoon and Y.S.Weerakkody

Department of Economics and Statistics, Faculty of Arts,
University of Peradeniya Sri Lanka

Keywords: *ARDL Approach; Balance of Trade; Sri Lanka*

Introduction

The trade balance is the difference between a country's exports and imports for a given period. It may be in deficit or surplus. Identifying those relations helps to explore what type of relationship between a country's exports and imports. The trade balance is one of the main components, which has a huge impact on the balance of payments and the overall economy. During the past so many decades, Sri Lanka has experienced a continuous trade deficit. According to data, Sri Lanka has recorded a negative trade balance for all the remaining sixty years except six years which were 1950.1951,1954,1956 and 1977. Since its negative trade balance has been continuously deteriorating over the last few decades, this is the right time to study the macroeconomic variables that are influencing the economy, which has been identified by the study "*Empirical Investigation of Determinants of Trade Balance in Sri Lanka*", of Pushpakumara and Kumari in 2009. A similar idea has been mentioned by Malith and others in the 2021 study "An Analysis of the Determinants of Sri Lanka's Trade Balance with Major Trading Partners." Therefore, we can see it is one of the main problems facing Sri Lanka today.

Currently, Sri Lanka is facing a massive economic crisis. The Sri Lankan trade deficit was $-6.54B (percentage of GDP -7.36%) in 2021. Policymakers are doing a lot of things regarding this crisis in this period. Therefore, there is some probability of those policies directly or indirectly affecting the trade balance. Hence, it is very important to examine whether those macroeconomic factors affect or not the trade balance. Otherwise, it will affect the trade balance negatively and will be the reason for increasing this crisis.

Many studies have attempted to explore the determinants of the trade balance in Sri Lanka. Improvement of the trade balance is a cause of economic well-being. Therefore, it is important to identify what factors are affecting the trade

balance and what kind of relationship those factors have with the trade balance. However, no study includes the tariff as an explanatory variable when estimating factors that affect the trade balance. This motivates us to fill the gap in the literature. Further, the findings study would help policymakers to adopt appropriate strategies and policies regarding the trade balance in Sri Lanka.

Objectives

The primary objective of this study is to identify the impact of macroeconomic variables considered in the short run and long run on Sri Lanka's trade balance.

Methodology

In this study, Time series data are used from 1990 to 2020, which were extracted from the World Bank database. The study used TB (Trade Balance) as the dependent variable and INF (Inflation), FDI (Foreign direct investment), GDP (Gross Domestic Product), ER (Exchange Rate**),** TFF (tariff), and BM (Broad money) as independent variables in the following functional form:

$TB = f\ (INF, FDI, GDP, ER, TFF, BM)$

The above function is expressed as the following multiple linear regression model:

$$TB_t = \beta_0 + \beta_1\ INF + \beta_2\ FDI + \beta_3\ GDP + \beta_4\ ER + \beta_5\ TFF + \beta_6\ BM + \varepsilon_t$$

Only the GDP variable was transformed into a natural logarithm, while the other variables were used in percentage form in this study.

$$TB_t = \beta_0 + \beta_1\ INF + \beta_2\ FDI + \beta_3\ lnGDP + \beta_4\ ER + \beta_5\ TFF + \beta_6\ BM + \varepsilon_t$$

Augmented Dickey-Fuller (ADF) and Phillips Personal (PP) tests are used to check the stationarity of variables. According to the results of ADF and PP tests, four variables namely, INF, FDI, and ER become stationary at level form [I(0)], and other variables namely, TB, LGDP, TFF, and BM are stationary at their difference [I(1)]. It was revealed that the order of integration is mixed with I(0) and I(1). Therefore, we take the ARDL model to estimate the parameters. Error correction version of the ARDL model was used to examine the short-run relationship between variables and long-run adjustment.

Results and Discussion

AIC advocates suggested the ARDL (1,0,1,0,1,1,0) model for this analysis. According to the diagnostic test, the residuals are distributed normally and not serially correlated. Also, there is no specification error in the estimated model, and the disturbance term in the equation is homoscedastic. Moreover, recursive estimates of the CUSUM plot lie within the upper and lower critical bounds at a 5% significance level, so that the stability of parameters is established.

According to the results of the Bounds test, we can see the value of F statistics (5.94428) is greater than the critical value of the upper bound (3.28). Therefore it is confirmed that there is a long-run relationship between those variables. The results of the Bounds test are shown in Table 1.

Table 1: Results of the Bounds Test

Test Statistic	Value	Significance	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.94428	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

Next, we can move to the results of the long-run relationship. According to Table 2, tariffs, inflation, gross domestic product, and exchange rate have affected the trade balance in the long run significantly. When it comes to tariffs, we can see there is a positive significant relationship between trade balance and tariffs. Therefore, we can say that an increasing tariff can improve the trade balance in Sri Lanka.

In like manner, we can move to the other significant variables. Those 3 variables which are INF, LGDP, and ER affect on TB negatively. According to Pushpakumara and Kumara (2009), the inflation rate has a marginal positive relationship with the trade deficit and is not significant. In that study, they only used data from the 1999 to 2008 period. When it comes to our research, we can see there is a negative significant relationship between inflation and trade balance. For instance, the increase in inflation will negatively affect the trade balance.

There is a positive relationship between the exchange rate and the trade balance that is not a significant factor (Weerasingha and Perera, 2019). According to our results of the long-run relationship, we can see the exchange rate is negatively significant with the trade balance. For example, the exchange rate depreciation negatively affects the trade balance.

Table 2: Results of long run relationship (Dependent Variable: TB)

Constant	FDI	LGDP	ER	TFF	BM	INF
5.9806	-0.0315	-0.2023	-30.712	-0.0062	0.0023	-0.0038
(0.000)	(0.172)	(0.000)***	(0.003)***	(0.072)*	(0.238)	(0.071)*

Note: Probability values are given in parentheses. *, **, and *** indicate variables are significant at 10%, 5%, and 1% level of significance, respectively.

Finally, we can move to the results of the short-run relationship and long-run adjustment. According to the Table 3 below, only the exchange rate has a significant impact on trade balance in the short run. That is, there is a negative relationship between the exchange rate and trade balance. However, the previous year's exchange rate has affected the trade balance positively.

Table 3: Results of short-run relationship and long run adjustment

Panel A: Short-run Coefficients							
Lag	ΔTB	ΔINF	ΔFDI	ΔLGDP	ΔER	ΔTFF	ΔBM
0		-0.0022	-0.0141	0.0035	-55.622	0.0002	-0.0009
		(0.346)	(0.485)	(0.538)	(0.027)**	(0.950)	(0.678)
1	1.0171		0.0023		45.732	0.0042	
	(0.000)		(0.912)		(0.021)**	(0.226)	
Panel B: Error Correction Representation							
ECT(-1)= - 0.0863982(0.0280)**							

Note: Probability values are given in parentheses. *, **, and *** indicate variables are significant at 10%, 5%, and 1% level of significance, respectively.

Table 3 reveals that the coefficient of ECT is negative and significant, which implies that the TB model can get back to the long-run steady state line with a speed of 86.39% in each period one period after the exogenous shock.

Conclusion and Policy Recommendations

The main objective of this study was to identify the factors that affect the trade balance (TB) in Sri Lanka. According to the long-run results Tariff, Inflation,

GDP and Exchange Rate affect TB in Sri Lanka. Meanwhile, tariffs positively affect the trade balance. On the other side Inflation, GDP, and Exchange rate negatively affect in the long run. However, only ER has a significant impact in the short run in Sri Lanka.

According to the results of the study, macroeconomic variables such as GDP, exchange rate, tariffs, and inflation can be considered as the main determinants that influence the trade balance in Sri Lanka. Therefore, focusing on these factors in the short term, a formal program that includes medium and long-term policies should be created and implemented formally. In particular, to increase the domestic product in the country, instead of restricting imports, it is timely to focus on the establishment of import substitution industries while focusing on a formal export diversification program. Even if the GDP increases in the long run, the demand for the domestic product will decrease and the demand for imports will further increase. Therefore, the trade balance takes a negative value in the long run. As a solution to this, policymakers need to formulate policies focusing on the tariff policy. By reducing imports and increasing exports, the balance of trade can be improved.

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The Impact of Quality Assurance Practices on Employee Productivity: Special Reference to Sri Lankan Apparel Sector

K. M. G. C. Bandara and N. A. Jayasuriya

Department of Business Management, Faculty of Business, Sri Lanka Institute of Information Technology, Sri Lanka

Keywords: *Six Sigma; 5S; Benchmarking; Total Quality Management; Employee Productivity*

Introduction

In the apparel industry, quality is crucial since customer expectations for quality garments are high. Therefore, quality assurance and quality control techniques are widely used to meet customer expectations. These methods ensure that production processes meet relevant quality standards. Currently, the four main quality practices used in the apparel industry are six sigma, 5S, benchmarking, and total quality management. Six-sigma is a business management strategy that targets an increase in quality of production processes by minimizing defects and variations (Schroeder *et al*., 2008). 5S method is a standardized method that motivates companies and employees to maintain a clean, safe, and efficient working environment (Gapp *et al*., 2008) Benchmarking is a method of measuring products, services, and processes against the leaders of an organization in one or more aspects of their operations (Anand and Kodali, 2008). Total quality management is a management framework that is based on the fact that the organization can build a long-term improvement with the support of all employees from low level to high level (José Tarí, 2005).

As key players in the industry accounting for the lion's share of exports, HINT, MAS, and Brandix have made several attempts to introduce quality assurance approaches to increase product quality by improving employee motivation and productivity. Employees behave productively creating a good working environment when the owner of the organization motivates work engagement within employees (Islam *et al*., 2020). Since apparel companies are engaged in the export business, they must meet relevant quality standards with the contribution of productive employees to satisfy the customers and gain new business opportunities. Moreover, these apparel giants supply to renowned

international brands for which adhering to stringent requirements is mandatory. If not, large-scale buyers are most likely hesitant to continue purchasing products due to non-compliance with standards and lower product quality. Hence, these companies will earn losses continuously as unsatisfied customers may shift to other brands. Therefore, these companies must improve employee productivity by enhancing their quality assurance practices.

Objectives

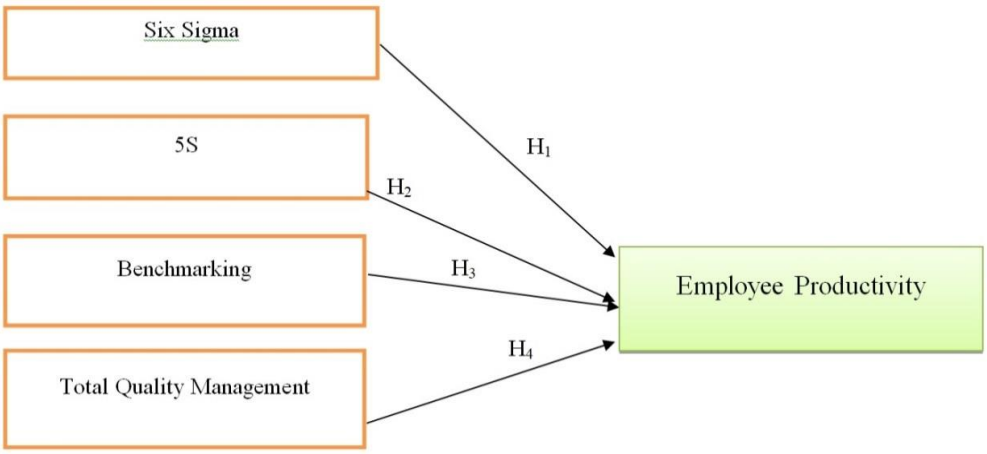
The main objective is to measure the impact of quality assurance practices on employee productivity in the apparel sector in Sri Lanka.

Methodology

Primary data was collected through a Likert scale questionnaire for hypothesis testing. Section A and Section B made up the questionnaire. Section A indicates details about the gender, age, designation, and work experience of the participants. Section B consists of participants' opinions on independent variables of six sigma, benchmarking, 5S and total quality management, and the dependent variable of employee productivity. Questionnaires were distributed through Google Forms and social media. The total number of respondents was 300, who are the employees at HINT, MAS, and Brandix. The simple random sampling approach was used to select the respondent sample.

Then, the questionnaire was tested for reliability and validity to clarify the ability to produce quality information for the analysis. This analysis used a Pearson correlation value to describe the association between factors. The most critical aspect of the relationship was its meaning, which necessitated using a significant value in the correlation table. Multiple regressions were used for regression analysis. Figure 1 shows the conceptual framework of this study.

Figure 1: Conceptual framework



Source: Developed by authors

Results and Discussion

Cronbach's alpha examined the reliability and validity of the dataset. Multicollinearity was checked using VIF, including tolerance, to verify that independent variables are not highly correlated. The VIF and tolerance are low (Maximum tolerance level is 0.445 and VIF maximum level is 2.246.), suggesting that multicollinearity is not significant in this study. The questionnaire has high internal consistency since Cronbach's value for each variable is greater than 0.7. Hence, the questions in this questionnaire can be used to produce highly accurate results. Table 1 shows Cronbach's alpha values of independent variables.

Table 1: Cronbach's Alpha values of independent variables

Variable	Reliability (Cronbach's alpha)	Number of question items
Six Sigma	0.968	7
5S	0.947	8
Benchmarking	0.941	5
Total quality management	0.945	5
Overall Cronbach's alpha	0.982	25

Considering the correlation results, all the values are positive. Here, all the relationships indicating the association between quality assurance practices

and employee productivity have a Pearson correlation value of 0.772, which explains a high correlation. Six Sigma and employee productivity have a Pearson correlation value of 0.737, indicating a high correlation. Similarly, 5S and employee productivity have a Pearson correlation value of 0.772 which is a high correlation. Benchmarking and employee productivity have a Pearson correlation value of 0.474, which shows a moderate correlation. Also, total quality management and employee productivity have a Pearson correlation value of 0.724 which shows a high correlation. Table 2 shows the correlation results.

Table 2: Results of Pearson Correlation Test (Two-tailed test)

	Six Sigma	5S	Bench Marking	TQM	Employee Productivity
Six Sigma	1				
5S	0.830**	1			
Bench Marking	0.660**	0.605**	1		
TQM	0.845**	0.745**	0.606**	1	
Employee Productivity	0.737**	0.772**	0.474**	0.724**	1

Note: ** represents that the correlation is statistically significant at 1% level of significance.

Regression results show significant positive signs of quality assurance practices which indicate a positive and significant impact of quality assurance practices on employee productivity. This is in line with the study's main objective to determine the effect of quality assurance practices on employee productivity in the apparel industry in Sri Lanka. To be more precise, there would be a 14.4% effect from Six Sigma, 49.2% effect from 5S, 29.6% effect from total quality management, and -0.098 from benchmarking on employee productivity. Hence, six sigma, 5S, and total quality management significantly and positively impact employee productivity. However, benchmarking has a negative but insignificant impact on employee productivity. Furthermore, there is the R square value of 0.654 which means that a 65.4% variance in quality assurance practices can be predicted using all independent variables. Table 3 shows the regression results.

Table 3: Results of regression model

Variable	Model 1	Model 2
Six Sigma	0.144***	
5S	0.492***	0.523
Benchmarking	-0.098	
TQM	0.296***	0.335
Constant	0.656	0.687
R squared	0.654	0.647
Adj. R squared	0.649	0.644
Std. error of the estimate	0.28060	0.28265
Observations	300	300

Based on these results, the first, second, and fourth hypotheses are accepted because of the significant positive impact of Six Sigma, 5S, and total quality management on employee productivity. But the third hypothesis is rejected because of the insignificant negative impact of benchmarking on employee productivity.

Conclusion and Policy Recommendations

The results reveal that quality assurance practices of six sigma, 5S, and total quality management substantially impact employee productivity. In contrast, benchmarking has an insignificant negative impact on employee productivity. Findings demonstrate that maintaining high quality creates more opportunities for employees in apparel companies. In Sri Lanka, quality assurance practices and employee productivity must be perceived to sustain the economy. The managers can improve the company training policy to provide employee training to achieve positive outcomes of six sigma, 5S, and total quality management. Self-accountability can be improved by allocating employee working time for working and social networking. The organizational working environment can be optimized by providing a conducive setting for proper infrastructure, ventilation, and minimal disturbances to motivate employees to be more productive. Six Sigma, 5S, and total quality management can be incorporated into the organizational practices and policies and thereby reflected in organizational working processes.

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The Impact of Monetary Policy Transmission Mechanism (MPTM) Variables on Economic Growth in Sri Lanka

W.H.A. Sandaruwan

Jiangxi University of Finance and Economics, Nanchang, P.R. China

Keywords: *Monetary Policy; Transmission Mechanism; Economic Growth; ARDL Model*

Introduction

Sri Lanka's economy has gone through various phases of growth and development throughout the years, affected by various causes. However, sustaining and increasing economic growth remains a challenge, as Sri Lanka's constraints are related to infrastructure development, human capital, governance, and regional imbalances. The Central Bank of Sri Lanka takes a vital position within the monetary policy framework, as it is responsible for the development and execution of policies aimed at effectively managing inflation, ensuring price stability, and stimulating economic growth. The efficacy of monetary policy transmission in Sri Lanka is dependent upon various factors, encompassing the configuration of the financial sector, the extent of financial market development, the degree of sensitivity of investment and consumption to fluctuations in interest rates, and the effectiveness of channels facilitating the transmission of monetary policy.

In previous studies, researchers have evaluated several studies to evaluate MPTM's various channels' impact on monetary policy instruments in Sri Lanka (Perera, 2016; Ghazanchyan, 2014). However, few studies have been conducted in Sri Lanka to evaluate how MPTM channels impact economic growth. This study aims to investigate and evaluate how the MPTM channel variables impact economic growth in Sri Lanka, focusing on the roles of numerous factors such as money supply, credit availability, interest rates, exchange rate, stock market performance, and other critical variables. By analyzing these interactions, policymakers may acquire insights into the efficiency of MPTM channel variables and discover opportunities to improve the influence of monetary policy on economic growth.

Objectives

The primary objective of this study is to identify the effectiveness of the MPTM channel variables in Sri Lanka by analyzing how changes in MPTM channel instrument variables affect economic growth (GDP) in the long and short run within the country.

Methodology

This study used secondary data sources from World Bank indicators and the Central Bank of Sri Lanka annual report database, including the database period of 1993 - 2021. The regression model of this study was developed by using a model followed by Adeoye and Shobande (2017) in the study of monetary policy transmission mechanisms and macroeconomic aggregate in Nigeria. Therefore, in this study, some independent variables were removed from the original model that they were using, and extra variables added to enhance the fit of the overall model relating to the study's objective. The empirical regression model is based on the literature as given below.

$$lnGDP_t = \beta_0 + \beta_1 lnGE_t + \beta_2\, lnFCF_t + \beta_3 TB_t + \beta_4 LBPR_t + \beta_5 INTR_t + \beta_6 \ln MS2_t + \beta_7\, lnPCR_t + \beta_8 EXCR_t + \beta_9\, lnASPI_t + \mu_t \quad (1)$$

where, Gross Domestic Product (GDP), Government Expenditure (GE), Fixed Capital Formation (FCF), Trade Balance (TB), Labor Force Participation Rate (LBPR), Interest Rate (INTR), broad Money Supply (MS2), Private Sector Credit (PCR), Exchange Rate (rupees per US $) (EXCR), and All Share Price Index (ASPI) were used as variables in the above model.

Results and Discussion

The Augmented Dickey-Fuller (ADF) unit root test was adopted to test the stationarity property of the variables. The ADF unit root test identified that all variables are integrated at their first difference [I (1)]. Thus, this study selected the ARDL (1,1,1,0,1,1,1,0,0,1) model to examine the long-run relationship between the MPTM channel variables and GDP growth. The diagnostic tests were conducted to evaluate model residuals, and tests have verified that the residuals confirmed were normally distributed, did not exhibit serial autocorrelation, and did not contain any specification errors in the estimated model. Further, it was confirmed that the error term in the regression equation was homoscedastic. The stability of the parameters was established through

recursive estimates of the CUSUM plot, and it confirmed the model stability during the selected period. The results of the ARDL bound test indicated that the upper bound value 2.08 I (1) was lower than the F statistics 10.25 at a 5% significance level, which confirmed the long-run relationship between variables estimated from the ARDL model.

Table 1: Results of long run relationship

Variable	Coefficient	Std. Error	t-statistics	Prob.
Constant	1.9653	1.019286	1.928123	(0.0800)*
LNGE	0.5146	0.147054	3.499637	(0.0050)***
LNFCF	0.4005	0.071364	5.612852	(0.0002)***
TB	-6.83E-6	8.74E-06	-0.780976	(0.4513)
LBPR	-0.0301	0.012500	-2.411151	(0.0345)**
INTR	0.0165	0.006493	2.554107	(0.0268)**
LNMS2	0.5731	0.216363	2.649230	(0.0226)**
LNPCR	-0.6939	0.169196	-4.101591	(0.0018)**
EXCR	-0.0041	0.001458	-2.811876	(0.0169)**
LNASPI	0.1877	0.046676	4.021817	(0.0020)***

Note: *, **, and *** indicate that variables are significant at 10%, 5%, and 1% level of significance, respectively.

The above table (Table 3) shows the results output of the long-run relationship. According to the results, the MPTM variables INTR, LNMS2, and ASPI had a positive impact. In contrast, MPTM variables LNPCR and EXCR significantly negatively impacted gross domestic product growth within the study period. Further, other variables LNGE and LNFCF had a significant positive impact, while LBPR showed a significant negative impact on GDP growth in the study period. Higher interest rates (INRT) incentivize savings and discourage consumption leading to a large pool of funds available for investment; and increased investment can contribute to higher productivity. Further, increasing the broad money supply (LNMS2) increases liquidity, and economic transactions can contribute to long-run GDP growth. A positive stock market performance (LNASPI), as reflected in a higher all-share price index, can increase household wealth. It can lead to increased consumer spending on goods and services, stimulating economic activity and contributing to long-term GDP growth. A large amount of private sector credit (LNPCR) may lead to crowding-out effects, where increased borrowing by the private sector reduces credit availability for other productive purposes, such

as business investment. Therefore it can limit credit availability for other economic agents, potentially hindering investment and economic growth in the long term. A depreciation of the domestic currency (EXCR) can lead to higher import costs, and it becomes more expensive to import goods and services. This can contribute to higher inflationary pressures in the economy as businesses pass on the increased costs to consumers and impact overall economic activity, resulting in slower GDP growth.

Table 2: Results of Error Correction version of ARDL model
Dependent Variable: D (LNGDP)

Variable	Coefficient	Std. Error	t-statistics	Prob.
D(LNGE)	-0.001504	0.052987	-0.028390	0.9779
D(LNFCF)	0.560038	0.031770	17.62813	0.0000***
D(LBPR)	-0.012386	0.003270	-3.787407	0.0030***
D(INTR)	0.003119	0.001725	1.808270	0.0980*
D(LNMS2)	0.147270	0.053111	2.772893	0.0181**
D(LNASPI)	0.023371	0.011287	2.070631	0.0627*
ECT-1	-0.820494	0.055915	-14.67385	0.0000***
R-squared	0.967985	Mean dependent var	0.076681	
Adj. R-squared	0.958838	S.D. dependent var	0.083657	

Note: *, **, and *** indicate that variables are significant at 10%, 5%, and 1% level of significance, respectively.

Table 2 represents the results output of ARDL Error correction regression. The above results imply that the current value of LNFCF, INTR, LNMS2, and LNASPI had a significant positive impact. In contrast, the current value of LBPR had a significant negative impact on the current value of GDP growth. Further, results imply that the current year LNGE did not significantly impact GDP growth in short-run dynamics. Finally, based on the short-run dynamics of variables, there was no correlation between MPTM channel variables, including private sector credit (LNPCR) and exchange rate (EXCR), in the short-term growth of the gross domestic product. The coefficient of error correction term [ECT (-1)] carries an expected negative sign, which is highly significant since the p-value is less than 1% significant level. The coefficient of -0.820494 indicates that, on average, about 82.0494% of any disequilibrium will be adjusted towards the long-run steady state line in each period one period after the exogenous shocks. It suggests a strong tendency for the system

equilibrium to be restored in response to any deviations from the long-run relationship between the variables.

Conclusion and Policy Recommendations

The findings and results indicate that in the long run, all variables of the MPTM channel (INTR, LNMS2, LNPCR, EXCR, and LNASPI) used in this study had a significant impact. At the same time, in the short run, private sector credit and exchange rate variables did not significantly impact GDP growth in Sri Lanka. Therefore, Policymakers could focus on implementing measures to ensure a stable and efficient monetary policy framework. This may include maintaining a conducive interest rate environment and implementing financial sector reforms to promote access to credit and enhance the efficiency of financial intermediation. Further, policymakers could work on enhancing investor confidence and promoting a well-regulated and transparent stock market. Policies that improve corporate governance, investor protection, and market integrity can help attract domestic and foreign investments, contributing to economic growth. Following short-run results, policymakers should increase government spending on infrastructure projects, targeted tax cuts, or direct support to sectors facing temporary difficulties and focus on promoting and diversifying exports within the country.

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Measuring the Impact of Logistic Performance, Foreign Direct Investment, Gross Domestic Product and Corruption Perception on Global Competitiveness

Naduni Kalansuriya, Shara De Silva, and Ruwan Jayathilaka

SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

Keywords: *Logistic Performance; Foreign Direct Investment; Gross Domestic Production; Corruption; Global Competitiveness*

Introduction

A result of the interconnection and dependency that globalization has created is the establishment of a more open economy that enables countries to import and export goods in the global market (Marti et al., 2014). One of the main elements influencing a nation's ability to sustain itself is its economy, and several elements that promote sustainable development impact a nation's economic competitiveness (Marti et al., 2014). The current study seeks to identify four such factors - Per Capita Gross Domestic Product (PGDP), Foreign Direct Investment (FDI), the Logistics Performance Index (LPI), and the Corruption Perception Index (CPI) - and how they impact the Global Competitiveness Index (GCI).

LPI is linked to a particular trio of GCI clusters, namely the human factor, infrastructure, and institutions (Kálmán and Tóth, 2021). As a result, the study has motivated researchers to explore how LPI influences GCI. According to Koh et al., (2018), nations with lower national competitiveness ratings are believed to have greater levels of corruption. However, this study investigated the influence of CPI on three graded levels of GCI, which has hitherto been unexplored. Despite a scarcity of literature specifically addressing the impact of FDI on GCI, it has been determined that it can support significant foreign investments, technological advancements, and improved administrative skills, directly strengthening a country's competitive edge (Simionescu and Naroș 2019). As a result, the research seeks to determine whether FDI inflows significantly influence GCI. According to Rusu and Roman (2018), PGDP is one of the elements that substantially influence competitiveness, irrespective

of a country's level of development. Therefore, PDGP is also considered since a rise in a country's output may improve its competitiveness.

These four variables have been examined independently in previous studies without taking the combined influence into account. Therefore, this study intends to address the research gap in the existing literature regarding the influence of these independent factors on competitiveness by carefully examining how each of them influences GCI rather than analysing them separately.

Objectives

The objective of this study is to identify the impact of logistics performance, FDI, PGDP, and corruption on the competitiveness of the world Region.

Methodology

The data for the five variables in this quantitative analysis (GCI, LPI, FDI, PGDP, and CPI) was gathered from the most recent reputable sources for 2018. To assess the influence of LPI, CPI, FDI, and PGDP on GCI, this research classified GCI into three categories: low, moderate, and high. Each of these three categories underwent the requisite scrutiny and investigation. Of the 110 nations, 36 are classified as low-level, 37 as moderate-level, and the remainder as high-level. Estimates from the Ordered Probit Model were utilized to compute the marginal effects, which are used to estimate the four independent variables investigated in this study.

$$Y = (GCI = 1,2,3) = xi\ (\beta_0 + \beta_1 LPI + \beta_2 FDI + \beta_3 CPI + \beta_4 Ln PGDP) + \varepsilon_i$$

GCI is categorized into 3 groups 1 denotes low level, 2 denotes moderate level and 3 denotes high level; the independent variables are LPI, FDI, PGDP, and CPI. Ln denotes the logarithm. The symbol ε_i represents the error term in the aforementioned equation.

Results and Discussion

Table 1: Ordered Probit results for the world region

Marginal Effects (In Percentage)					
Variable	**Estimate**	**Robust SE**	**Low Level**	**Moderate Level**	**High Level**
LPI	3.96075***	0.89321	-0.05553	-0.26268	0.318218
CPI	0.40203**	0.18878	-0.00564	-0.02666	0.032299
FDI	0.07044***	0.01989	-0.00099	-0.00468	0.005658
LNPGDP	1.48844***	0.27135	-0020868	-0.09871	0.119585
Ancillary parameters		**Marginal effects after Ordered Probit**			
$\hat{Y}_1$	24.78634	3.97312			
$\hat{Y}_2$	29.16438	4.71525			
Pseudo R^2	0.7591				
Log Likelihood -29.115249					
No. of Obs	110				

Note: *, **, and *** indicate variables are significant at 10%, 5%, and 1% level of significance, respectively.

According to Table 1, if LPI in a country increases by 1 percent, it would lead to the probability of increasing global competitiveness by 3.96075 percentage point. Moreover, an increase in CPI by 1 percent would accelerate the probability of increasing worldwide competitiveness by 0.40203 percentage point at a 5 percent significance level. In contrast, a rise in FDI of 1 percent tends to increase the GCI by 0.07044 percentage point. When PGDP increases by 1 percent, it results in the probability of increasing competitiveness in the global region by 1.48844 at a 1 percent significance level. Therefore, it can be concluded that an increase in LPI, CPI, FDI, and PGDP would increase the probability of a country falling into the high-level category of GCI since the probability of a country falling into low and moderate-level categorization has shown a negative value. In the world region, all four independent variables significantly impact the dependent variable, GCI.

Therefore, the findings prove that a variation is created upon global competitiveness via LPI, FDI, PGDP, and CPI. Such factors could be utilized as reliable variables when predicting international competitiveness that also cause a positive impact with vital statistical significance. Past researchers also further validate the findings by identifying LPI and PGDP as worldwide indicators that directly influence fluctuations in competitiveness, mainly in the

American and European regions. LPI and PGDP variables highly contribute to the competitiveness in such territories. Simionescu and Naroş (2019), confirmed that the higher the inflow of FDIs, the higher the contestability of the host markets. This is because FDI could be considered as the vehicle acquired in penetrating worldwide networks in marketing and production, thus enhancing competitiveness among countries. It further attests that European countries are rapidly growing with heavy FDI inflows and strengthening their competitive edge.

Conclusion and Policy Recommendations

This study differs from previous studies in that it considers the impacts of LPI, FDI, PGDP, and CPI on classified GCI in the global context. The findings revealed a negative and minor influence on moderate and low-level nations, with a favorable correlation pointing to high-level countries. The current analysis helps address the impact and significance of LPI, FDI, PGDP, and CPI on overall competitiveness.

Different policies can be applied to other categories when considering the policy implications. Accordingly, governments and policymakers in the GCI high-level category should take appropriate measures to reduce the corruption level of those countries, while minimizing the gap between the low-income earning population and the high-income earning population. By minimizing the corruption level of GCI high-level categories, countries can become more competitive in the perception of corruption. Policymakers in the countries in the moderate level category should earnestly adopt strong policies to remain in the global competitiveness index without falling into the GCI low-level category. On the other hand, having solid policies enables these countries to move to high positions in the GCI index. GCI low-level category is one of the most critical sections in policy implication. This study reveals that policymakers should be highly concerned about countries belonging to the low-level category in every continent.

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Household Demand for Rice Consumption in Sri Lanka

A.S.G.S. Bandara

Faculty of Management, Uva Wellassa University of Sri Lanka

Keywords**:** *Rice; Food Consumption; QUAIDS*

Introduction

Rice is a very important food item in developing countries. It is the staple food of more than half of the world's population. Approximately over 900 million poor people depend on rice as consumers. About a quarter of global per capita energy consumption is obtained through rice consumption (GRiSP, 2013). Countries in the Asian region consume more than 90% of the world's rice production (Abdullah *et al*., 2006). But due to urbanization, income growth, structural changes in the population demographics, and several other socioeconomic changes, world food consumption patterns have changed rapidly (Pingali, 2007). With a population of over 22 million in Sri Lanka, rice's annual per capita consumption is approximately 107 kg. Rice provides about 45% of the total calories and 40% of the protein requirements in the staple diet of an average person in Sri Lanka (GAIN, 2020). But over time, due to changes in rice prices and other demand factors, there have been many significant changes in rice consumption in Sri Lanka (DCS, 2019).

Objectives

This study aims to examine the changes in rice consumption in Sri Lanka and especially in urban, rural, and estate sectors from 2006 to 2016.

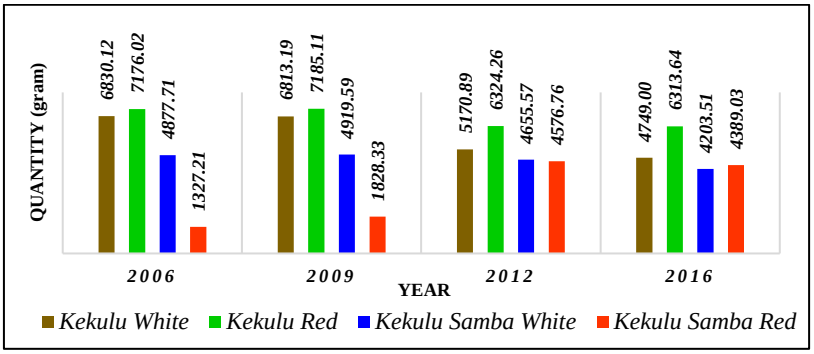
Methodology

This study utilizes Household Income and Expenditure Survey (HIES) data for the years 2006, 2009, 2012/13, and 2016 and uses the Quadratic Almost Ideal Demand System (QUAIDS) model, a multiple regression model and descriptive statistics to analyze the changes in rice consumption. STATA-14 software and MS Office Excel were used to analyze the data.

Results and Discussion

According to Figure 1, between 2006 and 2016, households reduced their consumption of *Kekulu* white rice. That is, the consumption of *Kekulu* white rice was 6, 830.12grams in 2006, and by 2016it has been reduced by %30.46 to 4, 749.00grams.

Figure 1: Household weekly rice consumption in Sri Lanka by quantity



Source: Author's compilation based on HIES 2006, 2009, 2012, and 2016

Regarding the consumption of *Kekulu* red rice, households consumed 7176.02 grams a week in 2006, and by 2016, it had been reduced by %12.02to 6, 313.64 grams. In 2006, a household consumed 4, 877.71grams of *Kekulu* Samba white rice in a week, and by 2016, it had decreased by %13.8to 4203.51grams.But the consumption of Kekulu samba red rice has significantly increased by 230.7% .from 1,327.21 to 4,389.03 during the period

Table 2: Estimated sampled rice expenditure function applying OLS

Independent Variables	Dependent Variable: ln (monthly total expenditure on sampled rice items)		
	Urban	Rural	Estate
ln (monthly per capita total expenditure)	0.188*** (0.003)	0.319*** (0.000)	0.709*** (0.003)
Age of the household head *(years)*	-0.004*** (0.071)	0.001*** (0.294)	0.002*** (0.710)
Household head is a male *(dummy)*	0.161*** (0.010)	0.100*** (0.004)	0.192*** (0.274)
Household size	0.151*** (0.000)	0.192*** (0.000)	0.228*** (0.000)
Household head with above secondary schooling *(dummy)*	-0.056*** (0.442)	-0.072*** (0.088)	-1.325*** (0.044)

Households from ethnic_minority *(dummy)*	-0.114*** (0.092)	-0.227*** (0.000)	0.269*** (0.230)
Constant	4.856*** (0.000)	3.638*** (0.000)	0.425*** (0.000)
No. of households	201	646	35
R^2 (overall)	0.4532	.4995	0.7496
Prob. > F	0.0000	0.0000	0.0000

Note: Numbers in parentheses are probability value. *** indicates variables are significant at 1 percent level of significance.

Table 2 shows the monthly expenditure on rice consumption estimated separately for urban, rural, and estate sector households applying OLS. Here, *Kekulu* samba white rice and *Kekulu* samba red rice were used as one rice item (*Kekulu Samba*) for the convenience of the study. Households in the estate sector allocated more of their per capita monthly income to these rice items than households in urban and rural sectors. Expenses on consuming these rice items increased for households in rural and estate sectors and decreased for urban households as the age of the household head increased. Households headed by males spent more on the relevant rice items in urban, rural, and estate sectors. Furthermore, the household size in the urban, rural, and estate sectors also increased the expenditure on these rice items by 2016. Households headed by a person having above secondary level education spent less on these rice items in all three sectors. Since they provide more benefits such as protein and energy required for daily diet. Ethnic minority households in urban and rural sectors spent significantly less on these rice items than households in the Sinhalese ethnic majority.

Table 3 shows the expenditure elasticities computed using the AIDS model. The overall expenditure elasticity values (E_y) for urban, rural, and estate sectors reveal that *Kekulu* white rice and *Kekulu* samba rice are necessary commodities ($E_y < 1$), and *Kekulu* red rice is neither a luxury nor a necessary commodity ($E_y =>1$). The expenditure elasticities for all rice items do not vary greatly across years and locations.

Table 3: Estimated income (expenditure) elasticities

Rice Items	Urban				Rural				Estate			
	2006	**2009**	**2012**	**2016**	**2006**	**2009**	**2012**	**2016**	**2006**	**2009**	**2012**	**2016**
Kekulu White	0.98	0.98	0.98	0.97	0.98	0.98	0.98	0.97	0.98	0.98	0.98	0.97
Kekulu Red	1.08	1.08	1.09	1.07	1.08	1.07	1.09	1.07	1.08	1.08	1.09	1.07
Kukulu Samba	0.92	0.93	0.93	0.92	0.92	0.92	0.93	0.92	0.93	0.93	0.93	0.92

Table 4 represents the calculated Compensated (Hicksian) and Uncompensated (Marshallian) price and cross-price elasticities for urban, rural, and estate sector households, respectively. The own-price elasticities of all rice items are negative, which is consistent with economic theory. The results of uncompensated price elasticity values indicate that *Kekulu* samba (Red and White) is price inelastic with an uncompensated price elasticity value of less than 1. The compensated elasticity is consistent with demand theory indicating both income and substitution effects. Among the sample rice items, compensated cross-price elasticity values are positive and those values indicate that these rice items are substitute goods. The largest substitution effect with a higher magnitude is between *Kekulu* white rice and *Kekulu* red rice (0.32) indicating that a 1 percent increase in the price of *Kekulu* white rice results in a 0.32 percent increase in consumption of *Kekulu* red rice.

Table 4: Estimated price and cross-price elasticities

Rice Items	*Kekulu White*		*Kekulu Red*		*Kekulu Samba (W&R)*	
	Com (ε_{ij}^{H})	*Uncom* (ε_{ij}^{M})	*Com* (ε_{ij}^{H})	*Uncom* (ε_{ij}^{M})	*Com* (ε_{ij}^{H})	*Uncom* (ε_{ij}^{M})
	Urban Sector					
Kekulu White	-0.86	-1.11	0.48	0.10	0.37	0.03
Kekulu Red	0.32	0.04	-0.63	-1.05	0.30	-0.07
Kekulu Samba	0.28	0.03	0.33	-0.02	-0.62	-0.94
Rural Sector						
Kekulu White	-0.86	-1.11	0.48	0.10	0.37	0.03
Kekulu Red	0.32	0.04	-0.63	-1.05	0.30	-0.07
Kekulu Samba	0.28	0.03	0.33	-0.02	-0.62	-0.94
Estate Sector						
Kekulu White	-0.86	-1.11	0.48	0.10	0.37	0.03
Kekulu Red	0.32	0.04	-0.63	-1.05	0.30	-0.07
Kekulu Samba	0.28	0.03	0.33	-0.02	-0.62	-0.94

Finally, compensated cross-price elasticities for all rice items do not vary greatly between the three sectors indicating no significant substitution effect difference between all three sectors' households.

Conclusion and Policy Recommendations

The food consumption patterns in Sri Lanka have gradually changed over time. There have been many significant changes in rice consumption, a staple food in Sri Lanka. While the consumption of *Kekulu* white, *Kekulu* red, and *Kekulu* Samba white rice has declined, the consumption of *Kekulu* Samba red rice has increased significantly. Since estate sector households do not have more access to consume more prepared foods and fast foods than households in urban and rural sectors, households in the estate sector spend a larger proportion of their per capita income on rice consumption. In rural and estate sector households, expenditure on these rice items gradually increases as the age of the household head increases. Households headed by males and household size spend more on these rice items, but household heads with above secondary level education spend less on consuming relevant rice items, because they tend to consume higher-quality grains and animal-source foods. Although rice provides protein and energy required for daily diet, excessive consumption of rice can lead to various diseases. In addition, *Kekulu* red and *Kekulu* samba red rice consumption have increased significantly in Sri Lanka because they are good for health. Therefore, in addition to these types of rice, it is a very important matter in principle to create opportunities for the consumption of high-quality rice types available in Sri Lanka. For that, it is more appropriate to conserve high-quality rice seeds and sustainably popularize the cultivation of those rice varieties among farmers.

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Global Alcohol Consumption and its Association with Stroke

K.A.T.V. Kolonne, K.K. Mudalige, K.V.R.K.M. Rathnayake, D.M.K.G. Dissanayaka, M.D.R.K. Jayathilaka, L.P. Rajamanthri, C. N. Wickramaarachchi, and R.P.U.S. Pathirana

SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

Keywords: *Alcohol; Stroke; Multiple Correspondence; Global*

Introduction

The consumption of alcohol and its effects on disease and mental disorders is a frequently explored topic but has many information gaps. Alcohol can be commonly broken down into four distinct categories, i.e., beer, wine, spirit, and other alcohol-based on its alcohol percentage. While beer has the lowest at 5%, other alcohol has as much as 60% alcohol (WHO, 2019).

The effects of uncontrolled and moderate alcohol consumption are well explored; however, when consumed in moderation, the effects of alcohol become quite controversial. Studies that discuss this relationship remain divided on the impact of moderate alcohol consumption. This contradiction is, however, untrue when considering habitual or excessive alcohol consumption, where all forms of excessive alcohol-use lead to detrimental health effects (Smyth et al., 2022). However, moderate alcohol consumption stands to provide a beneficial impact on the risk of Stroke.

The interactions of alcohol consumption in the regular person have been observed to differ based on age, where older persons who consume moderate levels of alcohol have higher risks of Stroke. Similarly, Alcohol interacts differently depending on the gender of the individual and the type of alcohol consumed. Whilst there exist varying implications of alcohol for different genders and ages, similar consequences are applicable for everyone. Stroke and low consumption of specific alcoholic beverages exhibit distinct associations with each other (Gan et al., 2021). But, while previous studies have attempted to determine the relationship and impact of alcohol on Stroke within a limited sample, none have taken the initiative to analyze and determine the association between alcohol consumption and stroke globally.

Objectives

This study aims to find the association between global alcohol consumption and the death rate of Stroke.

Methodology

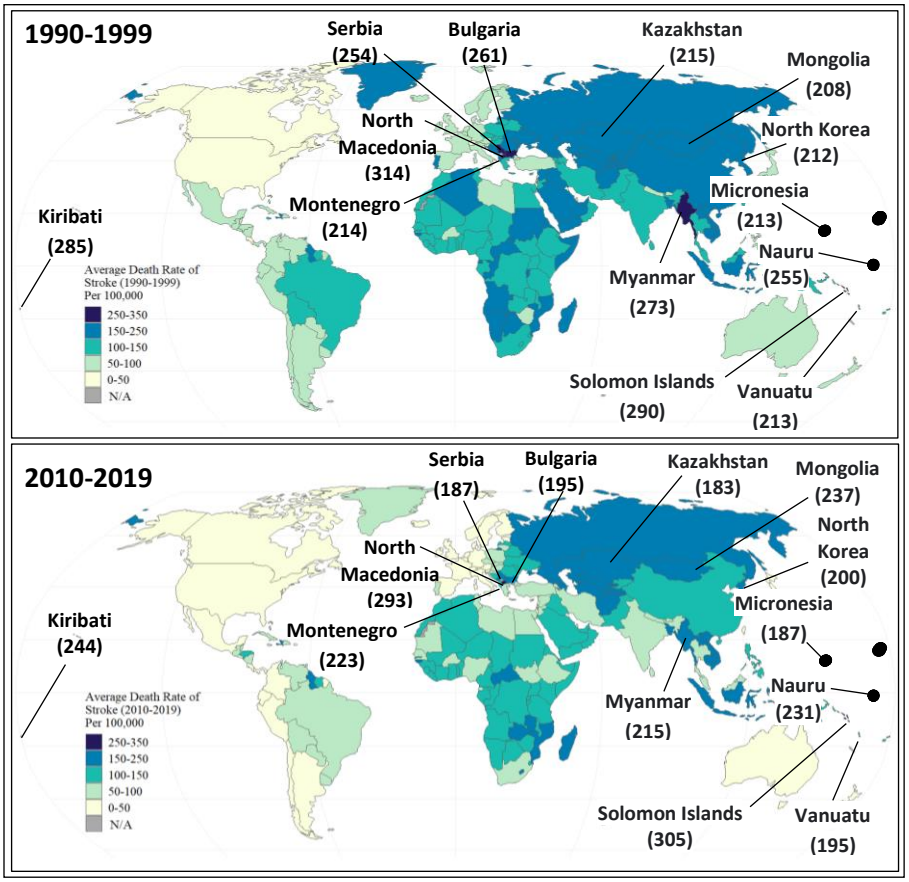
This study investigated the association of alcohol consumption with the death rate of Stroke across thirteen countries utilizing data from 1990 to 2019. The data was sourced from two reputable databases: Our World in Data and the World Health Organization. This study involved two key categorical variables: the death rate of Stroke and alcohol consumption. Alcohol consumption was then further categorized into three sub-categories formulated according to their relative alcohol percentages: beer, wine, and spirit. This allowed for the individual assessment of different categories of alcoholic beverages and their association with stroke. All variables, including Stroke, were then classified according to five sub-categories: Very High, High, Moderate, Low, and Very Low based on their relative minimum and maximum values.

Multiple Correspondence Analysis (MCA) is an analytical technique that extends the scope of Simple Correspondence Analysis (SCA) to analyze large multivariate categorical datasets with more than two variables. A Burt's matrix B=Z'Z was created to conduct our MCA using our dataset. Generally, a Burt matrix is a two-way contingency table represented within a matrix (Hamilton, 2011).

Results and Discussion

To further examine the association between alcohol consumption and Stroke, an analysis comprising globally available data was conducted. To determine the countries that exhibit prevailing high death rates, Figure 1 depicts the two maps created to visualize the data accurately. 13 countries were identified to exhibit high prevailing death rates for both year ranges. Unmarked Countries did not highlight a significant overall change and are not presented for further discussions.

Figure 1: Average death rate of Stroke per 100,000 in 1990-1999 and 2010-2019



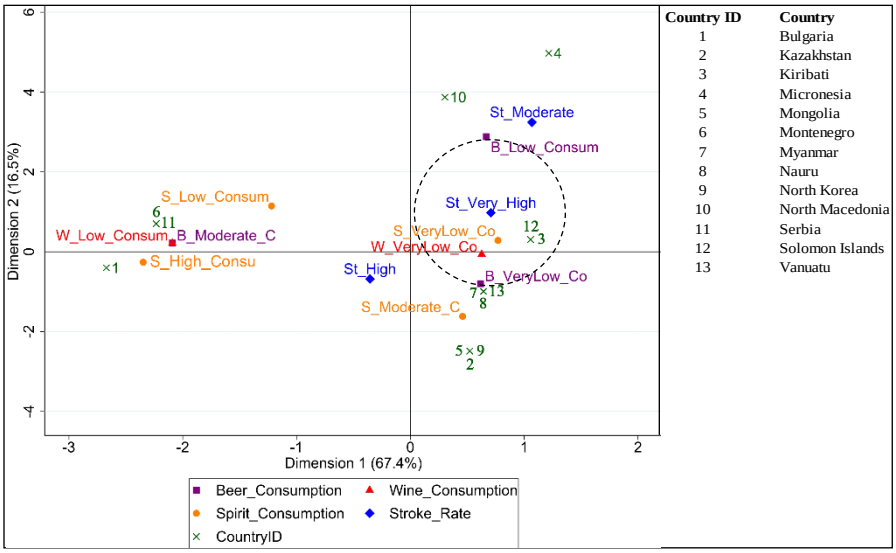
Source: Authors' Illustration

Table 4: Eigenvalues of MCA for Stroke

Dimensions	Principal inertia	% Inertia	Cumulative %
Dim 1	.4150348	67.41	67.41
Dim 2	.1016336	16.51	83.92
Dim 3	.0034384	0.56	84.48
Dim 4	.0000863	0.01	84.49

Table 4 presents detailed information about how much initial inertia is captured within each dimension. Results are limited to the first two dimensions, which showed a substantial contribution to the initial inertia where 67.41% and 16.51% of the variation were explained, respectively, amounting to a collective 83.92% of total inertia.

Figure 2: Biplot of Stroke MCA



Source: Authors' Illustration

Figure 2 presents a visualization of the MCA. This is done using a biplot. Within the results, Stroke displays a very high prevalence when alcohol consumption levels of beer, wine, and spirit are generally deficient. As spirit consumption increases to moderate, Stroke reduces to high. Similarly, beer strongly correlates with Stroke as an increase from very low to low reduces Stroke from very high to medium. However, while an increase in alcohol consumption seems favorable, beer growth to moderate and spirit to high shows no association with reducing Stroke. The countries strongly signifying these associations are the Solomon Islands, Kiribati, Myanmar, Vanuatu, and Nauru.

These findings are consistent with the literature explaining how moderate consumption of beer can reduce levels of Stroke and constant intake can deteriorate health (Christensen et al., 2018). While countries with persistent high death rates were chosen, only four displayed the association found through the MCA with high accuracy.

Conclusion and Policy Recommendations

The primary intent of this study was to investigate the association between alcohol consumption and Stroke from 1990 to 2019. However, due to the pandemic, global data collection halted after 2019, preventing studies from

incorporating recent years' data. Similarly, illicit alcohol consumption rates were not fully captured within the dataset. The study provides evidence of a significant association between alcohol consumption and Stroke. The results demonstrate that countries with lower alcohol consumption have a greater incidence of stroke deaths. The death rate from Stroke has decreased to a moderate level as alcohol consumption rises to an average level. The rate of Stroke has reduced to an intermediate level as beer consumption increases from a superficial level to a low. Additionally, when alcohol intake rises reasonably, Stroke shows no signs of reducing.

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Do Domestic and External Public Debt Enhance Economic Growth? Short-term and Long-term Evidence from Sri Lanka

U.L. Milhana[1] and J.M.A. Jayawickrama[2]

[1]*Department of Economics and Statistics, Faculty of Arts and Culture, South Eastern University of Sri Lanka, Sri Lanka*
[2] *Department of Economics and Statistics, Faculty of Arts, University of Peradeniya, Sri Lanka*

Keywords: *Domestic Debt; External Debt; Aggregate Demand Model; Economic Growth; Sri Lanka*

Introduction

Governments generate revenues to meet expenditure on their day-to-day operations and investment projects for the development of their countries. Since tax revenue and seigniorage are insufficient, governments often fall into borrowing from local and foreign sources to finance deficits. Such borrowings to finance continuous and large fiscal deficits may create severe macroeconomic imbalances. As per the recent data, the worldwide public debt recorded as high as 226 trillion US dollars in 2021 (Gaspar, et al., 2021). Sri Lanka is no exception in terms of accumulation of debt and thus having serious macroeconomic consequences (Jayawickrama, 2004).

The total public debt of Sri Lanka was 13,908 billion rupees at 2022Q1. It is expected to increase around 120 percent in 2023 (Ministry of Finance, 2020). At the same time, Sri Lanka experienced a high negative growth rate (-7.8%) in 2022 and expected a growth rate of -3% to -4% in 2023. The average growth rate also demonstrates a decreasing trend over time. In the presence of high accumulation of public debt, this poor growth performance questions the productiveness of the public debt.

Among other studies, this research especially concentrates on the post war period's impact of public debt on economic growth of Sri Lanka using quarterly data from 2010 to present. Measuring the impact of debt on economic growth after the end of the war is important for several reasons: First, the most of the government borrowing may be used for enhancement of productivity as spending on war recedes; Second, this period is known as a

highly corrupt period of public funds, especially borrowed money; Third, this period involves various policy reversals with a view to establish a domestic economy and then again to open the economy to international market. Further, the use of quarterly data will help identify short-term impact of debt on economic growth rather than the use of annual data.

Objectives

This study intends to find the short-term and the long-term effects of public debt, disaggregating into domestic and external debt, on economic growth of Sri Lanka.

Methodology

This paper adopts the Keynesian aggregate demand theory as a succinct way of modeling short-term and long-term fluctuations in economic growth. In this framework, the aggregate demand of the economy is given as:

$$\mathrm{Y}_t = \mathrm{C}_t + \mathrm{I}_t + \mathrm{G}_t + \mathrm{NX}_t \qquad (1)$$

Where, Y is output, C is private consumption spending, I is private investment, G is government spending and NX is net exports at time t.

As our objective is to examine the growth effects of public debt, we alter the above equation (1) to separate the effects of debt on government's recurrent expenditure and investment expenditure. In this modelling framework, we assume that gross fixed capital formation (GFC) includes both private and public investments and therefore GFC depends positively on public debt. As investment effect of public debt on output growth cannot be included in the output equation, we use the following two stage method of estimation to remove public debt effect on GFC:

$$\mathrm{GFC2}_t = \mathrm{GFC}_t - \mathrm{GFC1}_t \qquad (2)$$

where, GFC1 is defined as:

$$\mathrm{GFC1}_t = \sum_{i=0}^{n} \hat{a}_i \mathrm{DD}_{t-i} + \sum_{i=0}^{n} \hat{b}_i \mathrm{ED}_{t-i} \qquad (3)$$

DD is domestic public debt stock, ED is external public debt stock and $\hat{a}$ and $\hat{b}$ are estimated parameters that measure contemporaneous and lagged effects of domestic and external debt on GFC. Eq (3) is estimated with a constant

term. In this framework, the GFC2 variable, as given in Eq. (2), represents GFC in the absence of domestic and external debt effect on it.

With this specification, we write a testable equation in ARDL form of Eq. (1) as follows:

$$\mathrm{GDP}_t = \propto_0 + \sum_{i=1}^{p} \theta_i \mathrm{GDP}_{t-i} + \sum_{i=0}^{q_1} \beta_i \mathrm{GFC2}_{t-i} + \sum_{i=0}^{q_2} \gamma_i \mathrm{DD}_{t-i} + \sum_{i=0}^{q_3} \delta_i \mathrm{ED}_{t-i} + \sum_{i=0}^{q_4} \theta_i \mathrm{LFP}_{t-i} + \sum_{i=0}^{q_5} \rho_i \mathrm{INF}_{t-i} + u_t \qquad (4)$$

where, GDP stands for gross domestic product, LFP stands for labour force, INF stands for rate of inflation and u is an independent and identically distributed random error term. All macroeconomic variables except INF in Eq. (4) are in constant prices converted based on GDP deflator. The lag length used in equations (3) and (4) is determined by the lag length selection criteria. Equations (3) and (4) are estimated in log linear form.

The long-run solution of Eq. (4) is used to find the cointegrating solution of the variables and to find the long-run impact of debt on GDP. An Error Correction Model is estimated based on the long-run solution of Eq. (4) to examine the short term effects of debt on economic growth and short-term adjustments in the model in response to debt shocks given other variables are constant. This study uses quarterly data between 2010 and 2022 collected from the Monthly Bulletin of Central Bank of Sri Lanka. The quarterly data are used to model seasonal and short-term fluctuations in debt stocks.

Results and Discussion

Unit Root tests suggest that all variables in equations (3) and (4) are non-stationary [I(1)]. Therefore, the use of Auto Regressive Distributed Lag (ARDL) model to derive the long-term solution is appropriate. The estimated results are given below:

Table 1: Long run results of ARDL model

	ARDL Model		**Alternative ARDL Model with LGCF**		
	LR Coefficient	**Sum of Lagged Effects**		**LR Coefficient**	**Sum of Lagged Effects**
Constant	2.558 (1.976)	4.02 [1.74]	Constant	2.558 (1.976)	4.02 [1.74]

LDD	0.289*** (0.047)	0.455*** [11.36]	LDD	0.143*** (0.055)	0.225** [3.965]
LED	0.185*** (0.041)	0.291*** [11.31]	LED	0.097** (0.043)	0.153*** [8.71]
LGCF2	0.471*** (0.061)	0.740*** [9.351]	LGCF	0.471*** (0.061)	0.74*** [9.35]
LLFP	0.248 (0.254)	0.39* [2.309]	LLFP	0.248 (0.254)	0.39* [2.31]
LINF	-0.037*** (0.011)	-0.058** [3.489]	LINF	-0.037*** (0.011)	-0.058** [3.49]
LGDP	--	-1.57* [2.588]	LGDP	--	-1.57* [2.59]
LR Sigma	0.0197		LR Sigma	0.0197	
Wald Chi^2	1201.18 [0.00]		Wald Chi^2	1201.18 [0.00]	
UR t test	-3.829		UR t test	-3.829	

Accordingly, the variables domestic debt, external debt and gross fixed capital formation have a positive impact on GDP while inflation has a negative effect in the long-run. However, labour force participation has an insignificant impact on GDP.

Table 2: Results of error correction model

	ECM Estimates		**Lag structure analysis**	
Variable	**Est coefficient**	**SE**	**Sum of effects**	**F Test**
Constant	0.012	0.012	0.012	1.012[0.33]
dLDD	-0.184	0.181	0.342**	4.164[0.01]
dLDD(-1)	0.216	0.166		
dLDD(-2)	-0.136	0.192		
dLDD(-3)	0.447***	0.141		
dLED	0.602***	0.091	0.309***	11.119[0.00]
dLED(-1)	-0.249	0.168		
dLED(-2)	0.195	0.145		
dLED(-3)	-0.239	0.164		
dLFCF2	0.382***	0.063	0.957***	14.592[0.00]
dLFCF2(-1)	0.259***	0.085		
dLFCF2(-2)	0.035	0.083		
dLFCF2(-3)	0.281***	0.066		
dLLF	0.586	0.376	0.059	2.131[0.12]
dLLF(-1)	0.427	0.384		
dLLF(-2)	-0.466	0.387		
dLLF(-3)	-0.488	0.368		

dLINF	-0.042**	0.015	-0.063**	3.059[0.04]
dLINF(-1)	-0.028	0.016		
dLINF(-2)	0.014	0.016		
dLINF(-3)	-0.006	0.017		
dLGDP(-1)	-0.319	0.209	-1.44***	6.530[0.00]
dLGDP(-2)	-0.718	0.172		
dLGDP(-3)	-0.400	0.169		
ECT(-1)	-0.929***	0.316	-0.928***	8.641[0.01]
R^2	0.971323			
DW Stat	1.98			
F test stat	26.81[0.000]**			
UR t-test stat	-5.0647*			
AR F test	0.911[0.458]			
ARCH F test	0.342[0.795]			
Normality Chi^2	1.380[0.501]			
Hetero F test	--			
RESET F test	0.001[0.973]			
Observations	44			

We use the ECM model to identify the short-term impact of debt on growth and to find the speed of adjustment of growth shocks. According to the results, the coefficient of error correction term (ECT) is negative (-0.929) with p value equal to 0.008. It indicates that any short-term deviation from the long run relationship will be quickly adjusted. It means that 93 percent of any short run disequilibrium in LGDP will be adjusted within one quarter of time, which is a high speed of adjustment. This quick adjustment is possible in the aggregate demand equation. As per sum of lagged effects of the ECM model, short-term effect of domestic debt is 0.342 and external debt is 0.309 which are highly significant. This indicates that both domestic debt and external debt have a positive impact on GDP growth. However, the short-term positive impacts are much higher than the long-term positive impacts of domestic debt (0.289) and external debt (0.185).

Conclusion and Policy Recommendations

This study finds that both domestic debt and external debt are positively impacted on the GDP of Sri Lanka in both long run and short run. Further, the growth effect of domestic debt is higher than the external debt both in the short-run and in the long run. The higher growth effect of public debt in the short-run compared to the long-run effect indicates that public debt works through the demand side in the short-run. Therefore, public debt boosts economic growth of Sri Lanka. But low long-term growth elasticity of public debt (domestic debt 0.29 and external debt 0.18) indicates that high debt accumulation has only a marginal positive impact on the economy. The low long-term growth elasticity indicates that a one percent increase in public debt results in only 20-23% increase in GDP on average. Therefore, the accumulation of public debt results in an increasing debt to GDP ratio, making debt unsustainable.

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Impact of Economic Growth, Poverty and Female Employment on Global Crime Rates

R. Theneshiya, S. Thanikan, L.S. Gomez, M.D.R.K. Jayathilaka, and C.N. Wickramaarachchi

SLIIT Business School, Sri Lanka Institute of Information of Technology, Malabe, Sri Lanka

Keywords: *Female Labour Force Participation; Infant Mortality; Per Capita GDP; Panel Regression; Global Grime Rate*

Introduction

Crime significantly impacts the growth and development of nations, with high crime rates hindering progress and prosperity (Anggrayni, 2022). The motivation behind the study was to create an understanding of economic factors affecting crime rates in order to achieve sustainable development goals. This study highlights the importance of female labour, poverty alleviation, and promoting sustainable urbanisation and economic growth to reduce crime rates. Therefore, this study would bridge the research gap by investigating the impact of the female labour force participation rate (FLFPR), the infant mortality rate (IMR), per capita gross domestic product (PGDP), and urbanisation (URB) on crime rates simultaneously at the global level.

This study's contribution to the existing literature could be highlighted as two-fold. First, the research provides important policy implications for policymakers and international organisations seeking to promote peace, justice, and Sustainable Development Goals (SDG 16). Second, the study provides a comprehensive analysis of the impact of FLFPR, IMR, PGDP, and URB simultaneously on crime rates by analysing data from 161 countries for 32 years from 1990-2021, utilising a panel regression model.

Objectives

The main objective of this paper is to investigate the impact of FLFPR, IMR, PGDP, and urbanisation simultaneously on global crime rates.

Methodology

This study utilised secondary data for the 1990-2021 period from the Institute of Health Metrics and Evaluation and the World Bank for crime rates and other explanatory variables, for 161 countries. The homicide rate was used as a proxy for crime rate, while the infant mortality rate was used as a proxy for poverty (Messner et al., 2010). The variables of the study were selected based on the inspiration gained from theories such as anomie theory, resource scarcity theory, and modernisation theory respectively (Gartner, 1990, Neumayer, 2003). Panel regression was used as the statistical technique for the study where Eq.1 was developed.

$$CR_{it} = \beta_0 + \beta_1 FLFPR_{it} + \beta_2 IMR_{it} + \beta_3 PGDP_{it} + \beta_4 URB_{it} + \varepsilon_{it} \quad (1)$$

where, *CR* represents crime rate per 100,000 population, *FLFPR* denotes the female labour force participation rate, the percentage of the female population ages 15+, and *IMR* represents the infant mortality rate, deaths per 1,000 live birth, *PGDP* represents per capita gross domestic product in United States Dollars, and *URB* denotes urbanisation, the percentage of the total population. *i* and *t* denote cross-sectional and time series variables, respectively. Finally, ε represents the error term.

The appropriate model from three main panel estimation models, namely the pooled ordinary least squares (POLS), fixed effect (FE) model, and the random effect (RE) model, were chosen by performing specification tests such as the F test, Hausman and Breusch Pagan test (Wannisinghe et al., 2023). Further, robust standard errors were employed in the panel data regression model to minimise the problem of heteroskedasticity.

Results and Discussion

Table 1: Summary of descriptive statistics

Regions		CR	FLFRP	IMR	PGDP	URB
Global	Obs.	5,429	5,760	5,859	6,123	6,070
	Mean	7.56	50.96	33.52	11463.48	55.14
	SD	9.98	16.16	31.45	18242.77	23.78
African	Obs.	1,470	1,632	1,674	1,670	1,590
	Mean	6.90	56.94	65.13	2595.79	40.79
	SD	6.54	18.60	32.74	6515.35	19.54
American	Obs.	960	1,056	1,085	1,249	1,248
	Mean	17.93	49.21	21.38	10992.18	62.94
	SD	16.88	9.43	14.34	13659.39	21.17

Asian	Obs.	1,320	1,472	1,395	1,427	1,440
	Mean	4.75	45.26	31.69	10037.45	54.35
	SD	4.82	19.86	25.43	15216.59	25.40
European	Obs.	1,260	1,312	1,302	1,324	1,344
	Mean	4.03	50.53	7.55	25442.87	68.12
	SD	5.52	8.04	6.20	26479.32	16.13
Oceania	Obs.	419	288	403	453	448
	Mean	5.63	54.69	25.05	9088.13	47.95
	SD	3.23	15.26	14.12	13311.11	27.33

Note: Obs., SD, Min, and Max denote the number of observations, standard deviation, minimum value, and maximum value, respectively.

Table 1 displays the summarised descriptive statistics of the study. On average 7.56 crimes are committed for every 100,000 of the population annually. The American region recorded the highest crime rate, while the European region recorded the lowest. In the African region, FLFPR and IMR recorded the highest average. Regarding PGDP and URB, the European region reported the highest among all other regions.

Table 2: Results of specification test

Region	**Tests**		
	F Test	**Hausman Test**	**LM Test**
	H_o: POLS	**H_o: RE**	**H_o: POLS**
	H_1: FE	**H_1: FE**	**H_1: RE**
Global	200.71***	16.50***	49978.15***
Africa	239.18***	17.44***	13638.11***
America	130.62***	5.01	7372.26***
Asia & Middle East	116.95***	16.19***	9814.48***
Europe	113.34***	2.29	8742.94***
Oceania	130.75***	11.78***	1461.45***

Note: The symbols *, **, and *** represent 10%, 5%, and 1% significance levels, respectively.

According to Table 2, the F test results disregarded the POLS model for all regions, Therefore, the Hausman test was used to choose a suitable model among the FE and RE models. Except for the American and European regions, all other regions and the global selected FE model.

Table 3: Results of FE and RE models

Variables	Global	African	American	Asia & Middle East	European	Oceania
	FE	**FE**	**RE**	**FE**	**RE**	**FE**
FLFPR	0.8649*	0.0513	0.0662	0.1371**	0.0442	-0.2389***
	(0.493)	(0.1007)	(0.1687)	(0.0589)	(0.0337)	(0.0452)
IMR	0.0260*	0.0172	-0.0377	0.0715**	0.2242***	0.1381
	(0.0154)	(0.0179)	(0.0711)	(0.0272)	(0.0851)	(0.1032)
PGDP	-0.0004**	-0.0001	0.0009	-0.0005*	-0.0003*	0.0004**
	(0.0002)	(0.0012)	(0.0012)	(0.0002)	(0.0001)	(0.0002)
URB	0.0578	0.1271	-0.0379	0.0687	-0.0046	-0.0282
	(0.0703)	(0.1041)	(0.2291)	(0.0812)	(0.0611)	(0.0775)
Constant	-0.4353	-1.8592	18.6685	-6.8335	0.3364	14.9235***
	(4.9604)	(9.1001)	(14.5634)	(5.6702)	(3.7306)	(4.0914)
R^2 Overall	0.0069	0.0618	0.0354	0.0548	0.2970	0.0544

Note: *, **, and *** indicate variables are significant at 10%, 5%, and 1% level of significance, respectively. The robust standard errors are given in the parentheses.

According to Table 3, FLFPR and crime had a positive relationship with crime globally and especially in the Asian and Middle East regions but a negative association in the Oceania region. Further, IMR displayed a positive relationship with crime globally and in the Asia and Middle East region and European regions. PGDP revealed a negative relationship with crime globally and in Asia, the Middle East, and European regions but a positive role in the Oceania region. However, URB remained a statistically insignificant variable globally and regionally. Increased FLFPR may contribute to a higher crime rate due to changes in the family structure and lack of public amenities. In contrast, the negative relationship can be associated with the fact that females deviating from the traditional family norm may reduce the birth rates in the long run and thus reduce the number of victims exposed to crime. Additionally, poverty increases the likelihood of leading a life of crime, while PGDP increase helps reduce crime.

Conclusion and Policy Recommendations

This study concluded that FLFPR, IMR, PGDP, and urbanisation significantly impact crime. FLFPR is an essential contributor to economic growth and development. Hence developing policies that empower working women while creating a safe harbour for women The relationship between IMR and PGDP highlights the importance of introducing policies that target eradicating

poverty while simultaneously promoting economic growth. Strong and effective policies symbolise a country's good governance, which could be a key to preventing and reducing crime.

Regarding the policy recommendations, it is critical to developing measures to reduce poverty by improving the structure of the labour market, cautious income distribution, and providing social safety nets. Additionally, implementing policies regarding economic development and restructuring the finance policies would contribute to economic expansion, thus lowering crime rates.

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For A Greener and Sustainable Revival: A Panel Granger Causality Analysis on Tourism and Renewable Energy

K.O. Attanayake, U.H.A. Samarasinghe, P.G.Y. Ranmini, I.S. Wickramage, M.D.R.K. Jayathilaka, and S.R. Yapa

SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

Keywords: *Renewable Energy; Tourism; Unit Root Test; Granger Causality Test*

Introduction

Today, renewable energy is one of the most pressing global concerns, as nations worldwide strive to reduce their carbon footprints and move towards a greener future. Using Renewable Energy Sources (RES) allows for a sustainable future where the energy need of industries can be met without compromising future needs.

As one of the most significant and rapidly growing industries, tourism has been identified as significantly impacting the environment. By adopting RES, the tourism industry can reduce its carbon footprint and contribute towards sustainable tourism development (Usman and Radulescu, 2022). Carbon emissions and other harmful gases can be significantly reduced through RES, such as solar, hydropower, and wind, creating a more favourable and sustainable environment for tourism (Hailemariam, Ivanovski, and Dzhumashev, 2022).

Despite the growing interest among scholars in sustainable tourism and renewable energy, there is a lack of comprehensive research studies which examine the direction of the causality between these two variables based on different economic development categories worldwide.

Objectives

This paper aims to identify the direction of the causality between tourism and renewable energy consumption worldwide for countries categorised by their economic development category.

Methodology

For secondary data sources, World Bank and Our World in Data was utilized, with data for 27 years from 1995 to 2021 for 138 countries based on data availability. Renewable Energy Consumption (REC) as a percentage of Total Energy Consumption (TEC) was used to measure renewable energy. Tourist Arrivals (TA) in 100,000s was used to measure tourism. The countries' economic development categories were categorised according to the United Nations (2014).

The stationarity of the variables was tested according to Levin, Lin, and James Chu (2002) and the first and second differences were considered when not stationary. The Panel Granger causality test (Granger, 1969) was carried out to determine the direction of the causality between renewable energy and tourism, which can be shown as follows:

$$TA_{i,t} = \sum_{k=1}^{p} \beta_i \; TA_{i,t-k} \; + \sum_{k=1}^{p} \Theta_k \; REC_{i,t-k} \; + u_{i,t} \qquad (1)$$

$$REC_{i,t} = \sum_{k=1}^{p} \beta_i \; REC_{i,t-k} \; + \sum_{k=1}^{p} \Theta_k \; TA_{i,t-k} \; + u_{i,t} \qquad (2)$$

The above equations show the causality relationship between *TA* and *REC*, where *t* and *i* denote the time in years and country, respectively, while $u_{i,t}$ shows the error term, and *k* is the number of lags.

Results and Discussion

Through the stability tests, the model for the least developed category did not become stable, with 21 lags being the maximum number of lags that could be used. Therefore, this study omits the least developed type.

Table 1 presents the Granger causality test results for each economic category. A significant link can be seen between renewable energy and tourism where dREC Granger causes TA as coefficient value 20.409, and suggests a strong positive relationship from dREC to TA when considering the developed countries. REC causes TA for developing category as per the table where a coefficient of 8.681 value suggests a strong positive relationship between the two variables at 5% significance level.

Table 1: Results of Granger causality test

Region	Developed countries	Developing countries	Economies in transition
(TA) to (REC)	N/A	1.993	0.053
(REC) to (TA)	N/A	8.681**	2.469
(TA) to (dREC)	6.568	N/A	N/A
(dREC) to (TA)	20.409***	N/A	N/A

Note: ***, **, * represent 1%, 5%, and 10% significance levels, respectively. 'N/A' denotes not applicable.

Further, the Granger causality test was carried out for each country. The results presented in Table 2 summarise the countries for which a significant link between the variables can be observed.

Table 2: Results of Granger causality test for the three economic development categories

Category	Country	Direction
Developed	Belgium	dREC → TA
	Czechia	dREC → dTA
	Denmark	dREC → TA
	Lithuania	ddREC → TA
	Netherlands	dREC → dTA
	Norway	REC → TA
	Poland	dREC → dTA
	Switzerland	dREC → dTA
Developing	Bolivia	dREC → dTA
	Cape Verde	dREC ← dTA
	Curacao	dREC ←→ dTA
	Ecuador	dREC ←→ dTA
	Indonesia	dREC → dTA
	Jordan	dREC → dTA
	Mexico	dREC ← TA
	Nicaragua	dREC → dTA
	Paraguay	dREC ← TA
	Saudi Arabia	REC ← dTA
	Singapore	dREC → dTA
	Sri Lanka	dREC ← dTA
	Syria	REC ← dTA
	Turkey	dREC → dTA

Economies in transition	Belarus	dREC → dTA
	Kazakhstan	dREC → dTA
	Ukraine	dREC → dTA

Source: Authors' preparation

In the developed category, uni-directional causality from REC to TA prevails, as also shown by Beer, Rybár, and Kaľavský (2017). These countries encourage using renewable energy in the tourism industry, improving the quality of life and attracting more tourists.

For developing categories, the relationship is evident from TA to REC. Tourism creates opportunities to construct renewable energy facilities such as wind and solar farms in places where these resources are necessary but infrequently accessible, addressing energy poverty effectively. Further, a one-way link exists between REC and TA in a few countries also established by Shan and Ren (2023). Using RES will help mitigate carbon emissions in these economies, ultimately making them more desired tourist destinations.

Analysing the results for the economies in transition, a significant uni-directional relationship is evident from dREC to dTA for all countries. These nations significantly rely on tourism, and the tourism sector uses RES. Through a rise in visitor numbers, the greater use of RES in the tourism sector encourages sustainable tourism, boosting higher tourist visits.

Conclusion and Policy Recommendations

The results establish that REC Granger causes TA for developed and developing economies, while a significant link could not be identified for economies in transition. Furthermore, the findings for the individual countries showed a one-way causality from REC to TA for most countries. At the same time, TA Granger causes REC for Sri Lanka, Saudi Arabia, Cape Verde, Mexico, Syria, and Paraguay. Further, a significant bi-directional link was observed for Curacao and Ecuador.

Countries might be viewed as more ethical and desirable tourism destinations if they use renewable energy. However, most nations are urged to be cautious while putting into practice and amending current RES laws as they considerably influence tourism. The governments of these nations would also

need to promote and uphold policies and regulations that would support renewable energy and ultimately create sustainable tourism.

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Cardiovascular Disease Mortality Due to Tobacco Smoking Prevalence: The SAARC Experience

M.D.L. Silva, W.A.D.I.S. Abeysekera, R.C. De Silva, W.A.L. Piumika, M.D.R.K. Jayathilaka, and L.P. Rajamanthri

SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

Keywords: *Cardiovascular Disease Death Rates; Polynomial Regression; SAARC; Tobacco Smoking Prevalence*

Introduction

Tobacco Smoking has been a prominent risk factor for deaths caused by cardiovascular diseases (CVDs) in the South Asian Association for Regional Cooperation (SAARC), which comprises Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. As the SAARC countries mainly fall under the classification of low and lower-middle-income countries (LMICs), they display an incline towards tobacco-related deaths, which shares a significant proportion due to CVDs.

Additionally, a sizable proportion of the population in SAARC countries shows a significant increase in death rates in CVDs, caused due to tobacco consumption but it has not been investigated as a direct cause. Therefore the current study is planned to address this research gap. According to the World Health Organization (WHO), the SAARC countries Bangladesh (41%), Bhutan (42%), India (48%), Maldives (62%), Nepal (53%), and Sri Lanka (53%) have demonstrated that the leading cause for tobacco-related deaths is the CVDs (World Health Organization. Regional Office for South-East, 2023). Moreover, it wasapparentthrough a review of past studies, that the use of advanced analytical techniques to discover the impact of tobacco smoking on cardiovascular disease deathsis .limited

Smoking is an important modifiable risk factor for CVDs, and reducing tobacco consumption can significantly reduce the burden of CVDs Moreover, dispelling stereotypes and disparity, the individuals residing in SAARC countries were said to have the highest mortality rate due to CVDs (Patel, 2021). Additionally, most of the SAARC countries have limited healthcare

resources and lack technologies and provisions for the prevention and treatment of CVDs. Nevertheless, reducing tobacco use will uplift the region's cardiovascular health.

Objectives

This study aims to investigate the impact of tobacco smoking prevalence on deaths caused due to cardiovascular diseases in SAARC countries.

Methodology

This research investigated the period 1990 to 2019 for the SAARC countries. Data for the prevalence of tobacco smoking was extracted from the global burden of disease (GBD) database, and cardiovascular disease-related death rates were extracted from the Our World in Data database as percentages. Likewise, the independent variable was converted to per 100,000 people. A third-order polynomial regression was conducted as a single-country analysis for the eight countries to provide an in-depth interpretation of the non-linear relationship between the prevalence of tobacco smoking and cardiovascular disease-related death rates separately for the SAARC countries under review (Selvanathan et al., 2022). The polynomial regression was conducted for three orders to support the capture of a better fit mainly for countries like Bangladesh and Bhutan which portrayed two bends in the scatter diagrams. An equation was developed as seen below:

$$CDDR = \beta_0 + \beta_1 TSP_t + \beta_2 TSP_t^2 + \beta_3 TSP_t^3 + \varepsilon_t \quad (1)$$

Where, TSP depicts the Tobacco Smoking Prevalence, CDDR denotes the Cardiovascular Disease Death Rates, and ε_t denotes the error term.

Results and Discussion

The statistical results for the polynomial regression analysis are portrayed in Table 1 showing negative and positive impacts on CDDR by TSP.

Table 1: Polynomial results categorized as positive or negative trends

Country	Positive Trends			Country	Negative Trends		
	TSP	TSP^2	TSP^3		TSP	TSP^2	TSP^3
Afghanistan	4.79**	-0.3	-0.00	Bhutan	-1107.07***	10.6***	-0.34***
	(1.96)	(0.03)	(0.00)		(262.96)	(2.51)	(0.01)
Bangladesh	1225.98***	-4.76***	0.01***	India	-29.7***	0.18***	-0.00***
	(237.21)	(0.93)	(0.00)		(8.87)	(0.05)	(0.00)
Nepal	5.1***	-0.02***	0.00***	Maldives	-573.47	2.17	-0.00
	(1.54)	(0.01)	(0.00)		(412.5)	(1.5)	(0.00)
Sri Lanka	35.08	-0.17	0.00	Pakistan	-33.94***	0.2***	-0.00***
	(21.8)	(0.12)	(0.00)		(6.81)	(0.04)	(0.00)

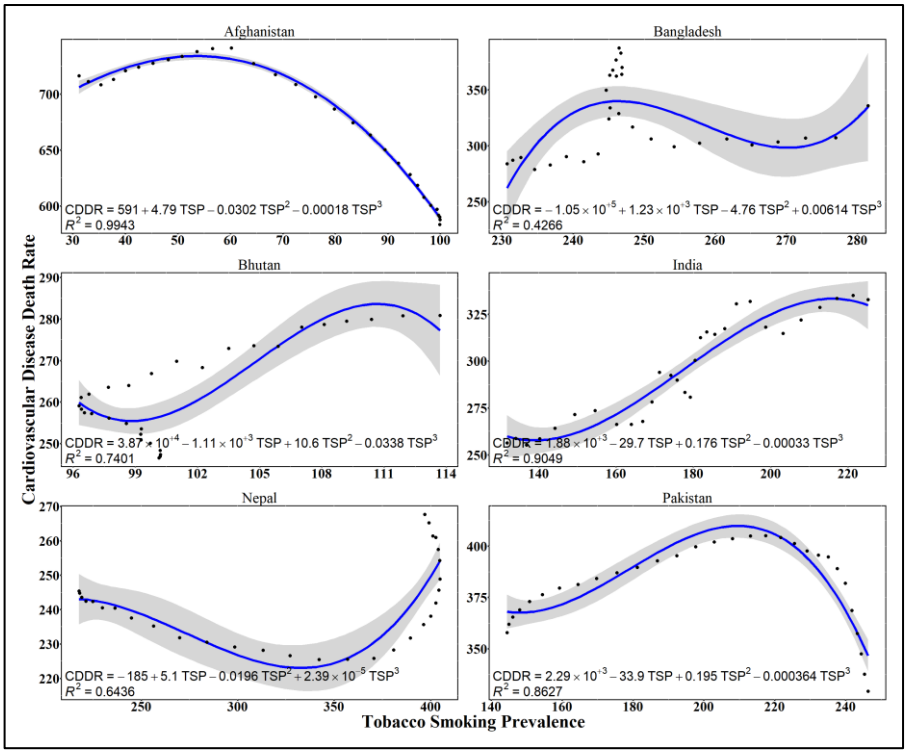
Note: *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively. Robust standard errors in paratheses.

Following the results obtained, it is evident that Afghanistan, Bangladesh, and Nepal have shown a positive trend when the impact of TSP on CDDR is considered. For every 1 unit increase of TSP, CDDR has had an increase of 5, 1,226, and 6 per 100,000 people in Afghanistan, Bangladesh, and Nepal, respectively. On the other hand, parallelly, it was proved in a study conducted in 2017 that Nepal had an increase in cardiovascular deaths due to tobacco consumption (Bhattarai et al., 2020).

Likewise, Bhutan, India, and Pakistan showed a decrease of 1,108, 30, and 34 per 100,000 people, respectively, for every 1 unit increase in TSP. Similarly, past researchers have proved that TSP significantly impacts cardiovascular mortality (Theilmann et al., 2022).

However, no significance was observed for Sri Lanka and Maldives via the statistical analysis conducted. Furthermore, the polynomial graphs for the considered countries are depicted in Figure 1.

Figure 3: Polynomial Graphs for the SAARC countries



Conclusion and Policy Recommendations

Accordingly, through the results, it is evident that in SAARC countries, TSP has had a significant effect on CDDR throughout the years from 1990 to 2019. This study provides valuable insights for policymakers to enhance their perspectives and build effective strategies to mitigate the negative impacts of smoking prevalence on cardiovascular disease-related deaths. This study is limited as the accurate number of cardiovascular deaths that are directly attributed to smoking cannot be identified separately. Several methods can be taken to uplift the health care system of the SAARC countries by monitoring the cardiovascular death rate and tobacco use at a country level.

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Unveiling the Dynamics of Gross Domestic Product, Energy Consumption, and Trade Openness on Carbon Emissions in Sri Lanka: A Longitudinal Analysis from 1990 to 2019

V.R.D. Methmini, E.A.S.L. Edirisinghe, W.D.N.M. Dharmapriya, V.G. Gunawardena, M.D.R.K. Jayathilaka, R.M.N.M. Rathnayake, and C.N. Wickramaarachchi

SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

***Keywords**: Carbon Emission; Energy Consumption; Gross Domestic Product; Sri Lanka; Trade Openness*

Introduction

Due to currency fluctuations and political conflicts, Sri Lanka is undergoing a severe economic crisis. Hence, the nation's focus on reducing carbon emissions (CE) is very low. However, due to extreme weather, it is one of the top ten countries on the Global Climate Risk Index (United Nations, 2022). Moreover, Sri Lanka is managing its economy to reach an upper-middle income level in the next five years. Against this backdrop, rural and urban populations are increasing their demand for energy, clean water, efficient transportation, excellent connectivity, and waste management (Ministry of Environment, 2021).

Moreover, an increase in energy consumption (EC) is associated with CE due to their economic activities as they are trying to enhance their gross domestic product (GDP) (Murshed et al., 2020). Seventy-five percent of Sri Lanka's energy requirement is mostly filled through various fossil fuels-related sources. Therefore, CE is at a high level. In 2019, the level of CE in Sri Lanka was identified as 0.8 metric tonnes, which was more than the average for a low-income country, while it was lower than the global average (IEA, 2023). The current financial crisis, which occured beyond the time frame covered by this study, is clearly influenced in a significant way by the rising trend in trade openness (TO) and GDP, as indicated by the predictions, which could affect CE as well. However, as a country, Sri Lanka is still not focusing correctly on reducing CE while expanding the economy. Currently, the country faces many challenges when implementing rules and regulations for environmental

protection and adaptation to low-carbon technologies due to legal and political instability and lack of resources.

Therefore, this study aims to examine the simultaneous impact of GDP, EC, and TO on CE in Sri Lanka to fill the research gap of the lack of studies examining the relationship between each considered variable in the Sri Lankan context.

Objectives

The research objective of this study is to examine the impact of GDP, energy consumption, and trade openness on carbon emissions in Sri Lanka.

Methodology

This study employed a panel data set spanning 1990–2019, using secondary data sourced from Our World in Data. The descriptive statistics for this study were generated using STATA software. In Equation 1, the Multiple Linear Regression (MLR) model is used to analyze considered variables.

$$CE_t = \beta_0 + \beta_1 GDP_t + \beta_2 EC_t + \beta_3 TO_t + \varepsilon_t \quad (1)$$

In equation 1, t represents the year taken into consideration. ε_t denotes the white noise error term. While CE is measured in metric tons per capita, GDP is expressed in thousands of dollars per capita, EC is expressed in thousands of kilowatt-hours per capita, and TO is defined as a percentage of GDP, by dividing the sum of import and export values by the GDP per capita.

Results and Discussion

Table 1 and Table 2 indicate the results of descriptive statistics and MLR estimates.

Table 1: Summary of descriptive statistics of variables

	Variable			
	CE	**GDP**	**EC**	**TO**
Obs.	30	30	30	30
Mean	0.5962461	7.715631	3.134966	66.60382
SD	0.2467642	3.027875	0.9620928	13.29174
Min.	0.222669	3.878309	1.712537	46.36389
Max.	1.074589	13.07013	4.996224	88.63644

Table 1 summarizes descriptive statistics for the GDP, EC, and TO in Sri Lanka. Based on a sample size of 30 observations, the statistics provide an overall view of each variable's mean, standard deviation, and lowest and highest values.

Table 2: Estimates of MLR model

Variables	Coefficients	
GDP	0.0087	(0.0299)
EC	0.2366***	(0.0736)
TO	0.0010	(0.0022)
Constant	-0.2817*	(0.1587)
Observations	30	
R^2	0.9699	
Adj. R-squared	0.9664	

Note: *, **, and *** represent that the variables are significant at 10%, 5%, and 1% significance levels, respectively; MLR denotes Multiple Linear Regression. Robust standard errors are given in parentheses.

Table 2 presents the main findings of the MLR analysis. As per the results, Sri Lanka is positively significant only for the EC towards CE due to heavy reliance on fossil fuels rather than focusing on renewable energy sources. According to previous studies, heavy dependence on fossil fuels has exposed Sri Lanka to the worst consequences of the global EC (Arthur, 2023). Furthermore, other considered variables, GDP and TO, do not display a positive or negative significance for CE. This implies that in Sri Lanka, economic output and engagement in international trade could not significantly impact increasing the CE until 2019, possibly due to financial and political decisions and difficulties in international trade.

Conclusion and Policy Recommendations

The current study shows a positive relationship between EC and CE, which is reasonable, given Sri Lanka's status as a developing country and its efforts to hasten economic growth and industrialization. To effectively address the vital need to reduce carbon emissions, Sri Lanka must enact comprehensive policies towards sustainable energy practices. This undertaking embraces supporting environmentally friendly modes of mobility, such as environmentally friendly public transport and cycling. Adopting renewable energies such as solar panels with the support of developed countries, as Sri

Lanka is currently fighting an economic crisis and imposing carbon taxes on high-carbon-emitting industries, can minimize CE. Sri Lanka may contribute to global efforts to mitigate climate change by implementing the aforementioned actions and moving closer to attaining its carbon reduction targets while speeding up the economy.

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The Impact of Fission Marketing on Online Consumer Buying Behaviour in Sri Lanka

N. U. Jayasuriya, K.H.S.M. Ehalapitiya, and N.A. Jayasuriya

SLIIT Business School, Sri Lanka Institute of Information Technology, Sri Lanka

Keywords: *Customer Buying Behaviour; E-Referral; E-WOM; Live Streaming E-Commerce; Website Content*

Introduction

For e-commerce platforms, fission marketing is a crucial method of attracting new customers via social media. Fission marketing, however, might lead to social pressure, a decline in clientele, and a negative image of the platform (Hao and Yang, 2022). Group fission, according to Zhang et al. (2022), is a type of fission in which the invitee and the sharer form a group to share the advantages and, after the group reaches a certain size, a team. There are two types of fission marketing: reputation-based fission marketing, where users share freely based on the reputation of the platform or product, and discount-based fission marketing, where users share or bring in new users in exchange for a price cut (Hao and Yang, 2022).

The goal of this study is to identify the key marketing strategies that play a role in Sri Lankan consumers' decisions to buy products and services online. In the context of Sri Lankan online commerce, most young people are tech-savvy and pick up new technologies rapidly. Entrepreneurs are able to launch their businesses using digital platforms because of the reasonable users in an online environment. The results of the current study may be useful not only to those who are already in the market but also to those who plan to launch an online business soon. Fission marketing strategies, which are popular in China and the US offer a fresh and modern approach to connecting with clients online. However, there is no literature on fission marketing in Sri Lanka. The lack of available literature inspired the authors to carry out this study. Website content, e-WOM (electronic Word of Mouth), e-referral (electronic referral), and live streaming e-commerce are some of the marketing activities that are practiced in online platforms, according to Hao and Yang (2022) and Zhang et al. (2022). Hence, the authors have identified these four activities as fission

marketing techniques used in online platforms and have used them as the independent variables of the study. By thoroughly studying the literature, the authors have identified that there is a lack of literature related to this research area. Hence, the authors have appraised the empirical gap identified by conducting this research.

Objectives

1. To identify the relationship between website content, e-WOM, e-referral, live streaming e-commerce with online consumer buying behaviour (purchase decision)
2. To evaluate the impact of the website content, e-wom, e-referral, live streaming e-commerce on online consumer buying behaviour (purchase decision)

Methodology

The study was conducted in the deductive approach and adopted a quantitative approach that focused on using an online survey to collect data. A descriptive study employing a survey and an in-depth, self-created survey was undertaken to acquire a better understanding of customer behaviour for recently launched internet shopping in Sri Lanka. To swiftly determine whether participants agree or disagree with a statement, a five-point Likert Scale from strongly agree to strongly disagree was used. In terms of the research time frame, this is a cross-sectional study because the data was gathered over a set period of six months. Additionally, both full-time employees in the public and private sectors made up the population chosen for the current study. There are 8.2 million active social media users in Sri Lanka, according to the "Digital 2022 - Sri Lanka" report, which was issued by Dk (2022). A trustworthy number for social media users, however, could not be located. As a result, Morgan's table was used to establish the sample size, which were 384 because it was impossible to determine the size of the actual population. Additionally, convenience sampling was the sampling methodology chosen. Using the SPSS program, regression analysis and Pearson correlation analysis were carried out.

Results and Discussion

Correlation Analysis was performed in order to measure the degree of relationship between independent and dependent variables. Table 1 shows the correlation results generated through the SPSS software.

Table 1: Results of Pearson correlation test

Scales	Purchase Decision	Website Content	E-WOM	E-Referral	Live Streaming
Purchase decision	1				
Website content	.542**	1			
E-WOM	.420**	.575**	1		
E-referral	.676**	.759**	.547**	1	
Live streaming	.693**	.375**	.374**	.690**	1

Note: ** indicates that the coefficient is significant at the 1% level of significance (2-tailed test) (N = 384).

Table 1 results show the correlation between all the variables; Website content, e-WOM, e-referral, and live streaming e-commerce with the purchase decision were statistically significant at the 0.01 level. Further, it was identified that the purchase decision had a moderate positive relationship with website content, e-referral, and live streaming e-commerce and a low positive relationship with e-WOM.

In addition, multiple regression analysis was performed to identify the most effective factors contributing to the model. The model summary presents a summary of the model in which the item of interest is the R square statistic, which is .578 with a statistical significance of $P<0.05$. This suggests that 57.8% of the variation in the purchase decision (outcome) was predicted from the level of fission marketing activities (predictors). The Durbin-Watson statistic was 1.986 and between +1 and+3 which means that the independence of the observations has been met.

Table 2: Results of multiple regression model (dependent variable: Purchase Decision)

Independent Variable	Coefficients	VIF
Constant	1.056	
Web content	0.209**	2.892
E-WOM	0.047**	1.575
E-referral	0.145**	4.330
Live streaming	0.453**	2.137
R-Squared	0.578	
Adj. R-squared	0.574	
Std. Error of the Estimate	0.517	
Observations	383	

Note: ** indicates variables are significant at the 5% level of significance.

Regression analysis examines the relationship between two or more variables, where it measures the relationship between several independent variables and the dependent variable. In this study, online consumer buying behaviour (purchase decision) is the dependent variable whereas website content, e-WOM, e-referral, and live-streaming e-commerce act as the independent variables. To check that the considered independent variables were not strongly correlated to each other, the multicollinearity test was done having used the variance inflation factor (VIF). The VIF and tolerance were measured and these were found to be low (VIF maximum level = 4.330), which was interpreted as the multicollinearity issue not being significant in the current study.

Conclusion and Policy Recommendations

The study indicates that there is a significant impact between all the variables except e-WOM on the online purchasing decision. It is highlighted that fission marketing activities have a strong power to influence consumers when they make a decision. When comes to the digital era, purchasing the essentials is comparatively different than visiting a physical shop. Thus, consumers should engage in some fission marketing activities in order to fulfil their need or want without wasting their time.

These fission marketing activities will encourage consumers as well as entrepreneurs or businessmen. However, this study will help online sellers and entrepreneurs to develop a competitive advantage over other businessmen by

understanding the fission marketing activities in the online industry. Consumers can be encouraged to purchase online goods and services while practicing fission marketing activities which lead to maximizing trustworthiness among consumers in digital businesses. Moreover, it will be a good sign when people move to digital shopping which creates a strong platform for young entrepreneurs/online businessmen to reach their goals as well.

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The Factors Influencing Malnutrition of School Children in Nuwara-Eliya District, Sri Lanka

S.K. Nandajeewa, A.A.S.K. Aluthwatta, W.M.N.D. Wijesinghe, M.L.T.G. Liyanaarachchi, R.M.N.M. Rathnayake, and R.S. Weerarathna.

SLIIT Business School, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka

Keywords: *Adolescents; Environmental Factors; Lifestyle; Malnutrition; Nutritional Knowledge, Attitude, and Practices (KAP)*

Introduction

Sri Lanka is currently undergoing the worst economic crisis since its independence mainly due to weak governance, exacerbated by the coronavirus (COVID-19) pandemic outbreak and political instability. This has resulted in the contraction of the real economy in the first half of 2022 and stagflation (Central Bank of Sri Lanka, 2022). A large segment of the population in Sri Lanka, particularly those with low or fixed income were experiencing the impacts of rising food prices and the loss of their purchasing power. Food insecurities have also severely impacted mental and physical health, leading to underweight, stunting, and wasting among the population (Sathiadas et al., 2021).

Malnutrition during adolescence is critical as it can affect growth spurt, which demands more macro and micronutrients (Soliman et al., 2014). The District with the highest malnutrition rate (23.9%) in Sri Lanka is Nuwara-Eliya. Furthermore, the highest stunting and wasting in Sri Lanka can be seen in the said District with rates of 8.8% and 12.2%, accordingly. Poverty and non-affordability also contribute sizeably to malnutrition, which is correspondingly high in the Nuwara Eliya District, where the majority of the population lives below the poverty line due to low household income (Central Provincial Council, 2022). Poor people are the hardest hit and are more vulnerable to malnutrition under the current economic circumstances in Sri Lanka, thus notably impacting the Nuwara-Eliya District. In 2022, malnutrition rates in this District had risen to 3.7% in stunting and 5.9% in wasting. According to the Ministry of Health (2022), it has become a major issue related to under 15 years school children in this region which has not

been addressed before. For this reason, it is imperative to address the factors that cause malnutrition of under 15 years school children and promote healthy lifestyle habits.

Objectives

To identify the factors that influence malnutrition in grade 10 in the Nuwara-Eliya District.

Methodology

The research design selected for the study was quantitative with a deductive research approach that involved a 5-point Likert scale questionnaire survey with 36 questions. This was physically distributed among grade 10 students from chosen schools. The population of this study was 12,764 school children in the Nuwara-Eliya District, based on data derived from the Ministry of Education. Once the list of schools in the said District was sorted in alphabetical order, the schools were selected using a systematic sampling technique to cover the required sample size of 360 schoolchildren. The sample size was derived using the sampling calculator. The analysis used in this study is factor analysis was carried out in this study using SPSS software.

Results and Discussion

The reliability was tested based on Cronbach's Alpha value and the validity was tested using KMO and Bartlett's test. The value for the reliability of the study was 0.818 where the KMO values for the pre-designed dimensions were; 0.87, 0.86, 0.84, 0.83, 0.57, 0.88, and 0.81 respectively for access to food, access to proper health care, physical activities, knowledge, attitude, practices, and hygiene. This was carried out to ensure the reliability and validity of the study, before proceeding to further research. The total variance explained in Table 01 shows the eigenvalues of identified 07 components which are higher than the eigenvalue of 01.

All the components that have an eigenvalue of less than 01 have been eliminated from the components. The extraction sums of squared loading explain the variance of data by using the retained 07 factors whereby the first component of the data is explained by 21.87. In the rotation sums of squared loading explain the variance of data of retained components after the rotation. In this study, the rotation that has been used is Varimax. The data variance

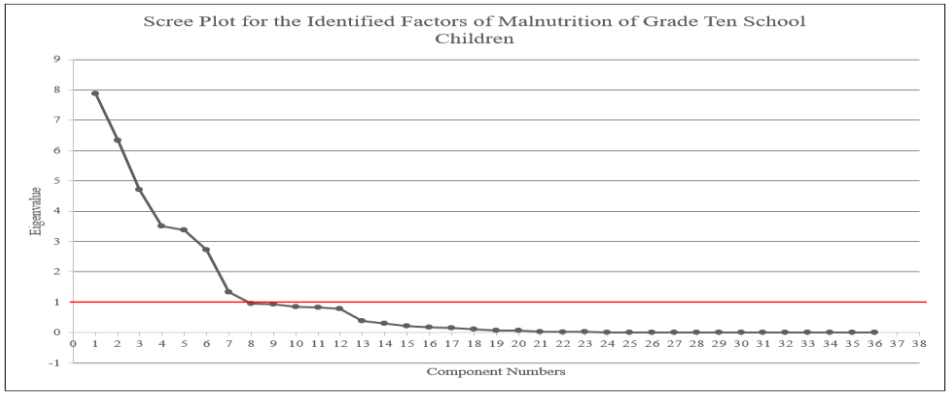
explained by the retained components after the rotation are 3.77, 10.57, 12.92, 13.05, 13.33, and 13.48, followed by 15.71.

Table 1: Total variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.87	21.87	21.87	7.87	21.87	21.87	5.66	15.71	15.71
2	6.34	17.62	39.49	6.34	17.62	39.49	4.85	13.48	29.19
3	4.71	13.07	52.60	4.71	13.07	52.56	4.80	13.33	42.52
4	3.50	9.72	62.28	3.50	9.72	62.28	4.70	13.05	55.57
5	3.40	9.39	71.66	3.38	9.39	71.66	4.65	12.92	68.49
6	2.73	7.57	79.23	2.73	7.57	79.23	3.80	10.57	79.05
7	1.33	3.70	82.94	1.33	3.70	82.94	1.36	3.78	82.83

Fig1 below was plotted to base the eigenvalues derived in the factor analysis. The components were identified as those above the eigenvalue of 01. Therefore, the retained ones are components 01, 02, 03, 04, 05, 06, and 07, which have been pre-defined using the literature review. After the factor analysis, the pre-defined dimensions have been rearranged according to the components.

Figure 1: Scree plot



Source: Authors' compilation based on SPSS output (2023)

Furthermore, Table 2 shows the correlation between the 07 dimensions and malnutrition. Since a strong positive correlation exists for 06 dimensions, these were identified as factors affecting malnutrition. The values that have been included in the 07th dimension were 0.28, 0.522, 0.661, 0.620, 0.414, and -0.027, where in all, the correlation was lower than 0.6. This was the main reason for rejecting the 07th dimension from this analysis. In line with the results, the 07th component has been identified as the attitude of students related to nutrition, which can be investigated in future studies.

Table 2: Correlation values of the components

	Correlation values					
Food Access	0.97	0.98	0.96	0.97	0.93	0.88
Practices	0.97	0.98	0.96	0.97	0.97	
Knowledge	0.98	0.98	0.98	0.89	0.97	
Access to proper healthcare	0.96	0.88	0.98	0.97	0.97	
Hygiene	0.94	0.95	0.97	0.93	0.96	
Physical activities	0.90	0.96	0.96	0.95		

Conclusion and Policy Recommendations

Based on the results of the factor analysis, the main dimensions that were identified as related to malnutrition are food access, access to proper health care, practices, knowledge, physical activities, and hygiene. Thus, it can be concluded that students' lifestyles, nutritional knowledge and practices, and environmental factors have an impact on the malnutrition of adolescents aged 15 years in Sri Lanka. Besides, transportation issues and unplanned school vacations were the key limitations of this study. Identifying these factors related to Nuwara-Eliya District will assist the Ministry of Health to provide proper guidance and services to mitigate school children's malnourishment by constant monitoring and organizing proper health checks /workshops for students vulnerable to malnutrition.

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The Economic Implications of Brain Drain and Migration in Sri Lanka

M.A.C.A.Wijerathne, G.D. Maussawa, R.A.D. Maduranga, M.W.G.J. Gunasekara, S. Thelijjagoda, and C.N.Wickramaarachchi

Sri Lanka Institute of Information Technology, Business School, Malabe, Sri Lanka

Keywords: *Sri Lanka; Professionals; Brain Drain; Migration; Economy*

Introduction

With globalization and contemporary political crises worldwide, brain drain and migration have become a global phenomenon (Dharmadasa *et al*., 2018). The emigration of highly skilled employees from a specific country to another country with a desire to search for better opportunities is known as brain drain (Wijesinghe and Jayawardane 2021).

Although migration is not a new topic in Sri Lanka, a significant number of professionals have started migrating to developed countries due to the recent economic recession. Dharmadasa *et al*,. (2018), have identified two migration trends in Sri Lanka. The first trend is the permanent migration of professionals such as engineers, intellectuals, doctors, experts, economists, IT professionals, and social scientists. The second trend is the temporary migration of non-professional or semi-professional man-power to Gulf countries such as Korea and Malaysia. Considering the above-mentioned trends, the problem statement of this study is what are the brain drain and migration patterns in Sri Lanka and what are the key components that determine the skill migration.

Objectives

To investigate the economic implications of migration and brain drain in Sri Lanka, the study identified the below objectives.

1. To investigate the migration and brain drain patterns in Sri Lanka.
2. To identify the key components that determines skill migration.

Methodology

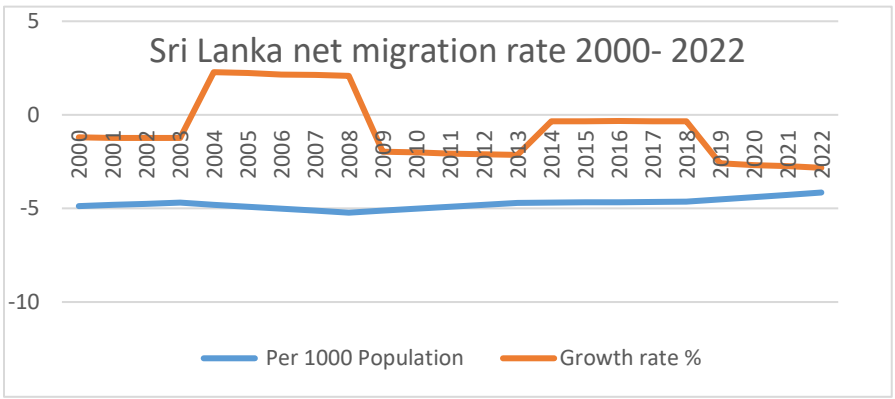
This study utilized a systematic literature review method to investigate the brain drain and migration patterns in Sri Lanka and to identify the key components that determined skill migration from 2000 to 2022.

Results and Discussion

Objective 1: After examining the literature, we identified that there was no significant change in the migration population within the period of 2000-2003. Then, from 2003 to 2004, there was a notable 2.28% growth rate in the migration population. In 2005, the net migration rate was -4.906 per 1000 population and it declined by 2.23% from 2004. Even though the growth rate declined from 2005 to 2008, it was not a considerable change. Afterwards, there was a serious reduction in the growth rate by -1.97% from 2008-2009 (*Sri Lanka Net Migration Rate 1950 - 2023*). According to Dharmadasa *et al*,. (2018), the skill migration population rose until 2010 as there was a crucial reduction in the unemployment rate from 2009-2012 in Sri Lanka.

Furthermore, it no serious reduction in the growth rate is seen from 2014-2018 according to Figure 1. As Figure 1 shows an increment in the migration population from 2018-2022, the growth rate shows a considerable reduction. The net migration rate of 2022 was -4.149 per 1000 population and it declined 2.83% from 2021 (Sri Lanka net migration rate 1950 - 2023).

Figure 4: Sri Lankas' net migration rate (2000-2022)



Source: Macrotrends website (per 10,000 population)

Objective 2: One of the factors that influence skilled professionals to self-migrate is the imbalance between their home country and the host country's earnings. Skilled professionals always tend to choose a country as their destination which provides a fair and good income for their skills when they are migrating. This is mostly seen in low-income countries (Gunawardena and Nawaratne, 2017).

With globalization, many people migrate to other countries for various reasons. Push factors are the factors that attract migrants to a particular area (Dharmadasa *et al*., 2018). Major push factors that influence Sri Lankan skilled professionals to migrate to other countries are existing political instability and degradation in the country, poor working conditions, low income, and lack of job satisfaction (Ekanayake and Amirthalingam, 2021; Wijesinghe and Jayawardane 2021) Majority of Sri Lankan professionals migrate to developed countries to seek better opportunities for employment, higher living standards and higher wages (Wijesinghe and Jayawardane 2021; Gunawardena and Nawaratne 2017; Dharmadasa *et al*., 2018).

Conclusion and Policy Recommendations

The population of skilled migrants shows a crucial growth over the past 22 years. As there are no studies conducted in-depth based on this area before, this study was able to identify the migration and brain drain nature in Sri Lanka and the key components that determine the skill migration for the period of 2000-2022.

After analyzing the results, we have determined that the brain drain and migration patterns vary according to year. Within the first 4 years (2000-2004) of the period we are considering, a significant change in the migration population has been identified. From 2005 onwards there was no significant fluctuation, but according to Dharmadasa *et al*,. (2018), a significant change was recorded in 2010. Major push and pull factors were also recognized which influence professionals in Sri Lanka to migrate to developed countries. According to Dharmadasa *et al*,. (2018), GDP per capita is the major push factor that influences people to migrate to developed countries while Wijesinghe and Jayawardane (2021) have brought up poor working conditions, less income, and lack of job satisfaction as push factors.

Although some studies have discussed both positive and negative consequences of brain drain, we have identified that the negative consequences outweigh the positive consequences.

Overall, this study attempted to find the migration and brain drain patterns and key determinants that determine skill migration, future researchers can focus on the impact of brain drain and migration on the economy of Sri Lanka and it will be helpful for policymakers to create new policies to address this issue.

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Exploring the Determinants of Migration Intention of IT Professionals: Evidence from Sri Lanka

K.K.T.Y. Amarasinghe, R.M.A.U. Rathnayake, G.L.T.Y. Jithmini and A.M.S.S. Alahakoon, V.R. Dunuwila, and Kethaka Galappaththi

Sri Lanka Institute of Information Technology, Business School, Malabe, Sri Lanka

Keywords: *Migration; IT; Professionals; Sri Lanka*

Introduction

Sri Lanka has been experiencing migration for decades. However, due to the economic and social unrest caused by the COVID pandemic in Sri Lanka, a considerable number of individuals are currently migrating. In November 2021, the Institute for Health Policy conducted a survey, revealing that Sri Lanka now has twice as many migrants as three to five years ago (Rannan-Eliya, 2021). By May 2022, employee migration had increased by 286 percent. It was also referenced by the President of the Computer Society of Sri Lanka (CSSL), where it was also specifically stated that since the beginning of the economic crisis, at least 10,000 of the country's best Information Technology (IT) engineers have moved out of the country (Chaturanga, 2022). Estimating the IT sector's contribution to Sri Lanka's economy, employment, growth, technological innovation, and social progress remains challenging. In 2017, Kumari conducted research to examine the variables that led specifically to these IT workers to migrate to Sri Lanka but that was before COVID. (Kumari, 2017), Thus, this study examines the driving causes that influence the migration of IT workers after COVID, as there has been no factor study in this area since 2017. The study aims to address IT career migration gaps in Sri Lanka, offering insights for organizations, governments, and educational institutions to recruit and retain IT professionals. Understanding migration factors and identifying key categories can manage employee deficits and promote digital projects.

Objectives

The aim of this study is to investigate the factors that currently influence the migration intention or the decision of IT professionals in Sri Lanka.

Methodology

This study followed a mixed method, and in order to collect primary data to build the Likert scale questions, interviews were conducted initially to gain an idea of the current factors affecting IT migration. The population considered in this study was IT professionals above 25 years of age with tertiary education, or related professional qualifications with at least three years of work experience and employed in one of 140 organizations registered under the Export Development Board, Sri Lanka website (EDB, 2023). As there are 28 Likert scale questions, a minimum of 280 (28*10) responses from IT employees were selected using simple random sampling to conduct the factor analysis using SPSS.

Results and Discussion

Considering the demographic questions, the majority of the participants were between 31-35 years of age with a percentage of 38%. The majority of participants (152 (50%)) had Masters Degrees as their highest educational qualification. In terms of career length, the highest number of participants (47%) had 3-6 years of work experience. As presented in the table, most of the participants were married (76%) and out of married participants, 66% had at least one child. The majority of participants (86%) confirmed that they had never thought of migrating to another country and also majority (85%) of respondents claimed that they intended to migrate permanently. It is important to note that 19% were set to migrate in less than 3 months.

Table 1: Descriptive statistics

IT Professionals (n = 303)			
Demographic Parameter		**Decision Parameters**	
Age, n (%)		**Thought of migration, n (%)**	
25 – 30	79 (26%)	Yes	261 (86%)
31 – 35	114 (38%)	No	42 (14%)
36 – 40	66 (22%)	**Temporarily or permanently, n (%)**	
Above 40	44 (14%)	Temporarily	29 (10%)
Gender, n (%)		Permanently	259 (85%)
Male	153 (50%)	N/A	15 (5%)
Female	150 (50%)	**Migrate Within, n (%)**	
Educational qualification, n (%)		Not decided	51 (17%)
Diploma/Higher Diploma	7 (2%)	Beyond 2 years	6 (2%)

Bachelor's degree	111 (37%)	Within 1-2 years	35 (12%)
Master's degree	152 (50%)	Within 3-6 months	76 (25%)
PhD	33 (11%)	Within 6 to 12 months	77 (25%)
Experience, n (%)		With immediate effect (within 3 months)	58 (19%)
3 - 6 Years	143 (47%)		
7 - 10 Years	106 (35%)		
More than 10 Years	54 (18%)		
Marital Status, n (%)			
Married	230 (76%)		
Unmarried	73 (24%)		
Number of Kids, n (%)			
None	102 (34%)		
1	94 (31%)		
2	68 (22%)		
More than 2	39 (13%)		

Factor Analysis

A Factor Analysis was conducted to reduce the size of the data set removing anomalous and unusual variables, reducing redundant factors and complexity. For the reliability of the questionnaire, Cronbach's alpha score was 0.885, which is higher than 0.6 so it can be considered reliable. Results of the KMO test for the validity of the evaluated questionnaire indicate a value of 0.755 and since it is greater than 0.5, it can be said to be accurate. Rotated component analysis (Table 1) is crucial in factor analysis, examining the relationships between variables and estimated components. Structural equation modeling involves factor loading of 0.7 or higher, indicating a significant reduction in variable variance. Rotation aims to minimize significant factors in the variables, resulting in a more accurate understanding of the research.

Table 2: Rotated component analysis

	Components		
	1	2	3
Increased cost of goods & services			0.947
Low pay scale			0.950
Income taxes against government benefits			0.780
Public facilities and infrastructure	0.812		
Social security & social peace	0.868		
Difficulties in accessing basic basic necessities & resources	0.905		
Quality of the healthcare facilities	0.898		
Independence in decision making		0.958	
Opportunities for spouses overseas		0.956	
Better education for children overseas		0.794	

The ten elements impacting an IT professional's propensity to migrate were identified by the rotational component analysis results, which also indicated which factors might be categorized under each component or variable. According to the findings, component one can be characterized as "macroenvironmental conditions", component two as "family relations", and 'Financial Stability' as the final category, which had an impact on the movement of IT professionals. Therefore, this study can conclude that there are three key factors impacting Sri Lankan IT professionals' decision to migrate after the Covid 19 period. These findings are consistent with some foreign research that claims that family ties, social issues, and economic factors are the primary driving forces for migration (Iqbal et al., 2021). On the basis of the nation's economy and way of living, there is a difference between the factors identified in the study and the one prior to Covid-19. Factors have dramatically changed between 2017 and 2022 as a result of the economic crisis and pandemic (Kumari, 2017).

Governments and businesses should promote the establishment of top-notch educational programs and allot funds for research and development in the IT sector, which results in the production of technological advancements, inventions, and intellectual property, in order to retain IT workers. Businesses should give employee wellbeing a top priority and create a dynamic work environment that fosters innovation, career advancement, and job happiness.

The Sri Lankan government must make investments in building solid infrastructure and facilities to raise the overall standard of living for IT workers. Governments can encourage IT workers to stay in their area and lessen their propensity to emigrate by creating a high-quality living environment.

Conclusion and Policy Recommendations

Determining the IT industry's impact on Sri Lanka's economy, social areas, employment, growth, technological innovation, and advancements remains challenging. To understand the migration intentions of IT workers in Sri Lanka, this study examined the economic, career, and quality of life aspects in Sri Lanka. It is essential to set guidelines to retain talent in order to avoid negative impacts. Financial incentives, training programs, work-life balance initiatives, infrastructure improvements, and collaborative efforts should all be taken into account by policymakers. In Sri Lanka's IT sector, these policies may encourage innovation, expansion, and long-term economic development. Governments, organizations, and stakeholders can work together to retain the fifth largest export revenue generator's human capital by putting these policies into place.

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The Impact of Internship on Academic Performance of Non-State Undergraduate Management Students

E.A.T. Wishvamali, A.B.C. J. Wimaladasa, G.A.D.M. Gangodawila, D.M.V. P. Dissanayaka, L.P. Rajamanthri, and R.S. Weerarathna

Sri Lanka Institute of Information Technology, Business School, Malabe, Sri Lanka

Keywords: *Academic Performance; Internship; Working Hours; Workload; Working Environment*

Introduction

Internships are voluntary, temporary work assignments often taken by college and university students. They have been hailed as a win-win situation for both interns and employers, as employers don't have to commit to actual labor and can advance their careers. However, there is still controversy about the exact benefits of internships and how to achieve them. Curricular internships are usually considered the first job experience for a student. (Volpe, M. Della, 2017). Internships are associated with higher attraction of job applicants, higher pay levels and increased job satisfaction (Bryman, 2006). Students are encouraged to develop personality, self-assurance, and independence, to make decisions on their own or with minimal guidance, and to acquire leadership skills such as teamwork, communication, time management and commitment to projects. Internships provide a safe environment for professional development and help students understand their strengths and weaknesses**.** Internships are a practical way for university students to envision a future career with a limited investment of time and resources (Rothman and Sisman, 2016). However, in addition to the number of working hours, the amount of work at the internship location as well as the working environment is also impacted. Internships are essential for university students in Sri Lanka in their third and final year. While some academics say internships may in some cases be detrimental to students' grade point average (GPA), some scholars say that it is an investment in their education and future. Internships benefit students by providing professional work experience, risk-free trial access, and the opportunity to mentor and evaluate skills. It has a great impact on the future

of university students due to the increase in academic performance. It provides a foundation for students to have an opportunity to succeed in their own life.

Harpe (2015) states that students who are not employed have a Grade Point Average (GPA) 1.7% higher than those who are working. Humphrey's (2006) research showed that working students had significantly lower end-of-year average Grade Point Averages (GPA). According to Prianto & Maisaroh (2017), working students had three times higher failure rates than non-working students on average, and they also had poorer grades and graduate classes. Curtis and Shani (2002), looked at how work performance was impacted on a student's academic performance. They found that a student's attendance at lectures decreased, they scored lower in tests, and working while attending classes had more negative impacts on their health. Furthermore, the researchers of this study also conducted a mini survey by collecting primary data to identify the practical gap. Accordingly, 53 fourth year management students of IITSL University were surveyed by the researchers to collect data for this study. According to the survey 54.7% students' Grade Point Averages (GPA) increased during the internship period, but 79.2% said that the internship interrupted their academic performed. This suggests that there is disconnect between academic performance and internships, whether the latter has a positive or negative impact on academic performance.

Many scholars from around the world have studied the benefits and drawbacks of internships and how they affect graduates' careers. But only a small amount of research has been done on topics such as the impact of internships on undergraduate students' academic performance (James et al., 2020). Considering the Sri Lankan context, no such studies have been done yet.

Overall, the study of internships on academic performance is relevant and important in the current educational landscape, as it can provide insight into the efficacy of experiential learning and inform the design of internship programs that can enhance students' academic performance.

Objectives

The main objective of this study is to study the impact of internships on academic performance of undergraduate management students at non-state universities in Sri Lanka.

Methodology

Research design includes the selection of research strategies, data collection methods, analytical procedures, and time horizons. This study used a deductive research methodology to test a hypothesis and used an unconventional research design to test the hypothesis. Moreover, the researchers focused on dimensions under independent variables. Workload, Working Hours, and Working Environment were identified as independent variables under internship (James et al., 2020). Furthermore, the dependent variable of semester GPA assesses students' academic performance. Researchers developed a linear regression equation to evaluate the impact of workload, working hour and working environment on academic performance. This study was conducted in a naturalistic setting to evaluate the impact of internships on academic performance. The unit of analysis was individual students, the time horizon was cross-sectional, and the data and sampling design applied. Primary data is unique and original data while secondary data is already collected for other purposes. The research population was 434 management students from two non-state universities in Sri Lanka. A structured questionnaire was used to collect data from the sample. 205 as the sample was decided according to Morgan table, which was selected using a simple random sampling technique. Data collection using a quantitative method which is a questionnaire survey enabled researchers to gain first-hand knowledge and unique insights into their research problem. 205 questionnaires were distributed among a sample of management students from two non-government universities in Sri Lanka. Of these, 205 responses were received, giving a response rate of 100% and all questionnaires were selected for this analysis. The data gathered from the questionnaire was examined using Statistical Package of Social Science (SPSS) software.

Results and Discussion

Table 1: Descriptive statistics

Construct	N	Minimum	Maximum	Mean	Standard Deviation
Academic Performance	205	17.00	50.00	34.7707	6.55453
Working Hours	205	10.00	45.00	27.3284	7.59538
Workload	205	11.00	50.00	36.8000	6.61949
Working Environment	205	16.00	60.00	43.5171	7.19449

With the research findings, Table 1 shows that the mean value of academic performance of students at non-state universities in Sri Lanka is 34.7707. This shows that the academic performance of non-state university students in Sri Lanka is average. The mean value of workload is 36.8 and the workload is an average value for academic performance. The mean value of working hours is 27.3284 and the number of working hours is at a normal value for academic performance. The mean value of the working environment is 43.5171 and the quality of the working environment is at a high value for academic performance.

When considering the impact of each hypothesis, the impact of internship on academic performance is summarized in Table 2.

Table 2: Summary of the hypotheses testing

Factors examined for academic performance	Correlation Coefficient (r)	Strength of the relationship to	R Square	P-value
Working hours	0.644	Positive	.430	0.000
Workload	0.545	Strongly positive	.601	0.000
Working environment	0.779	Strongly positive	.607	0.000

Correlation analysis was used to test the hypotheses. According to the findings of the tests, the correlation analysis of working hours on academic performance showed that only 43% of the variation in academic performance was explained by working hours. The results showed that the marginal contribution of working hours (0.644) was statistically significant. Results

were statistically claiming that there is a significant impact of working hours on academic performance. Therefore, correlation analysis results showed a significant impact of working hours on academic performance. The correlation analysis of workload on academic performance showed R2 =.601, indicating that only 60.1% of the variation in academic performance was explained by workload. The results showed that the marginal contribution of workload (0.540) was statistically significant. Results were statistically claiming that there is a significant impact of workload on academic performance. The results of a correlation analysis of working environment on academic performance showed that only 60.7% of the variation was explained by working environment. Durbin-Watson (DW) statistic was 1.560 and marginal contribution of working environment (0.779) was statistically significant (Sig. = 0.000). This suggests that there is a strong positive impact of the working environment on academic performance. According to the findings for the main objective, internships have a positive impact on academic performance of undergraduate management students at non-state universities in Sri Lanka.

Conclusion and Policy Recommendations

The purpose of the study was to investigate the impact of internship on the academic performance of undergraduate management students in non-state universities in Sri Lanka. Accordingly, to examine the impact of internships on academic performance, a theoretically grounded conceptual framework was developed. The results of the study proved that there is a positive impact of internship on academic performance. A study by Harpe (2015) stated that internships can increase students' Grade Point Average (GPA). Accordingly, the results of this present research agree with the literature research results. Furthermore, Allen, Titsworth and Hunt (2013) stated that internships lead to increased academic performance, thus confirming the findings of the current research. According to the results of the present research, all the dimensions defined by internship have a positive impact on academic performance. Accordingly, the variables considered for internship are working hours, workload, and working environment. Working hours, workload and working environment impact academic performance by 43%, 60.1% and 60.7% respectively.

Findings show that academic performance is influenced by the working hours, workload and working environment of university students during the internship period. These working hours can help improve students' academic performance if they use them to enhance their professional knowledge and experience. If this workload is regularly and systematically organized, students' learning activities can be successfully maintained. As an intern, students may have to juggle both their studies and internship duties. Creating a schedule or to-do list will help them keep track of all their responsibilities and ensure students meet all their deadlines. Their studies should always come first. Be sure to set aside enough time to complete their coursework and prepare for exams. This will help students maintain good grades and avoid lagging in their studies. The working environment can successfully maintain students' learning if they work to build and develop valuable relationships. It can help to increase the academic performance of students. Internship is a valuable learning opportunity to improve students' performances in a typical working context, and students can use the skills and knowledge that they gain in the workplace to enhance their studies. To carry out this objective successfully, educators and organizations must not only improve practical and holistic courses for training, but also continuously support students with the challenges they face in the working environment.

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Does Player Attitude Mediate the Effect of Pop-up Advertisements on Players' Intention to Download New Games

J.K.D.N. Thilakarathne, S.I. Vidanagama, K.M.N.D.B. Ulapane, W.M.Y.C.B. Wijekoon, and K.Wisenthige

Sri Lanka Institute of Information Technology, Business School, Malabe, Sri Lanka

Keywords: *Pop-up Advertisements; In-game Advertising; Download Intention; Freemium Games*

Introduction

Today, the internet has become a very significant and fundamental part of our routine lives. Many people, despite their age, spend a huge amount of time with modern technology, such as social media, mobile apps, and video games. In the present time, online games, especially freemium games, are popular among young game players. Freemium games can be downloaded for free or free to play, but payments are required for additional features (Hussain *et al.*, 2022).

Gaming channels have become a common form of digital advertising in this era, primarily through in-game advertising. The use of existing online gaming platforms to promote new games can be seen as a new trend initiated by game developers. Pop-up advertisements are one of the most influential in-game advertising methods used by marketers. But the issue related to pop-up advertisements has been identified as the lack of skills of marketers to productively use those for promotion purposes (Nelson and Nelson, 2014). Since thousands of dollars are invested in digital gaming, in-game advertising has become one of the key pillars in generating profits for game developers. Players' intention to download new games can be increased by personalization and infotainment factors. Players can also be informed about the new games that they might be interested in by using infotainment. Research related to in-game advertising and pop-up advertisements is a novel area of study in Sri Lanka. This study assessed the impact of specific attributes of pop-up advertisements on a player's attitude and how it can have an impact on the

download intention of the player. Furthermore, the mediating effect of player attitude was taken into consideration.

Objectives

- To assess the significance of specific characteristics of pop-up advertisements: infotainment and personalization on the players' intention to download new games.
- To assess how the player attitude mediates the effect of infotainment and personalization on players' download intention.

Methodology

Considering the past studies related to the research area, to collect the data required for the study, one large Sri Lankan university was selected, and simple random sampling was used to form the sample for the study (Hussain *et al.*, 2022; Hu and Wise, 2021; Mattke *et al.*, 2021). Relevant places where students were expected to be accessible were pre-planned for random collection of data (e.g. students who are seated on the 3rd table of the cafeteria, 5th student who comes out from a specific lecture hall, students who are sitting under a specific tree at a specific period). According to Vashisht & Chauhan, (2017), an average game player is 35 years of age, and 74% of the gamers are 18 years or older, which supports the selection criteria of our sample which is the Gen Z population, aged between 18 and 25 years. The sample size was determined as 384, according to the Morgan table and data was collected from 420 respondents using an experimental model followed by a questionnaire, which was developed in English, Sinhala, and Tamil languages. The participants were asked to play a selected game for 5-10 minutes until several pop-up advertisements were displayed and then they were directed to the questionnaire. Structural Equation Modeling (SEM) was used for data analysis and SPSS and AMOS software were used for this process.

Results and Discussion

Reliability and validity are the most important measures that need to be considered before start analyzing a dataset. To measure the overall reliability of the model Cronbach's alpha was used and a value that is above 0.7 represents a good reliability of the dataset. Here, Cronbach's alpha value was

0.9 which represents acceptable reliability in the model. Further, the variable-wise reliability was also measured and all the values were above 0.6. Hence it can be concluded that the variable-wise reliability was also good. To test the overall validity of the model KMO and Bartlett's value was considered and it was 0.904. A value which is above 0.7 is considered as a better validity and here we can conclude that the model has excellent reliability and validity.

Table 1: Model fit summary

Model	CMIN/DF	GFI	AGFI	CFI	RMSEA
Default	3.604	0.867	0.834	0.847	0.082

The above table shows the model fit results of the acquired dataset. CMIN/DF value, 3.604, which is a value lower than 5 is considered an acceptable value. The Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) were both greater than 0.8 which implies a good fit since values were closer to 1. The Comparative Fit Index (CFI), which is a borderline comparison, was obtained as 0.847, a value closer to 1, therefore considered acceptable. Also, the Root Mean Squared Error of Approximation (RMSEA) value should be below 0.08 to consider the best fit, and the values that are between 0.08 and 0.1 are considered to be on the borderline. Here, the RMSEA value was 0.082 which is an acceptable value. Hence the model fit summary results indicated that the model had a good fit.

Table 2: Standardized indirect effects

	Personalization	Infotainment
Player Attitude	--	--
Download Intention	0.048	0.270

Considering the standardized indirect effects with two-tailed significance, the mediating effect of personalization and infotainment on the download intention through player attitude can be determined. The above values lie between obtained lower, and upper bounds and hence can be considered acceptable and confirms the mediating effect.

Table 3: Structural model assessment

	Estimate	S.E	C.R	p-value
Player Attitude ← Infotainment	0.530	0.680	7.734	0.000
Player Attitude ←Personalization	0.278	0.700	3.986	0.000
Download Intention ←Player Attitude	0.141	0.053	2.675	0.007
Download Intention ←Infotainment	0.404	0.059	6.835	0.000
Download Intention ←Personalization	0.241	0.054	4.437	0.000

Using the path coefficients, p-values, and t-values, the significance of the structural model can be tested. The path coefficients indicated that all the independent variables had a positive and significant impact on the dependent variable. Based on the t-values and p-values, all the independent variables had a significant correlation with the players' intention to download a new game. Hence the developers should keep these variables in mind when designing and deploying in-game adverts in order to optimize their effectiveness while minimizing their negative impact on user experience.

Conclusion and Policy Recommendations

The study was conducted to identify the impact of infotainment and personalization factors on the download intention of a new game and the player attitude was considered as a mediating variable. From this study, it was discovered that infotainment and personalization affect the download intention both directly and indirectly. Personalization has a strong relationship with the download intention, while infotainment has a strong relationship to download intention through player attitude. In the study, player attitude acted as the mediating variable between infotainment and personalization variables of the intention of downloading a new game through pop-up advertisements. It implies that the player's attitude can directly affect the player's intention to download a new game through personalization and infotainment of pop-up advertisements. As for the conclusion, many game developers can get many insights from the study. Firstly, it suggests that game developers personalize the advertisements according to the preferences of players. Secondly, it suggests including content that has both informativeness value and entertainment value, which creates infotainment attributes in pop-up advertisements. Last but not least, game developers should be concerned about the player's attitude when designing pop-up advertisements. Overall, this

study provides many insightful factors about how the infotainment and personalization factors can make a huge effect on gamers to download new games that are displayed in the pop-up advertisements. Game developers can use this study to increase the value of their advertisements which can attract more players to download new games, which leads to an increase in profits.

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Risks for Start-up Managers during Crises: Recent Romanian Experience

A.S. Tecău[1], T. Foriș[1], C.A. Băltescu[1], E. Nichifor[1], and M.M. Băltescu[2]

[1]*Transilvania University of Brasov, Faculty of Economic Sciences and Business Administration, Romania*
[2]*National Agency of Fiscal Administration, Brasov, Romania*

***Keywords*:** *Start-up; Managers; Risks; Crises; Solutions*

Introduction

Entrepreneurial initiatives face a diversity of challenges today due to political, financial, sanitary, climate, or energy crises. Under these circumstances, the survival and success of existing companies are endangered. Several factors explain the mechanism of business failure but, at the same time, are essential for recovery and development (Karabag, 2019). The most relevant of these factors are ownership, strategies, management approaches, and technological developments. The recent COVID-19 pandemic, political and energy-related events have demonstrated, more than ever, the need for enhancing business resilience (Su and Junge, 2023). As stated by Williams et al. (2017, p. 750) "crisis management and resilience are two aspects of the same challenge—the challenge of adversity". The same authors (Williams et al, 2017) draw attention to leadership and mindfulness as important themes for organizational resilience. Start-ups are considered crucial vectors for economic growth and social development. Start-ups are well-known for their innovative characteristics which allow them to implement updated measures to face and to overcome various threats (Ressin, 2022). The COVID-19 pandemic had a huge negative impact on the successful building and structuring of start-ups (Kalogiannidis and Chatzitheodoridis, 2021). Assessing these negative experiences represents the foundation for outlining the most suitable future solutions. Recent research has emphasized the role of individual, group, and organization-level characteristics which are decisive for building start-ups' resilience (Kalogiannidis and Chatzitheodoridis, 2021; Su and Junge, 2023). Leaders' individual resilience is considered the starting point in this process. Their strong beliefs in firms' capacity to face threats and their ability to transfer these feelings to all organizational members are driving forces for mobilizing

employees and generating organizational growth (Su and Junge, 2023). Moreover, individual self-efficacy and capacity to improvise and a transformative mindset of organization members are prerequisites for this end. Group-level characteristics considered as the most important are: group identity, diversity and efficacy, groups' capacity to improvise; and group psychological safety (each member is empowered to engage in strategic discussions without negative consequences). The most significant organization-level characteristics are structure, resources, efficiency, flexibility; and social and environmental practices. Different solutions are appropriate for start-ups in times of crisis: reconsidering the present business models, co-opting organizational members in shaping survival strategies, renegotiations with suppliers and finding solutions to become more flexible and less dependent on suppliers, identifying new demands, applying for government grants and identifying new partners (Kalogiannidis and Chatzitheodoridis, 2021).

The article highlights the impact of the current international crises on Romanian start-up managers which represents, to the authors' knowledge, a research gap in the literature. The assessment of risks faced by start-up managers in the context of current crises is the problem analyzed in the article.

Objectives

The research objectives are to identify the risks assumed by managers before starting a business and those perceived during the start-up activity and to identify solutions that may help strengthen the business in order to increase resilience.

Methodology

By aiming to understand in detail the concerns and feelings of start-up managers in the current period marked by uncertainty, exploratory research was carried out. The methods used imply a mixed-combined technique to discover detailed aspects of this topic. Firstly, online semi-directive interviews were conducted by questioning 25 participants in April 2023. The required characteristic of eligible participants was to be managers of start-ups founded between 2021 and 2022, in different fields of activity. During the sessions, an interview guide was used as an investigative tool, with the role of directing the

discussions and focusing them semi-defectively on the chosen topic. Thus, its role was to start and facilitate conversations. Secondly, data analysis was performed by using the technique of qualitative research i) structuring, ii) sorting, and iii) classifying the information obtained. Before performing the third step, the content analysis was run.

Results and Discussion

Respondents emphasized the numerous risks they faced since they started the business. The most frequent risks mentioned during the interview were the financial risks which were highlighted by 68% of respondents. Market risks were also acknowledged by 48% of the interviewed managers. Among the most significant market risks the respondents named were fluctuations in demand and competitive pressure. Other risks analysed were those related to the possibility of a new pandemic crisis, with 5 out of the participants stating that they had taken into account the possibility of suspending their business in the event of a new pandemic. In their daily basis activities, the managers declared that they faced problems related to production, distribution, and labour. The results revealed that managers understood the importance of assessing risks, such as difficulties in maintaining the quality of products or services, product safety, and operational risks, among which the most important was the relationship with suppliers, logistics, and supply, especially during the first part of the Russian-Ukrainian armed conflict. Another category of risks faced by the participants was risks related to compliance with regulations and legislation in the field, which changed frequently, generating numerous difficulties in anticipating and fulfilling financial or economic plans.

Participants did not envisage potential risks related to personal development, their attention being concentrated mainly on business development. The interviewed managers also neglected the risks associated with the lack of attention to mentoring and developing leaders in the organization. Other risks that participants did not take into account were those related to data security. At the same time, they were aware that cybersecurity risks can be easily ignored or underestimated, with costly and serious consequences for their business. The most relevant results are presented in Table 1.

Table 1: Risks mentioned by Romanian start-up managers

Risks	Number of respondents	%
Risks assumed by managers before starting a business		
Financial risks (financial losses, impossibility to find additional financing sources)	17	68%
Market risks (demand fluctuations, competitive pressure, lower purchasing power)	12	48%
The risk to suspend the business in the event of a new pandemic	5	20%
Risks perceived by managers during start-up activity		
Risks related to production, distribution, and labour	21	84%
Risks related to compliance with regulations and legislation in the field	11	44%

Crises felt almost everywhere in the world have also had an impact on businesses, but the interviewed managers stated that these were not extremely strong. The negative effects were felt, of course, but most participants declared they managed to cope with unforeseen challenges by making consistent efforts to survive, adapt and seek solutions. In terms of solutions and support measures, the managers interviewed expect policymakers to intervene to limit the effects of crises. Subsidising fuel prices, capping energy tariffs, fiscal facilities, non-reimbursable financing, and predictability of financial legislation were solutions most frequently mentioned by participants.

Conclusion and Policy Recommendations

The results of the present research support the idea that crises push boundaries, forcing change, creativity, improvement, rebuilding, developing, or even rethinking their businesses. They associate this moment with the admission of a higher level in the business market, a level to which only those who show resilience to adversities in a period marked by multiple turbulences will have access. Start-up managers focus their attention on their daily organizational aspects, which are increasingly demanding, neglecting or not finding time to focus on the individual-level characteristics necessary to challenge adversities. The negative effects become evident, among which are fatigue, burnout, and decreased performance. The same is valid with their attention towards employees, leading to a decrease in employee loyalty and increased feelings of insecurity in the organization.

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Innovative Business Strategies during the Economic Crisis: A Study Based on Star Hotels in Kandy District

K. Selvanayagam[1] and B.A.N. Eranda[2]

[1] *Postgraduate Unit, Faculty of Management, University of Peradeniya, Sri Lanka*

[2] *Department of Marketing Management, Faculty of Management, University of Peradeniya, Sri Lanka*

Keywords: *Innovative Business Strategies; Economic Crisis; Star Hotels; Asset Light Model*

Introduction

Sri Lankan tourism is highly at risk during the economic crisis and with the current foreign exchange rate depreciation along with price hikes attached to the scarcity of essential items. All the supply chains have been affected, so this study aims to uncover how the star hotels in Kandy have adapted their businesses by implementing innovative business strategies during the economic crisis period in Sri Lanka. Due to power cuts and a rise in fuel prices, hotels are using generators that run on diesel. If this situation lingers, there will be a massive job shortage in the hospitality and tourism industry. Also when considering Sri Lankan tourism, the hoteliers played a major role to attract tourists even at the time of the crisis. It has been reported that the number of cancellations of reservations made by tourists was soaring due to the ongoing economic crisis in the country. More importantly, 80% of cancellations of reservations are from tourists in key markets such as the UK, Germany, France, Australia, and New Zealand. Even local tourists are not in a position to travel anywhere due to the shortage of fuel and this has influenced the hotel-staff earnings service charge to be dropped by 50% (The Hindu, 2022). Therefore, star hotels need to develop new strategies to attract tourists, in order to be competitive in the business. This is in sequence with prior studies conducted in other countries, which talk about the economic crisis and how the star hotels got adapted to the economic crisis. The present study explores how the star hotels started to implement innovative business strategies during the economic crisis in Sri Lanka which is a new challenge for all business organizations in Sri Lanka.

Objectives

The purpose of this research is to identify the influence of the economic crisis on star hotels and also to uncover the innovative business strategies adopted by star hotels to sustain during the economic crisis.

Methodology

Innovative business strategies during the economic crisis are underexplored in the literature, and in particular there is a lack of information on the Sri Lankan context and this has led the researchers to conduct an exploratory study (Sekaran and Bougie, 2016). The qualitative nature of this study led to the adoption of the case study method as the research approach (Yin, 2014). Particularly, researchers used multiple sources of evidence in collecting data including in-depth interviews with the managerial staff in hotels and documentary evidence as suggested by Creswell (2013). The unit of analysis in this study is the star hotel, which can be presented as multiple case studies. In the multiple case study design, there are no hard-and-fast rules on the number of cases required to satisfy the requirements of the replication strategy. However, Yin (2014) has suggested having five to ten cases and hence the researchers examined five case studies of star hotels in Kandy which include three five-star hotels and two four-star hotels. Accordingly, the selected hotels are Mahaweli Reach, Earl's Regency, and The Grand Kandyan as five-star hotels, and Amaya Hills and Cinnamon Citadel as four-star hotels. The researchers have chosen these hotels since they are star hotels in Kandy and they used to adapt quickly to the environmental changes created by the economic crisis with innovative strategies by following the purposive sampling method (Creswell, 2013).

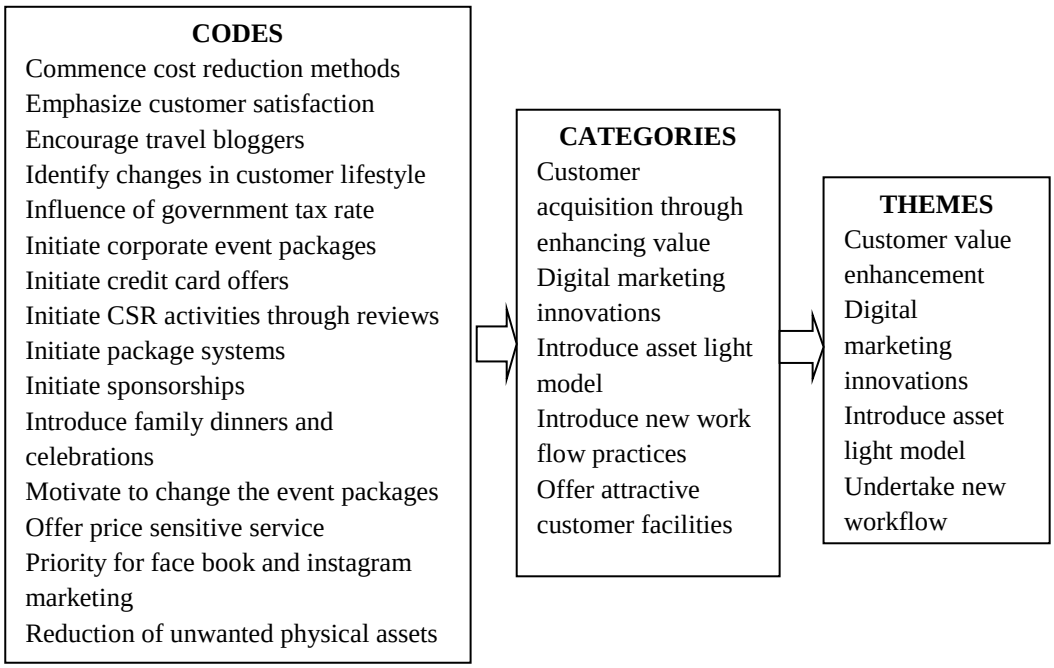
To increase the credibility of this research the researchers incorporated methodological strategies to ensure the trustworthiness of the findings. Accordingly, an interview guide was designed to get clear information from the participants. Furthermore, the interviews were recorded to use for transcription and also the respondents were invited to comment on the interview transcripts to enhance the respondent validation. In analyzing the qualitative data of the study, the generic strategy is followed. First, by adopting the data reduction approach the interview transcripts were coded by identifying the significant information. Second, the codes were grouped into

categories based on the similarities and relationships among the codes. Third, themes were generated from the categories to address the research question without losing the meaning of the data. As per Creswell (2013), themes were generated by studying each case.

Results and Discussion

The analysis of findings showed that the economic crisis has influenced star hotels in two main ways: supply scarcity and customer attrition. Under supply scarcity, hotels mainly had issues with obtaining fuel and gas to operate their day-to-day activities during the economic crisis. The number of customers who stayed at hotels decreased drastically during the crisis period and this is termed as customer attrition in this study. However, hotels developed innovative business strategies in responding to these challenges. Accordingly, the innovative business strategies followed by star hotels to sustain their business during the economic crisis are presented in Figure 1 with respective codes, categories, and themes generated in the analysis.

Figure 1: Summary of the analysis related to innovative business strategies followed by star hotels during the economic crisis



Source: Compiled by authors

Each of the themes is explained below.

Theme 1: Customer value enhancement

During the crisis period, star hotels in Kandy experienced a reduction in their customer base. Hence to boost the customer base and customer satisfaction, hotels started to execute price-sensitive methods and endow with a pool of customer facilitates. The hoteliers recognized that during the crisis period customer life style has changed from the premium market to the middle market. The main motive for that is the high rate of tax and high price. Further, hotels started offering attractive packages. Accordingly, one of the hoteliers mentioned that *"Considering our customers we thought to change the entire facilities full of budget-friendly. We have introduced the corporate event packages for full board single Rs. 21,000 and triple Rs. 29,000. The package includes complimentary early check-in and late check-out on availability, an outdoor garden area for team building activities, offers on selected beverage deals, customized menus spacious and well-equipped conference venues"*.

Theme 2: Digital marketing innovations

This indicates that the marketing activities commenced by star hotels during the economic crisis cannot be limited to prices and it should be extended for innovative endeavors. Accordingly, they undertook innovative digital marketing activities to reach the target market more effectively. "We paid more attention to the effective use of social media and creative digital marketing initiatives which can result in a higher number of online reviews". This statement reveals the use of digital marketing communication which helps enhance the visibility of the hotel.

Theme 3: Introduce the asset light model

The idea here is that star hotels in Kandy carry out a reduction in their assets and focus more on operational efficiency. The asset-light model trim down the risk of owning fixed assets which are impediments to flexibility in decision-making. *"We sold unwanted two vehicles and a piece of land belonged to our hotel"*. This statement reflects that the hotel is trying to focus more on its core business rather than owning resources which adds less value to the business.

Theme 4: Undertake new workflow practices

As per the findings throughout the crisis stage star hotels in Kandy aim to introduce new practices in their working environment to improve the customer

base and to sustain in the hotel industry. Hence during the crisis to ensure the task is completed correctly, consistently, and efficiently star hotels came up with cost reduction methods, provided credit card offers and initiated sponsorship programs. *"Without considering the profit what we did was to get more customers we started to implement regular cost reduction (offers and discounts). We gave 20% of discount rates for our rooms and if our customers stay for two nights we provide one day stay free"*.

Conclusion and Policy Recommendations

According to the findings, the economic crisis in Sri Lanka broadly influenced star hotels in Kandy in two ways, namely, supply scarcity and customer attrition. However, hotels responded to these influences with innovative business strategies in order to retain and enhance their competitiveness. Therefore, these innovative strategies enabled the hotels to sustain their businesses during the hard times and also to increase the customer base. This implies that the hotels are required to analyze the business environment continuously and engage in adaptation in order to avoid strategic drifting. Further, it seems that the hotels need to avoid clinging to their history and legacy. Instead a continuous upgrading of their business approach is required to be competitive.

The findings also reflect the fact that the hotels are required to rethink their existing business practices and strategies and need to evolve those in line with the environmental changes. In doing that, developing a paradigm shift in mindset is required for the managers which can significantly change their thoughts and actions more towards agility. Further, the adoption of these changes for hotels requires strengthening their existing organizational culture. Accordingly, the redefinition of organizational strategies needs to focus on sustaining employee engagement, understanding employee experience, and taking the necessary actions to support the employees. Particularly, this is significant for hotels since they are falling under the service sector whose success is highly dependent on employee satisfaction. Moreover, the hotels are required to focus on reconfiguration of these newer strategies where they need to maintain a consistent interdependency with organizational structures and systems. The innovative business strategies uncovered in the study need the support of a proper organizational structure. Also, hotels need to make sure that their formal and informal systems are in line with these organizational

structures for the effective implementation of these innovative business strategies during the crisis.

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Assessment of Domestically Produced Energy Impact on Total Energy Use: SAARC Experience

M.A.D.P. Dias, K.M.C. Rajapaksha, M. D. R. K. Jayathilaka, R. M. N. M. Rathnayake, R.P.U.S. Pathirana, and C.N. Wickramaarachchi

Sri Lanka Institute of Information Technology, Business School, Malabe, Sri Lanka

Keywords: *Domestically Produced Energy; Energy Consumption; Total Energy Use*

Introduction

There has been a remarkable surge in energy demand due to the growth of the global population and economic development (IEA, 2019). There is a pattern that domestically produced energy stimulates total energy use since many countries have adopted policies to increase domestically produced energy rather than focusing on energy imports (York, 2015).

Even though many countries in the South Asian region account for major natural energy sources, the South Asian Countries' domestic resource development pace and regions' current bilateral energy trade agreements cannot meet the growing energy supply needs (Wijayatunga, 2013). Thus, it can be argued that if inefficient energy sources are used to generate domestically produced fuel, it could limit the total energy output by reducing productivity. Hence, it is better to establish appropriate regulations to increase the overall energy output of SAARC countries, while also increasing domestically produced energy.

Objectives

To investigate the impact of domestically produced energy on total energy consumption across the SAARC nations.

Methodology

The study draws upon secondary data from the Energy Information Association (EIA) from the period 1990 to 2021 for the SAARC countries. This was analysed using a simple linear regression model and a polynomial

regression model when appropriate. The regression models show the patterns and trends of the impact of domestically produced energy on total energy use and the study used line-graphs to display the trends. The following regression models were used to analysis the data:

$$\mathrm{TEU}_i = \beta_0 + \beta_1 \mathrm{DPE}_i + \varepsilon_i \quad (1)$$

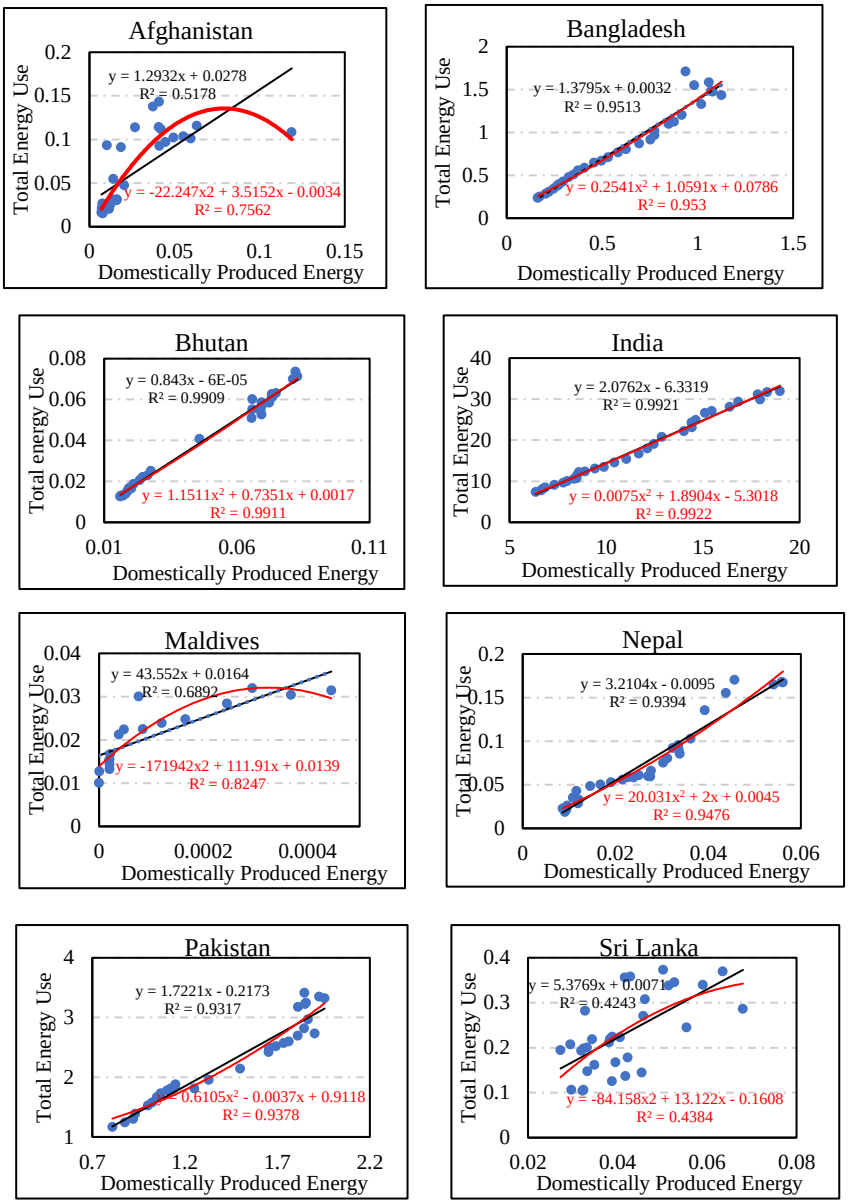
$$\mathrm{TEU}_i = \beta_0 + \beta_1 \mathrm{DPE}_i + \beta_2 \mathrm{DPE}_i^2 + \varepsilon_i \quad (2)$$

Equation 1, simple linear regression, was used to examine the impact of domestically produced energy on the total energy use of many countries (Bangladesh, Bhutan, India, Nepal, and Pakistan). Equation 02, a polynomial regression model, was used to investigate the effect of domestically produced energy on the total energy use of a few countries (Afghanistan, Maldives, and Sri Lanka). To apply the proper functional form for the data of the specific country, the basic linear regression model and the polynomial regression model were chosen considering the R^2 value generated. Accordingly, TEU_i represents the total energy use of county *i* in *quad Btu* (quadrillion British thermal units). DPE_i represents domestically produced energy of country *i* in *quad Btu*.

Results and Discussion

Figure 1 shows each country's estimated simple and polynomial regression models. Based on the results, the R^2 value of the simple linear regression model is higher compared to the estimated polynomial regression model of those countries and the R^2 value is higher of the polynomial regression model compared to the estimated simple linear regression model of those countries

Figure 1: Estimated simple and polynomial regression models



Source: Based on EIA

Figure 1 shows the impact of the DPE on the TEU of the SAARC countries. Accordingly, all the plots depict linear and nonlinear positive effects from DPE on TEU. Furthermore, it can be observed that all regression models

demonstrate an R^2 value of greater than 80%, except Afghanistan and Sri Lanka.

When considering simple linear regressions, Nepal shows a higher coefficient of 3.21. It shows that when domestically produced energy increases by one unit of *quad Btu*, total energy use is increased by 3.21 units of *quad Btu*. The second largest coefficient is observed in India, which is 2.076. The lowest positive coefficient is denoted by Bhutan as 0.84. Overall, it can be concluded that total energy use varies directly in proportion to domestically produced energy.

Considering the estimated polynomial regressions, Afghanistan, Maldives, and Sri Lanka exhibit a nonlinear impact from domestically produced energy to total energy use. Even though the total energy use has increased when domestically produced energy increases, the relationship becomes nonlinearly negative after a certain point. Moreover, the Maldives show the highest growth rate in total energy use caused by domestically produced energy i.e., when domestically produced energy increases by a unit of *quad Btu*, the total energy used increases by 111.9 units. And the lowest growth rate in total energy use caused by domestically produced energy is shown by Afghanistan as 3.515. Furthermore, the findings revealed that an increase in domestically produced fuel increases total energy use at a rate of 3.122 (*quad Btu*) in Sri Lanka. In contrast to the linear impact discussed under simple linear regression models, the nonlinear positive domestic-produced energy effect on total energy use implies that the contribution of domestically-produced energy to the total energy use of those countries is relatively insignificant.

Conclusion and Policy Recommendations

The empirical findings of this research show a significant impact of domestically produced energy on total energy use in SAARC countries. Therefore, necessary policy imperatives can be derived for countries such as Afghanistan, Maldives, and Sri Lanka. First, the projected forecast of domestic energy production over the forthcoming years might be insufficient to meet the future demand for energy use. Second, those countries need to take appropriate action to develop domestic energy sources to meet the total energy use. Third, to enhance energy collaboration, a regional power exchange framework with distinctive power system structures, operational procedures, and regulatory and commercial necessities for cross-border trade of individual

countries is suggested. Additionally, it is suggested to construct autonomous regulatory systems to augment private sector investments in energy generation and transmission.

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Factors Influencing Female Employment among Graduates vs Non-graduates during the Economic Crisis Period in Sri Lanka

J.M.H.N. Jayasinghe[1] and H.M.A.E. Herath[2]

[1,2]*Postgraduate Institute of Humanities and Social Sciences, University of Peradeniya, Sri Lanka*

Keywords: *Female Employment; Economic Crisis; Marital Status; Childcare*

Introduction

The role of the active labor force is an important aspect of achieving sustainable Economic Development in a country. 66.1 percent of males and 33.9 percent of females in Sri Lanka were economically active in the 2018-2020 period. It implies that more than 50 percent of the labor force consists of males. When considering the economically inactive population by reason and sex, the majority of females are economically inactive due to household activities: 62 percent of females in 2018 and 2019 and 60 percent of females in 2020. 98 percent of those who are inactive in all three years because they engage in household activity are female (Department of Census and Statistics, 2021). Madurawala (2014) emphasizes that the untapped reservoir of manpower can be utilized for the future development of Sri Lanka. The current economic crisis has influenced various sectors and its impact on female employment has not been identified yet. Therefore the **research problem** of this study is to investigate the impact of the economic crisis on female employment, with a specific focus on two distinct groups, namely graduates and non-graduates. Educational attainment is the most important variable influencing female labor force participation (Mujahid, Muhammed, and Normen; 2013). Therefore, we have considered two different education groups in this study.

Objectives

- To identify major barriers to female employment during the economic crisis period of Sri Lanka.
- To identify current trends of female employment among graduates & non-graduates in Sri Lanka during the economic crisis period of Sri Lanka.

Methodology

The study was based on using insights from the Household Nash Bargaining model which identifies that bargaining power in household decision-making is related to the threat point or fallback position of each individual. It states that the two parties cooperatively engage in the process of bargaining to arrive at an agreement that improves their utility over their threat utility which is what they would achieve if they did not cooperate and form a household (Eswaran, 2014). Examples of factors determining the threat point are education, household composition, number of children, marital status, relative wages, social norms, land, and other assets.

Primary data was collected from a non-probability sample of 45 graduates and 45 non-graduates, aged between 25 – 45 years, through in-depth interviews. They were analyzed quantitatively and qualitatively (Srikanth and Dey, 2022). The binary logistic model in regression analysis can be expressed as follows:

$$Y_i = \beta_0 + \sum_{i=1}^{3} \beta_i X_i + \sum_{j=1}^{7} \alpha_j D_j + U_i \qquad (1)$$

where, $i = 1,2,3$ and $j = 1,2,3,4,5,6,7$

The dependent variable is female employment with a binary outcome (1 if females are employed, 0 otherwise (unemployed/ not having a job/ not in the labor force) and the independent variables are Monthly household income in Rupees excluding females' income (Inc); Number of dependents within the household (Dep); Education (Number of years); D1 = 1 if graduate, 0 otherwise; D2 = 1 if the respondent has at least one child, 0 otherwise; D3 = 1 if the respondent is married, 0 otherwise; D4 = 1 if the house is owned by the wife, 0 otherwise; D5 = 1 if the wife has fixed deposits, 0 otherwise; D6 = 1 if in-laws positively influence wife's market activities, 0 otherwise and D7 = 1 if current economic crisis affects female employment, 0 otherwise. The variables D6 and D7 are based on the subjective perceptions of the respondent.

The explanatory variables represent both the demand and supply side of the labor market as well as the women's household bargaining power, captured in assets, social norms, and level of human capital.

Results and Discussion

The qualitative analysis showed that both graduate and non-graduate young women (aged 25-35) are motivated to do a job in order to achieve economic independence. But older women (age 36 - 45) do so mainly for survival based on the ideology of becoming a strength to their husbands & families in the current economic crisis.

“I do not want to be a housewife & depend on someone else since I am educated. If I earn, I can spend freely on my loved ones without begging someone else.” - Female Respondent (Age 29, Graduate, Married).

“If both of us work, we can survive during this crisis period. Then I can share the burden of our household responsibilities.” - Female Respondent (Age 42, Non-Graduate, Married).

Therefore, we can observe that the different thinking patterns in different age groups play a significant role in female employment. Also, the current economic crisis heavily impacts older women's employment decisions due to their bulk of responsibilities.

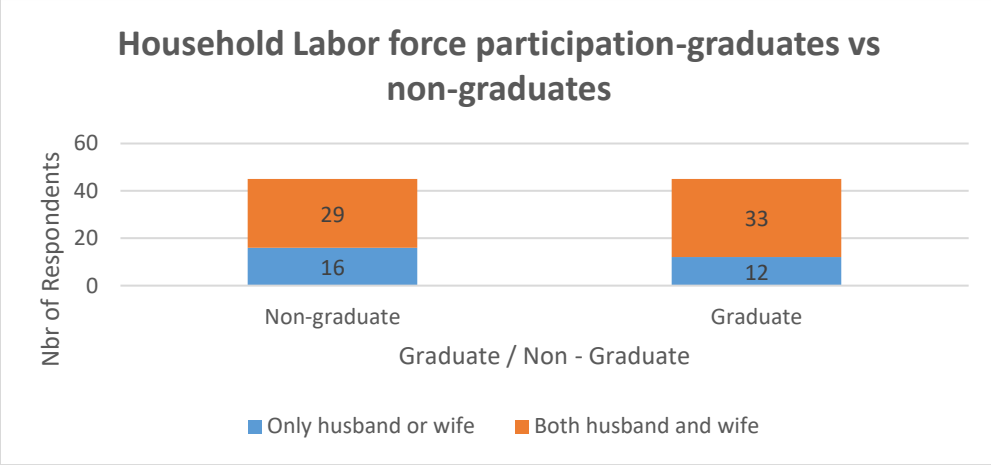
Also, young respondents are less satisfied with their jobs than older respondents. The majority of graduates do a job due to the fear of not getting any other job in the job market. On the other hand, some graduates engage in qualified jobs without much interest. And all of them agree that they are dissatisfied with their current job since their dream job is something else.

“Females should give their contribution to the economy by doing a job since the country has invested in their education” - Male Respondent (Age 42, Graduate, Married)).

Both graduate and non-graduate men do not like their wives or girlfriends to do night shifts.

“My wife is a nurse; sometimes I want her to quit the job, because it is very difficult to handle household work without her presence. But also due to the financial issues, I cannot ask her to quit the job” - Male respondent (Age 42, Non-graduate, Married))

Figure 1: Household labor force participation; Graduates Vs non-graduates



According to Figure 1, there are sixteen families among the graduates where both husband and wife work which is higher than the non-graduate group.

Interview results reveal that with the crisis in the country, household income influenced females to be employed. Both males & females accepted that it was important to do a job during this crisis. Some of the males did not want females to do a job before. But now they think that no one can survive in the current economy without a job.

The ideologies of in-laws on female employment also positively changed in the current society. Only two respondents in the sample use daycare centers, while all the others keep their children with parents or in-laws. They do not trust strangers to care for their children and do not have a method to transport kids to the daycare due to their heavy work schedule & transport cost.

"I pay my servant 700 rupees per day. But if I put my child in a daycare, the cost is high. I do not have safety issues with the servant since she is under the supervision of my in-laws" - Female respondent (Age 30, Graduate, Married)

Some females think that when children grow up, the care burden will be less, and therefore, do not quit their jobs on account of their children. On the other hand, some females are not able to keep their children with in-laws or parents since they are old and weak.

Only six unemployed females have fixed deposits while two unemployed females have land ownership in the sample. Therefore, it can be concluded that they do not have sufficient bargaining power within the household in terms of fixed deposit facility and land ownership.

According to the descriptive statistics in the final sample, there were sixty females (mean years of education = 16.52, SD = 0.39). The majority of respondents are married (Mean = 0.65, SD = 0.62) and do not have at least one child (Mean = 0.417, SD = 0.064). Their household income ranged from 5000 to 400000 rupees while the average income was 125000 rupees. According to thirty-five females, the current economic crisis has influenced their employment decisions (Mean = 0.583, SD = 0.064).

Table 1: Binary logistic regression output

Variable	Coefficient	Standard error	Z	P|Z
Income	-3.65E-06	5.91E-06	-0.62	0.536
Number of Dependents	-2.274	0.953	-2.39	0.017
Education (years)	0.708	0.295	2.4	0.016
Graduate	-1.885	1.496	-1.26	0.208
Has child	0.461	1.589	0.29	0.772
Married	3.707	1.667	2.22	0.026
Owns house	-0.204	1.272	-0.16	0.872
Has Fixed Deposit	-0.956	1.147	-0.83	0.405
In-laws are supportive	-737	0.951	-0.77	0.439
Crisis affected decision	4.622	1.808	2.56	0.011
Constant	-10.377	4.585	-2.26	0.024

Based on the binary logistic regression output (Table 1), the employment of females is significantly influenced by the number of dependents within the household, education, marital status, and the impact of economic crisis.

Conclusion and Policy Recommendations

Both quantitative and qualitative analyses show that there is a significant impact of the economic crisis on female employment decisions in both graduate and non-graduate groups. According to the literature, marriage and children have traditionally been recognized as impediments to female employment, resulting in a significant number of women exiting the job market (Srikanth and Dey, 2022). But our study identified that despite the

presence of marriage and children as potential barriers, women are increasingly opting to remain actively involved in the job market during the crisis with the support of their in-laws, parents, and male partners. In addition, the literature emphasizes the importance of higher education levels in female employment (Mujahid, Muhammed, and Normen, 2013). But this study reveals that regardless of their education level, women tend to continue their jobs during the crisis. Alos, those who did not work before also have started to work with the pandemic. Work-from-home arrangements and night shifts are not suitable for married females with children due to the bulk of household responsibilities.

Establishing a national daycare system would be helpful to increase productive female employment. Workplace policies such as parental leave policies and regulation of part-time employment should be introduced to increase the flexibility of jobs which would motivate females to become productive in the labor market.

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Determinant Factors Affecting Agriculture Labour Supply in Kurunegala District: A Case Study in Polpithigama DS Division

N.G. Manorathna[1], C. R. Nakandala[2], D.G.C.S.B. Bandara[3], D.M.C.N. Kumara[4], and M. B. Ranathilaka[5]

[1,2,3,4] Postgraduate Institute of Humanities and Social Sciences (PGIHS), University of Peradeniya, Sri Lanka

[5]Department of Economics and Statistics, University of Peradeniya, Sri Lanka

Keywords: *Agriculture Labor; Vegetable Farmers; Economic Impacts; Policy Reforms*

Introduction

Sri Lankan economy consists of three main sectors: agriculture, service, and industry. The agriculture sector used to have the highest share of Gross Domestic Product (GDP), but over time, its contribution has decreased, while the service and industry sectors have grown.

The agriculture labor force comprises all persons engaged in producing agricultural output, and their supply and demand determine the agriculture labor force. According to the most recent Labor Force Survey-Annual Report of the Department of Censuses and Statistics, which provides data for 2022, there are still several districts in Sri Lanka with a high concentration of employment in the agriculture sector. The districts with the highest proportion of agriculture employment are Nuwara Eliya (66.9%), Badulla (57.8%), Monaragala (56.9%), Mullaitivu (54.4%), Polonnaruwa (51.4%), and Anuradhapura (50.7%). These districts have a significant share of their labor force working in agriculture-related activities, such as farming, fishing, and forestry. Agriculture labor force is a critical factor for the country's development, and this study aimed to identify the determinant factors affecting on agriculture labor supply, the problems faced by farmers, and the economic impact of reducing agriculture labor supply.

Several previous studies can be found on this subject area and they can be categorized as, studies related to the determinant factors affecting agriculture labor supply, studies related to the problems faced by agriculture laborers and

studies related to the importance of the agricultural sector and its economic impact.

Getnet and Kassa (2006) examined determinants of household demand and supply of farm labor in rural Ethiopia and found the factors influencing demand for hired farm labor. Ranathunga (2011) is a Sri Lankan case study conducted to analyze the impact of rural to urban labor migration and the remittances on sending household welfare. This study explores the economic impact of rural to urban labor migration on sending communities paying particular attention to the determinants and usage of remittances on the development of the wellbeing of the rural communities and income gains through rural to urban migration in Sri Lanka. Khan (2013) examined the agricultural labor problems in Barpeta of Assam and this includes problems of agricultural labors, government policy measures and suggestion for improvement of the agricultural labor. Karunagoda (2004), examined the changes in labor market and domestic agriculture as well as the influence of the expansion effect of non-agricultural sector on the real wages of the domestic agriculture during the post reform period.

Overall, this study highlights the importance of addressing the problems faced by farmers to ensure that the agriculture labor force remains robust. It also emphasizes the need for policy reforms that support and encourage farmers to stay in farming by providing adequate training, technology, credit facilities, and infrastructure facilities, etc. The study provides valuable information for policy decisions and education purposes, especially in terms of agriculture labor supply in Sri Lanka.

Objectives

This study aims to identify the determinant factors and problems that contribute to the Agriculture labor force in Sri Lanka and assess the economic impact of the declining agriculture labor supply.

Methodology

This study aims to identify the factors contributing to the decrease in agriculture labor supply in Sri Lanka and to analyze the economic impact of this trend. The study focuses on identifying problems faced by farmers and how the determinant of agriculture labor supply impacts the economic situation and consumption patterns of the people.

The sample consisted of fifty one (51) vegetable farmers from Polpithigama DS division in Kurunagala district, who were selected using a convenience sampling method. Data was collected through structured questionnaires and secondary sources such as the Central Bank Annual Report, Labor Force Survey Annual Report, and other relevant publications. The study provides valuable information for policy decisions and education purposes, especially in terms of agriculture labor supply in Sri Lanka.

The questionnaire was constructed including, general information regarding farming (education level and training programs received by farmers), yield and income from farming, farming experience, farm size, technology and intention of farmers regarding technology and the problems faced by farmers. Data were analyzed through Microsoft-Excel.

Results and Discussion

When analyzing the motives to start farming, majority of the sample (47.10%) started farming due to family inheritance while others (23.50%) started due to interest in farming and (5.90%) which is the lowest percentage taking place due to lack of any opportunity. It shows that majority in the sample continue farming as they inherit it by parents, but not with a valid interest or as it is profitable.

This 23.5% group was analyzed further. They are 12 persons out of 51, who said, that they have started farming due to their interest. So that, their other information (net income, farm size, education, yield, farming experience and technology usage) were analyzed further and summarized as below.

Table 1: Frequencies and percentages of other variables of the selected sub-group

Variable	Maximum Frequency Class	Frequency (Percentage)
Net income	Between (30000-50000) LKR	9 (75%)
Farm size	More than 5acres	11 (91.6%)
Education/training	no any training	10 (83.3%)
Farming experience	5-10 years	08 (66.6%)
Technology usage	Yes	11 (91.6%)

These results show that, the majority of farmers in this sub-group had a monthly income between 30000 and 50000, which is a relatively high income

compared to the main target group of 51 farmers. Further, the majority of this sub-group had a farm size of more than 5 acres while the majority of the main group had less than 2 acres.

When comparing the education or having any training related to farming, majority in both groups had not gained any training related to farming.

In addition, a majority of this sub-group had farming experience of 5-10 years, which is a relative low value compared to the main group, which had the majority of 30-40 years. Finally, technology usage had the same pattern in both groups, where the majority of both groups were using any type of machines. So, if we can reconstruct this farming as a profitable industry, these farmers will be motivated to continue it, even though they had started farming with different motives. And also, the knowledge and the experiences of the 9.8% group (who said that they were motivated as it was profitable) can be used to develop the sustainability of the industry further.

Farmers' intention regarding the farming test under main three categories, income respect to living expenditure, freedom compared with other fields and the government support for farming are in focus here. According to the analysis, a majority of the farmers (60.80%) had moderate intention while others were (21.60%) satisfied and 6 farmers were unsatisfied and one farmer was (2.00%) strongly unsatisfied. Training programs related to farming is the most valuable step to improve the productivity of farming, but when analyzing the sample, there were only 11 farmers who (21.60%) had undergone a training program related to farming. And the majority of the sample, (78.40%) did not receive any training related to the farming.

The data was collected related to the previous year farming experiences of farmers under the yield from farming, information gathered related to the previous year experience with respect to vegetable type, number farming acres, expected production by farmers and the actual production that they could obtain. Majority of the selected sample - 28 farmers (54.90%) cultivated beetroot in the previous year and the lowest rate of 2.00% goes to beans and papaya individually.

We selected mainly small scale farmers with 1-7 acres owned**.** Out of them**,** majority (64.70%) had less than 2 acres while 33.30% had 2 to 5 acres and 2.00% had more than 5 acres for farming activities.

Technology is a crucial factor that affects the productivity of farming, but in general, rural farmers did not use enough technology to improve their production capacity due to financial difficulties, unwillingness to change and they did not have enough knowledge regarding those new technologies. Nevertheless, our data shows that, the majority of farmers 94.10% used machinery for farming activities while only 5.90% did not use machines for farming activities.

As per the survey, after deducting average monthly expenditure for the farming activities from average monthly income (from farming based on the previous year experiences of farmers) majority of the sample 56.90% could earn 20000 to 30000 rupees as their monthly average net income, while 39.20% and 2% of farmers earned less than 20000 and 30000 to 50000 rupees respectively and only 2% of farmers earned 50000 to 75000 as their monthly net income from farming activities.

As per the survey, majority of farmers 31.40% had 20 to 30 years experiences in engaging with farming activities while 29.40% and 25.50% had more than 30 years and 10 to 20 years of experiences with farming. Only 5.90% of farmers had a minimum experience of farming of less than 5 years.

Conclusion and Policy Recommendations

Sri Lankan economy has shifted away from agriculture, and the agriculture labor force faces significant challenges. The study found that farmers with more experience, higher net income, and larger farms are less likely to leave farming, while education, yield, and technology usage negatively affect intention to leave. The problems faced by farmers have a significant impact on agriculture labor supply and demand, highlighting the need for policies that support and encourage farmers to stay in farming. Addressing these issues is crucial to ensuring a robust agriculture labor force and promoting the country's development.

The majority of these farmers have started farming as they inherit it from parents but not for their own interest. Even though they had 20-30 years' experience in farming, they did not have proper knowledge or training. Even though more than 90% of them use machines, their monthly income is low, so that the majority is not satisfied with the farming. All these factors are inter-

related and it is essential to address the issues carefully by considering all these matters.

The sub-group who stated that 'farming is profitable and they have started farming due to their own interest' is the most crucial of all. They are the core of our farming industry. Their knowledge, experience and proposed further development programs will be highly beneficial to the sustainability of our economy. Size of the farm is a major factor that contributes to the income of farmers, as the income increases together with the farm size.

The study found that net income, farm size, education, yield, experience, and technology usage were significant factors affecting the agriculture labor force. So that, there should be policy reforms with better proposals, to satisfy these unsatisfied and moderately satisfied farmers.

In comparison with previous studies on this subject area, Bedemo, Getnet and Kassa (2006), Simbi and Aliber (2000) and Karunagoda (2004) have also revealed similar conclusions. And also, Ranathunga (2011) has extended his studies to analyze the economic impacts of rural to urban labor migration and reveals similar results. Nevertheless, Roy (1961) has found inverse associations between age, education and income level with aspiration for farming in Washington, USA.

According to the findings and conclusions of this study several policy recommendations could be drawn to diminish the negative determinants and enhance the positive determinants of Agriculture Labor Supply in Sri Lanka.

Majority of farmers did not have enough monthly income, as most of them were small scale farmers. Almost all of them have less than 7 acres. It is obvious that, these small sizes farms lead to less income generation. So that, introducing mega scale farm or combining and converting small scale farms to Group Farms is highly recommended. And also, it is essential to develop and implement enhanced training programs to address those farmers.

And also it is recommended to farmers to undergo a crop rotation by producing different kinds of vegetables and producing different by-products because high level of supply related to one vegetable will be affected to reduce prices.

Lack of low interest credit schemes faced by agriculture laborers is one issue highlighted regarding investing to proceed the farming (Ex: Expand the

farming acres). Because high investment can make more profits in future. This was a barrier to earn more profits. Furthermore, due to lack of credit accessibility farmers could not access new technologies related to farming. Many farmers live in rural areas of the country and far away from the town, so they did not have proper transportation facilities, developed roads facilities, and they are facing communication barriers. It is recommended for government to develop infrastructure facilities for the whole country, because otherwise farmers have to pay additional cost for transportation.

Damages from wild animals such as monkeys, giant squirrels, peacock, etc. for farming was another major issue, since most of the farming lands are situated near the jungles and there is a higher possibility to face troubles from animals. Government should take action to maintain proper mechanisms to protect harvest from wild animals to increase the yield.

Therefore, enhanced policy reforms in the agricultural sector are crucial to increase the income of (ordinary) farmers and attract younger generation for farming, as they highly concerned with their income.

So, increasing land extent with the use of new technology will be a motivation factor for increased income generation.

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Impact of Public Education Expenditure on Economic Growth: Sri Lankan Experience

P. Anusha and J.G. Sri Ranjith

Department of Economics and Statistics, Faculty of Arts, University of Peradeniya, Sri Lanka

***Keywords*:** *Recurrent Expenditure; Capital Expenditure; Education; Economic Growth; ARDL Model*

Introduction

Education plays a major role in the human capital formation of a country. Expenditure on education is a long-term investment that can lead to higher levels of productivity of the workforce and contributes positively to the growth of Gross Domestic Product. Hence, expenditure on education creates positive externalities to the economy, which accelerate the development process of a country (Sunde, 2017). Public spending on education in Sri Lanka was relatively high during the period 1977-1995 in comparison with other periods. Particularly, government expenditure on education has been reduced from 2.45 percent in 1991 to 1.75 percent in 2021, and averaged 2.21 percent of GDP over the period 1991-2021.

Both classical and neoclassical economists have emphasized the contribution of education to economic growth. According to endogenous growth theory Lucas (1988) states that technological progress and increased spending on education accelerate economic growth. By increasing the level of workers' cognitive skills, human capital theory shows that education can increase their productivity and efficiency (Romer, 1990). Meanwhile, the new development approach emphasized the social benefit of education, which explains the long-term benefits of developing a country's human capital (Cianesi Ru Reinen, 2003). Thus, evidence shows that education has an important role to play in today's economy. However, some economists argue that expenditure on education is not an investment but just merely consumption (Devarajan et al., 1996). In addition, several studies have shown that there is no significant correlation of spending on education with growth in GDP. Thus, empirical literature suggests that mixed and inconsistent results on the education growth nexus.

Objectives

The main objective of this study is to examine the short run and long run impact of government education expenditures on economic growth in Sri Lanka.

Methodology

This study used time series data of Sri Lanka over the period 1991-2021. Based on the Endogenous Growth Theory, the econometric model of this study is expressed as follows:

$$GDPGR_t = \alpha_0 + \alpha_1 GDCF_t + \alpha_2 LFPR_t + \alpha_3 REE_t + \alpha_4 CEE_t + u_t \qquad (1)$$

Where, $\alpha_0, \dots\dots, \alpha_4$ are coefficients of determinant variables; u_t is the white noise error term and subscript t is time period. The Gross Domestic Product Growth Rate (GDPGR) is used as a proxy variable for economic growth which is the dependent variable of this study. Gross domestic capital formation (GDCF), labor force participation rate (LFPR), public recurrent expenditure on education (REE) and capital expenditure on education (CEE) are independent variables. REE and CEE are used as a proxy variable for human capital[23]. GDCF, REE and CEE are taken as a percentage of GDP. Data for all variables are extracted from annual reports of the Central Bank of Sri Lanka (CBSL).

The study adopted Augmented Dickey Fuller (ADF) and Phillips Perron (PP) unit root test methods to check the order of integration of variables and AIC criterion was used to select the optimum number of lags for each series. Since the variables are stationary with mixed orders of I(0) and I(1), Auto Regressive Distributed Lag (ARDL) Bounds test technique which was developed by Pesaran et al. (2001) was adopted to examine the impact of public education expenditure on economic growth and to investigate the existence of co-integration among the variables. Once we confirmed the co-integrating relationship between the variables using Bounds testing method, error correction version of ARDL model was adopted to determine the short run dynamic relationship and long run adjustment between the variables. These tests were conducted through E-views 10 statistical software.

[23] Other parties also give their contribution to education, such as NGOs and parents. But in this paper, we consider only the government's expenditure on education.

Results and Discussion

The results of both ADF and PP unit root test approaches confirmed that, all variables were stationary at their first difference form except CEE which became stationary in level form when we included intercept only in the model. The criteria of the AIC have indicated that amongst the top 20 models, a model for ARDL (1,4,3,4,4) should be used. The result of the ARDL Bounds test is shown in the following table.

Table 1: Results of F- Bounds test

F-Bound Test	95% Level of Confidence		90% Level of Confidence	
F-Statistics	I(0) Bound	I(1) Bound	I(0) Bound	I(1) Bound
5.558669	2.56	3.49	2.2	3.09

The ARDL Bounds test method was adopted and the results indicated the existence of a cointegration relationship between GDPGR and explanatory variables in the model since the calculated test statistics (5.558669) is exceed critical value (3.49) of the upper bound at 5% significant level. Since we confirmed a cointegration relationship between the variables by Bounds test, there should be association among the variables in the long run. The results are given in the following Table (Panel A):

Table 2: Results of ARDL (1,4,3,4,4) Model

Dependent Variable: GDPGR					
Panel A: The Results of Long run Coefficients					
Cons	GDCF	LFPR	REE	CEE	R^2
220.56*** (0.0175)	0.6930*** (0.0083)	3.5378** (0.0226)	2.6453** (0.0261)	22.0995 (0.1438)	0.9414
Panel B: Results of Short run Coefficients					
Lag order	$\Delta GDCF$	$\Delta LFPR$	ΔREE	ΔCEE	
0	0.469739** (0.0115)	0.80629** (0.0277)	1.58599 (0.2489)	-0.07279 (0.9829)	
1	1.68115*** (0.0008)	2.90949*** (0.0011)	1.69985 (0.2361)	-35.8908*** (0.0008)	
2	1.22184*** (0.0022)	1.85050*** (0.0020)	2.02758 (0.1672)	-27.6926*** (0.0010)	
3	0.37383** (0.0415)		4.27397 (0.1202)	-20.9794*** (0.0045)	
Long run Adjustment CointEq(-1) = -0.290701*** (0.0002)					

Panel C: The Results of the Diagnostics Test	
Serial Correlation [LM Test]	Prob. =0.1062
Normality Test (Jarque- Bera)	Prob. = 0.6494
Heteroscedasticity (BPG Test)	Prob. = 0.4095
Omitted Variables (Ramsey's RESET)	Prob. = 0.6146

Note: Probability values are given in the parenthesis. ** and *** represent the variables are statistically significant at 5% and 1% level of significance, respectively.

In Sri Lanka there is a strong positive correlation between the growth rate of GDP and recurrent public expenditure on education as a percentage of GDP. But, government capital expenditure on education as a percentage of GDP has a positive relationship with the economic growth of which the impact is not significant. The long term result shows that gross domestic capital formation is a positive and significant driver of economic growth.

Moreover, the labor force participation rate has a significantly positive impact on economic growth because a high labor force participation rate promotes labor productivity in the long run and such firms can reinvest their profits into physical capital. The above table (Panel B) represents the results of short run dynamic relationship and long run adjustment. The coefficient of error correction term of this model indicates that about 29.07% of the short run disequilibrium in the GDPGR is offset towards long run steady state line in each period one period after the exogenous shocks.

The short run dynamics of the error correction model indicates that capital expenditure on education has a negative impact on GDP growth rate. However, the association between government expenditure on recurrent expenditure on education and GDP growth rate is positive in the short run also, but the impact is statically insignificant. Moreover, the gross domestic capital formation and labor force participation rate have a positive impact on economic growth in short run.

The Lagrange Multipliers test of autocorrelation suggests that residual values are not serially correlated. Based on the JB test results it has been determined that residuals are distributed normally. The test for heteroscedasticity by the Breusch-Pagan-Godfrey indicates that a disturbance term in an equation is homoscedastic. The Ramsey RESET test result confirms there is no specification error in the estimated model, Table 2, Panel C as shown above.

In order to confirm the stability of the parameters, the CUSUM plots are situated between the lower and upper critical limits at a 5% significance level.

Conclusion and Policy Recommendations

The empirical findings of this study show that recurrent education spending is a positive and important contributor to economic growth in Sri Lanka while capital expenditure on education had positive and insignificant impact on long run economic growth. Recurrent education spending has an insignificant and positive effect on economic growth over a period of time; whereas capital expenditure on education is negative and significant impact on economic growth in the short term.

This study identifies that economic growth of a country is closely associated with the effectiveness of the education system promoting economic growth via increasing productivity of labor force. Based on the findings of this study we therefore recommend that government allocate more on recurrent expenditures such as updating curricular and improving teaching skills, motivation and incentives for the teachers. Including a greater weight on employment related course contents in schools education is important to gain better outcomes for the national economy in the long run.

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The Impact of External Debt and Other Macroeconomics Variables on Economic Growth in Sri Lanka

A.P.G.H. Wickramathilaka and M.H.F. Afriha

Department of Economics and Statistics, University of Peradeniya, Sri Lanka

Keywords: *Economic Growth; External Debt; Macroeconomic; ARDL model*

Introduction

Economic growth and development are a major goal of most developing countries. External debt helps to attain a positive stage of increase. In particular, governments borrow to fill the vacuum created by way of the fiscal gaps inside the proposed year expenditure and predicted revenue of the year. According to neoclassical economists, external debt has a positive impact on economic growth of a country because debt is a major source of the capital accumulation of a country and the motivation for investment. Some economists argue that external debt negatively affect economic growth by discouraging investment and increasing capital flight.

Shahzad et al., (2014) and Safdari and Mehrizi (2011) have found that external debt has significant negative impact on GDP. Malik et al., (2010) have shown that external debt is negatively and significantly related with economic growth. Kasid et al., (2013) have found external debt and debt service to have a favorable and considerable impact on GDP growth.

Sri Lanka has run budget deficits since 1956.To fund the budget deficit, the Sri Lankan government has borrowed from both domestic and foreign sources. Overall budget deficit as a proportion of GDP climbed to 12.2% in 2021 from 11.1% in 2020, while external debt increased steadily from $ 49.0 billion in 2020 to $ 50.7 billion in 2021.The external debt to GDP ratio has recorded very high values over the period. This ratio was 29.1%, 37.1%, 35.4% and 40.4% continuously in 1977, 2007, 2017 and 2020 (CBSL Report, 2021). As a result of that this study attempts to investigate the influence of external debt and other macroeconomic variables on economic growth.

Objectives

The main objective of this research is to investigate the influence of external debt on economic growth in Sri Lanka. As a sub objective we try to investigate the impact of foreign direct investment, inflation rate, gross capital formation, exchange rate, gross savings and trade balance on economic growth in Sri Lanka.

Methodology

In this study we have used the time series data gathered from World Bank from 1977 to 2021. We employed the data of annual growth rate of gross domestic production (GDP) as dependent variable and external debt (EXTD), foreign direct investment (FDI), inflation rate (INF), gross capital formation (GCF), exchange rate (ER), gross savings (GS) and trade balance (TRB) as independent variables. This study's econometric model is expressed as follows:

$$\mathrm{GDP}_t = \beta_0 + \beta_1 \mathrm{EXTD}_t + \beta_2 \mathrm{FDI}_t + \beta_3 \mathrm{INF}_t + \beta_4 \mathrm{GCF}_t + \beta_5 \mathrm{ER}_t + \beta_6 \mathrm{GS}_t + \beta_7 \mathrm{TRB}_t + u_t$$

The stability of the variables were tested using unit root tests such as ADF and Phillis Parron. The AIC method was used to determine the optimal number of lags for each variable. The ARDL Bound test was used to determine cointegration and long-term relationships between variables. The error correction model also identifies the short-term link between the variables as well as the long-term correction.

Results and Discussion

The absence of multicollinearity issues among the independent variables was proved by correlation analysis. According to the model fitting test, the model residuals are normally distributed and residuals are not affected by autocorrelation, heteroscedasticity and omitted variables. At 95% confidence, the CUSUM test demonstrated that the model is dynamically stable and correct. The ADF and Phillis Parron tests confirmed that annual growth rate of gross domestic production, foreign direct investment, inflation gross capital formation, trade balance and gross savings are stationary at level [1(0)] whereas external debt and exchange rate are stationary at first difference

[1(1)]. The Akaike Information Criteria recommended to adopt the ARDL (1, 0, 0, 0, 1, 1, 1, 0). The results of Bounds test for the selected model is given below.

Table 1: Results of the F-Bounds test

Test Statistic	Value	Significance	I (0)	I (1)
F-Statistic	4.689533	10%	1.92	2.89
K		5%	2.17	3.21
		1%	2.73	3.9

According to the above results, there is a co-integration relationship among the variables because the F-Statistic is greater than the upper bound critical value at 5% level of significant. The Bound test confirmed that the cointegration link between the variables, there should be long run correlation among the variables. The results of the long run relationship (see table 02 below) implies that external debt has a negative impact on economic growth at 5% significant level in the long run. Furthermore, the exchange rate has a considerable negative impact on economic growth whereas trade has a significant favorable impact.

Table 2: Long run results of ARDL Model (1, 0, 0, 0, 1, 1, 1, 0)

Variable	Coefficient	Std.Error	t-Statistic	Prob
ER	-0.029645	0.010462	-2.833626	0.0079**
EXTD	-0.134455	0.045148	-2.978114	0.0055**
FDI	0.617392	0.710490	0.868967	0.3913
GCF	0.082059	0.199854	0.410597	0.6841
GS	0.152512	0.187627	0.812848	0.4223
INF	0.073080	0.100643	0.726130	0.4730
TRB	0.317658	0.176095	1.803899	0.0807*

Note: *, ** represent variables are significance at 10% and 5% respectively.

The table below displays the outcomes of the selected ARDL model's short run relationship and long run adjustment.

Table 3: Results of error correction vesrsion of ARDL model

Lag order	0	1
ΔGDP		0.683084**
ΔER	-0.016370*	
ΔEXTD	-0.039135	
ΔFDI	0.628892	
ΔGCF	0.509357***	-0.504040***
ΔGS	-0.080275	0.302546**
ΔINF	0.024995	0.102201*
ΔTRB	0.271850**	
ECT (-1)	-0.680935**	0.01572**

Note: *, ** and *** represent variables are significance at 10%, 5% and 1% respectively.

The previous year GDP and current value of TRB have positive and significant impacts on economic growth. The present value of ER has a negative influence on economic growth. The present value of GCF has a positive impact on economic growth when the previous year GCF had a negative and major impact. Previous year GS and INF have positive and considerable impact on economic growth. ECT (-1) coefficient have a significant negative sign, indicating that the there should be an adjustment towards the steady state line at a speed of 68% in each period following the exogenous shocks.

Conclusion and Policy Recommendations

Debt is critical to Sri Lanka's economy and development progress. According to this research, there is no support for economic growth in Sri Lanka from external debt. We can make a few policy recommendations based on the study's findings. Relying less on external debt because, external debt impacts economic growth negatively and depending more on balance of trade. Sri Lankan government should have to ensure the usage of external debt on profit earning specific development activities rather than for consumption purposes. Furthermore, the government should diversify the country's economy by generating more opportunities for services and industry sector to provide income to development plans rather than rely on external debt. Increasing the value addition and export diverfication would be encouraged in order to alleviate the budget deficit.

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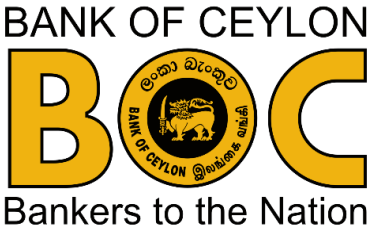

Postgraduate Institute of Humanities and Social Sciences
Faculty of Arts, University of Peradeniya


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