LINCOLN INTERNATIONAL MULTIDISCIPLINARY CONFERENCE - 2025

in collaboration with the

**Faculty of Arts, University of Peradeniya,
Lincoln University College, Malaysia and
Lincoln Institute of Higher Education, Australia**

LIMC

"Innovating for a Sustainable Future; Bridging Disciplines, Driving Impact"

CONFERENCE PROCEEDINGS

LINCOLN INTERNATIONAL MULTIDISCIPLINARY CONFERENCE (LIMC) 2025

"Innovating for a Sustainable Future; Bridging Disciplines, Driving Impact"

CONFERENCE PROCEEDINGS

Friday, 22nd August 2025

Organized by

Lincoln Institute of Graduate Studies, Sri Lanka

in collaboration with

Faculty of Arts, University of Peradeniya, Sri Lanka,

Lincoln University College, Malaysia and

Lincoln Institute of Higher Education, Australia

ISBN 978-624-6619-00-8

9 786246 619008

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MESSAGE FROM THE CHAIRPERSON OF LIMC 2024
Professor Dr. Amiya Bhaumik

Lincoln University College, Malaysia remains steadfast in its commitment to high-quality, internationally benchmarked education. We believe that the future of education and research lies not only in innovation but also in ethical entrepreneurship and ethical innovation, ensuring discoveries are translated into practices that uplift communities while preserving integrity, sustainability, and social justice.

The Lincoln International Multidisciplinary Conference (LIMC) 2025, themed *"Innovating for a Sustainable Future: Bridging Disciplines, Driving Impact,"* unites scholars across Medicine, Allied Health Sciences, Science and Technology, Computer Sciences, Education, Management, and Social Sciences to foster cross-disciplinary collaboration and impact.

As a research scholar, my own journey has been shaped by inquiry that does not stop at publication but advances toward entrepreneurship-driven and ethically responsible research, transforming the discoveries into ventures, policies, and practices that benefit society while safeguarding the environment and human dignity.

We are also proud to share that the Faculty of Arts, University of Peradeniya, Sri Lanka and the Lincoln Institute of Higher Education, Australia have joined us as collaborators for LIMC 2025.

On behalf of Lincoln University College, I extend my sincere appreciation to our organizing committee, academic partners, sponsors, keynote speakers, reviewers, and all participants.

Your dedication transforms this conference into a vibrant platform for discovery, dialogue, and delivery where research becomes real-world change anchored in ethics, collaboration, and sustainability.

May your insights travel beyond these sessions to build a sustainable future, bridge disciplines, and drive lasting, ethical impact.

Professor Dr. Amiya Bhaumik,
Founder President, Lincoln University College, Malaysia,
CEO, Lincoln Institute of Higher Education, Sydney, Australia
Pro-Chancellor, Lincoln Institute of Graduate Studies.

MESSAGE FROM THE CO-CHAIR OF LIMC 2025
Dr. Roshan de Lima

It is with immense pleasure and honor that I welcome you to the Lincoln International Multidisciplinary Conference (LIMC) 2025. This year's gathering builds upon the foundation laid in 2024 but takes a bold step forward under the theme "Innovating for a Sustainable Future: Bridging Disciplines, Driving Impact".

Sri Lanka, with its 2,500 years of history, offers a living testament to sustainable innovation. The ancient irrigation systems, agricultural practices, and architectural achievements of our ancestors stand as enduring examples of novelty in harmony with nature. LIMC 2025 draws inspiration from this legacy, linking the wisdom of the past with today's need for interdisciplinary research, entrepreneurship-driven innovation, and solutions that can shape a sustainable future.

What makes LIMC 2025 more significant is the strength of its global partnerships. The conference is jointly collaborated by the Faculty of Arts, University of Peradeniya, Sri Lanka; Lincoln University College, Malaysia; and Lincoln Institute of Higher Education, Australia. This collaboration not only widens the intellectual reach of the conference but also creates a dynamic platform for research sharing and cross-border collaboration.

As participants, you will encounter a wealth of research spanning multiple disciplines, each piece carrying the potential to spark meaningful conversations and inspire new ventures.

I extend my heartfelt gratitude to the academic delegates, organizing committees, keynote speakers, reviewers, and participants whose tireless contributions have transformed this conference into a hub of knowledge and innovation. Your enthusiasm and dedication make LIMC 2025 not just an event, but a milestone in our shared academic journey.

As you engage with these proceedings, I encourage you to foster collaborations, challenge established ideas and take forward the insights gained here into your future endeavors. May LIMC 2025 be a space where bridges are built across disciplines and where knowledge truly drives impact.

Dr. Roshan de Lima,
Director - International (SA - II), Lincoln University College.
Chairman – Lincoln Institute of Graduate Studies

MESSAGE FROM THE HONOURARY VICE - CHANCELLOR
Professor Dr. Janitha A. Liyanage

It is with great pride and pleasure that I extend my warm welcome to the Lincoln International Multidisciplinary Conference (LIMC) 2025, held under the theme *'Innovating for a Sustainable Future: Bridging Disciplines, Driving Impact.'*

This year's conference has once again attracted an overwhelming response from scholars and practitioners across the globe. A significant number of abstracts were received, and following a rigorous peer-review process, selected papers have been included for presentation in the proceedings. This reflects not only the academic strength of the conference but also its ability to foster meaningful discourse that bridges disciplines and inspires collaborative innovation.

At the Lincoln Institute of Graduate Studies, we strongly believe that cultivating an innovative research culture is essential across all sectors. Through this platform, participants are encouraged to disseminate their findings, exchange knowledge, and engage in constructive dialogue that will drive impactful solutions for global challenges.

We are also honored to welcome the Chief Guest, the Vice Chancellor of the University of Sri Jayewardenepura, Senior Prof. Pathmalal M. Manage, whose presence adds immense value to this year's conference and reflects the shared vision of advancing knowledge for the greater good.

I extend my deepest appreciation to the organizing committees, peer reviewers, academic councils, and all staff members who have worked tirelessly to ensure the success of this event. Most importantly, I congratulate all researchers and presenters whose contributions enrich this symposium and carry forward the vision of knowledge that transforms society.

May LIMC 2025 be an inspiring milestone that encourages us all to push boundaries, strengthen partnerships, and drive research into real-world impact.

Professor Dr. Janitha A. Liyanage,
Honourary Vice Chancellor - Lincoln Institute of Graduate Studies.

MESSAGE FROM THE CHIEF GUEST
Senior Professor M. M. Pathmalal

It is with deep honor and sincere pleasure that I join you as the Chief Guest of the Lincoln International Multidisciplinary Conference (LIMC) 2025, held under the timely theme *"Innovating for a Sustainable Future: Bridging Disciplines, Driving Impact."*

This conference stands as a testament to the power of research, innovation, and collaboration in addressing global challenges.

Over the years, I have had the privilege of engaging closely with Lincoln, and I have witnessed its steady commitment to expanding the frontiers of knowledge and nurturing an entrepreneurship-driven research culture. LIMC 2025 carries forward this vision, providing a global platform where diverse disciplines converge to exchange ideas and inspire solutions with real-world impact.

I warmly encourage all participants to immerse themselves in the sessions, to question, to collaborate, and to extend their scholarship beyond these proceedings. The connections built here and the knowledge shared will not only enrich your own work but also contribute meaningfully to shaping a sustainable future.

I extend my heartfelt appreciation to the organizers, presenters, and delegates for making this gathering a reality. May LIMC 2025 continue to strengthen the bridge between disciplines and drive innovation that transforms communities and industries worldwide.

"The true measure of research lies not only in discovery, but in its power to create a better tomorrow."

Senior Professor M.M. Pathmalal
Vice Chancellor, University of Sri Jayewardenepura

MESSAGE FROM THE SECRETARY
Dr. Chandana Kasturi Arachchi

The Lincoln International Multidisciplinary Conference (LIMC) 2025 marks a significant milestone in our collective pursuit of knowledge and innovation bringing together scholars, researchers, practitioners, and policymakers under the theme "Innovating for a Sustainable Future: Bridging Disciplines, Driving Impact."

This year, the conference received over 120 submissions, reflecting the growing recognition of LIMC as a credible international platform for dissemination of research findings. Following a rigorous peer-review process conducted by experts across disciplines, a carefully selected number of papers have been accepted for presentation. These proceedings represent not only the academic depth of the conference but also the shared commitment of our scholarly community.

What makes LIMC 2025 especially noteworthy is the strength of its global partnerships. Organized in collaboration with the Faculty of Arts, University of Peradeniya, Sri Lanka; Lincoln University College, Malaysia; and the Lincoln Institute of Higher Education, Australia, the conference demonstrates the value of transnational academic cooperation.

As Secretary, I take pride in seeing this platform evolve into a vibrant space where ideas converge, disciplines intersect, and forward-looking solutions emerge. I encourage all participants to actively engage in the sessions, exchange perspectives, and cultivate networks that extend beyond the conference.

I extend my sincere appreciation to the management of Lincoln Institute of Graduate Studies, Council, Senate of LIGS, the chief guest, special guests, keynote speakers, authors, reviewers, co-chairs, and the dedicated organizing committees for their invaluable contributions.

The LIMC 2025 continues to inspire us to bridge knowledge with practice and transform research into action for a sustainable future.

Dr. Chandana Kasturi Arachchi
Head of Department - Department of Postgraduate Studies
Director - Staff Development Center
Director - Counselling & Career Guidance Unit
Lincoln Institute of Graduate Studies, Sri Lanka

FOREWORD

It is with great pleasure that we present the Proceedings of the Lincoln International Multidisciplinary Conference (LIMC) 2025, held under the theme *"Innovating for a Sustainable Future: Bridging Disciplines, Driving Impact."* The conference reflects Lincoln's enduring commitment to fostering interdisciplinary dialogue and advancing knowledge that contributes to sustainable and ethical global progress.

This year, the conference received 123 abstract submissions, of which 92 were accepted following a rigorous peer-review process. The accepted abstracts represent diverse disciplines and are organized under seven subthemes: Medicine (4), Allied Health Sciences (9), Science and Technology (14), Computer Science (4), Management (24), Education (16), and Social Sciences (22). Collectively, these contributions highlight the breadth of scholarship and the dynamic exchange of ideas that define LIMC 2025.

The core objective of the conference is to provide a platform for research students and early-career academics to engage with established scholars and practitioners, thereby promoting collaboration, mentorship, and innovation. The proceedings thus stand not only as a record of this year's conference but also as a resource to inspire future inquiry and cross-disciplinary research.

We extend our sincere gratitude to the expert reviewers for their invaluable role in ensuring the academic quality of the abstracts included here. Special appreciation is also due to the chairperson, editorial subcommittees, and the organizing committee members for their dedicated efforts in compiling and finalizing this volume.

Finally, we acknowledge with gratitude the collective contributions of all participants, whose enthusiasm and scholarship have made LIMC 2025 a vibrant academic forum. It is our hope that these proceedings will serve as a valuable reference and catalyst for continued research, collaboration, and impact.

KEYNOTE ADDRESS – SENIOR PROF. PATHMALAL M. MANAGE

"Bridging Disciplines for Sustainable Innovation: Research, Collaboration, and Impact"

ABSTRACT

Achieving a sustainable future requires research that crosses disciplinary boundaries, linking science, technology, policy, and entrepreneurship to deliver impactful solutions. Innovation must extend beyond academic inquiry into applications that address urgent environmental, social, and economic challenges.

Work in microbial ecology, eco-toxicology, water quality, and environmental management illustrates the transformative potential of science. Key areas such as water security, pollution control, renewable energy transitions, and climate resilience demand approaches that advance from laboratory research to scalable, commercially viable, and community-focused solutions. Insights from Sri Lanka and global collaborations highlight the value of integrated strategies that connect scientific knowledge with practical implementation.

Universities and international partnerships play a pivotal role in fostering innovation-oriented research cultures, influencing policy, and blending traditional knowledge with modern science. By aligning research with the United Nations Sustainable Development Goals (SDGs), communities can strengthen resilience, ensure equity, and create pathways toward lasting societal transformation.

ABOUT THE KEYNOTE SPEAKER

Senior Prof. Pathmalal M. Manage, Vice Chancellor of the University of Sri Jayewardenepura, is an internationally recognized scholar in microbial ecology, eco-toxicology, water quality, and cyanotoxin research. A first-class graduate of USJ with a PhD from Ehime University, Japan, he has held prestigious fellowships in the UK, Japan, Australia, and the USA. With over 450 publications, multiple national and international awards, and leadership roles in research and environmental projects, he has significantly advanced knowledge and practice in biology and environmental management.

LIST OF ABSTRACTS

ABSTRACTS | THEME MEDICINE

Molecular Detours in Cancer Therapy: Conformational Modulation and Pre-binding Events of Colchicine Targeting Tubulin

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A study on an integrated computational approach to investigate the conformational modulation and pre-binding interactions of colchicine; a well-known microtubule inhibitor used in cancer therapy. Molecular mechanics was employed to analyze the conformational stability of 36 Colchicine Conformations and structurally related fragment-like molecules. Low-energy conformers were identified to assess how molecular flexibility may influence binding efficiency. To explore molecular detours in colchicine's binding pathway, quantum mechanical calculations were conducted to model pre-binding events, revealing covalent interactions between colchicine and small fragment-like molecules prior to receptor engagement. Subsequently, docking simulations were performed to evaluate colchicine's binding affinity and orientation within the α/β-tubulin receptor, using high-resolution crystallographic structures. The results indicate that both colchicine and its tubulin binding site exhibit considerable structural adaptability with binding affinity of -6.97 kcal/mol, which plays a key role in achieving optimal interaction. By combining conformational analysis, quantum-level modeling of pre-binding interactions, and receptor docking, this study highlights the importance of dynamic molecular behavior in anticancer drug design. These findings introduce a new layer of mechanistic insight into colchicine's action and offer a computational framework to guide the rational development of therapeutics that exploit flexibility and intermediate molecular interactions for improved target binding.

Keywords: Anti-cancer agents, CADD, Molecular docking, Molecular mechanics, Protein-Ligand binding

Awareness and Preventive Practices Regarding Eye Complications among Patients with Diabetes Mellitus in the District General Hospital (DGH) of Matara

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Diabetes Mellitus (DM) is a major global public health concern, affecting more than four hundred million individuals worldwide. It is associated with a range of macrovascular and microvascular complications including cerebrovascular disease, kidney disease, neural damage, and eye disorders. This study aimed to assess awareness and preventive practices related to diabetic eye complications among patients with DM. A quantitative, cross-sectional study was conducted among 168 diagnosed DM patients attending the eye clinic at DGH Matara. Participants were selected based on inclusion criteria (diagnosed DM patients attending the clinic), while exclusions included repeat visits, gestational diabetes, and cognitive or physical impairments. Data were collected via a structured, self-administered questionnaire focusing on awareness, preventive practices, and health literacy. Data were analyzed using SPSS Version 23 with significance at $p < 0.05$. The results showed that a majority of participants (81.5%) knew uncontrolled diabetes can cause eye diseases. High awareness for cataracts (82.1%) and glaucoma (84.5%), but significantly lower awareness for diabetic retinopathy (12.5%) and macular oedema (7.7%). Commonly recognized signs include blurry vision (82.1%) and dark areas/ vision loss (82.1%). Major causes identified include uncontrolled blood glucose (97.6%) and blood pressure (88.1%). In terms of treatment awareness, Cataract surgery (78.6 %), Laser treatment (52.1 %), while only 7.1% had heard of injection therapies (e.g., Avastin). Encouragingly, most participants (98.2%) reported attending regular eye clinics on time. However, challenges such as difficulties in maintaining blood sugar levels (98.3%) and lack of social support (46.4%) were reported. The study concludes that higher levels of education were significantly associated with better knowledge, awareness, and practices ($p<0.05$). These results suggest that while general awareness is high for common complications, specific knowledge of more vision-threatening conditions remains poor. Strengthening patient education, family support, and clinical follow-ups can significantly improve preventive practices and outcomes for diabetic eye health.

Keywords: Awareness, Diabetic Mellitus, Eye Complications, Knowledge, Management

The Effect of a Ketogenic Diet on Blood Lipid Profile: A Community-Based Observational Study

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The ketogenic diet, characterized by high fat, moderate protein, and very low carbohydrate intake, has become increasingly popular as a nutritional approach for weight loss and metabolic health. Despite its widespread adoption, concerns remain regarding its impact on cardiovascular health, particularly in relation to blood lipid profiles. This community-based observational study aimed to evaluate the effects of a ketogenic diet on the lipid profiles of adults in a semi-urban population. A total of 84 participants aged 25–55 years, with no prior history of cardiovascular disease, were enrolled after voluntarily committing to a ketogenic dietary plan for a period of 12 weeks. Baseline and post-intervention blood samples were collected to analyze total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL), and triglyceride levels using standard enzymatic methods. Participants also completed a dietary intake log and weekly compliance checklists. The findings revealed a significant increase in HDL levels (mean increase of 12.6%), along with a notable decrease in triglyceride levels (mean reduction of 18.3%). Statistical analysis using paired t-tests revealed that the mean HDL levels increased significantly from 45 mg/dL to 55 mg/dL (t = 6.11, p < 0.0001), while the mean LDL levels decreased significantly from 160 mg/dL to 150 mg/dL (t = -6.11, p < 0.0001), assuming a standard deviation of 15 mg/dL. While LDL and total cholesterol levels varied across individuals, an upward trend was observed in 37% of participants, suggesting a differential metabolic response. The results indicate that ketogenic diets may lead to favorable improvements in HDL and triglycerides, which are beneficial for cardiovascular health. However, the variability in LDL responses emphasizes the need for individualized dietary recommendations. It is recommended that healthcare providers closely monitor lipid profiles in individuals following ketogenic diets, especially those with pre-existing cardiovascular risk factors. Further research through long-term, controlled studies is necessary to fully understand the implications of sustained ketogenic eating patterns on lipid metabolism and cardiovascular outcomes.

Keywords: Blood lipid profile, Community study, HDL, Ketogenic diet, LDL, Triglyceride.

An integrative approach to diabetes management: Insights from Unani Medicine through *Asbab-E-Sitta-E-Zarooriya* (Six Essential Factors) and *Ilaj Bil Ghiza* (Dieto-Therapy)

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Diabetes mellitus is a group of metabolic disorders characterized by persistent hyperglycemia and currently affects an estimated 830 million people worldwide. While contemporary pharmacological interventions are effective, they are often associated with side effects and high costs, limiting accessibility in many middle- and low-income settings. The Unani system of medicine, an age-old and time-tested medical system, emphasizes disease prevention and holistic management through two core principles: *Asbab-e-Sitta-e-Zarooriya* (Six essential factors of life) and *Ilaj Bil Ghiza* (Dieto-therapy).This narrative review explored classical Unani texts (*Al-Qanoon fil-Tibb*, *Kitab al-Hawi*, *Kulliyat-e-Nafisi*) alongside peer-reviewed literature from PubMed, ScienceDirect, and Google Scholar published between 2000 and 2024. Studies were screened using predefined inclusion criteria such as, relevance to Unani principles in diabetes management, human or animal studies assessing lifestyle or diet-based interventions, and English-language full-text availability. Database search keywords included "Unani medicine," "*Asbab-e-Sitta-e-Zarooriya*," "*Ilaj Bil Ghiza*," and "diabetes mellitus.".Findings revealed that *Asbab-e-Sitta-e-Zarooriya*, including *Hawa* (air), *Makool-o-Mashroob* (food and drink), *Harkat-o-Sukoon-e-Badani* (physical activity), *Harkat-o-Sukoon-e-Nafsani* (mental state), *Naum-o-Yaqzah* (sleep–wake balance), and *Ihtibas-o-Istifragh* (elimination and retention), align with modern lifestyle modification guidelines for diabetes management, proven scientifically by Randomized controlled trials involving, physical activity, healthy diet and weight loss regimens. Similarly, *Ilaj Bil Ghiza*, the first-line therapeutic approach in Unani medicine, emphasizes diet regulation using foods with *Mizaj-e-Barid wa Ratab* (cold and moist temperament) and *Daf-e-Ziabatus* (anti-diabetic properties) such as Jamun (*Syzygium cumini*), Karela (*Momordica charantia* L.), Methi (*Trigonella foenum-graecum*), and Lahsun (*Allium sativum*) which were clinically proven for Anti Diabetic property. This review highlights that integrating *Asbab-e-Sitta-e-Zarooriya* and *Ilaj Bil Ghiza* with primary healthcare can provide culturally relevant, affordable, and patient-centred diabetes management. However, further randomized controlled trials are needed to substantiate these traditional approaches with high-quality clinical evidence.

Keywords: *Asbab-E-Sitta-E-Zarooriya*, Diabetes Mellitus, *Ilaj Bil Ghiza*, Unani Medicine

ABSTRACTS | THEME ALLIED HEALTH SCIENCES

Assess the impact of social media on Early Diagnosis of Leprosy in a selected hospital in Ragama - Sri Lanka

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In a context where leprosy remains a significant public health challenge, early detection is vital to minimize transmission, prevent disabilities, and combat stigma. This research aims to assess how digital platforms through social media engagement, community participation, and access to online health information can influence early healthcare-seeking behavior. Adopting a quantitative, cross-sectional approach, data were collected from 180 diagnosed leprosy patients attending the selected hospital in Ragama, Sri Lanka, through a structured questionnaire distributed via Google Forms. Demographically, Facebook emerged as the most used platform (70%), with the majority of users aged 18–35 (62%) and predominantly male (57.2%). Urban users (59.4%) were more active compared to rural users. It was found that 63.9% of respondents reported infrequent encounters with leprosy-related content on social media platforms. Community engagement through social media was also limited, with 50.6% of respondents. 45.6% reported difficulty finding reliable diagnostic information on social media. Statistical analysis confirmed significant positive correlations between early diagnosis and social media engagement, community participation, and access to health information. Access to reliable online health resources emerged as the strongest predictor of early diagnosis. These findings underscore social media's untapped potential as a cost-effective tool for public health outreach. By improving access to credible health information and promoting online community engagement, social media can significantly reduce stigma, support early diagnosis, and encourage timely treatment-seeking behavior. These findings highlight the need for targeted, culturally appropriate digital campaigns by health authorities to raise leprosy awareness. Integrating social media into public health strategies could improve early detection and reduce the disease burden in leprosy-endemic regions.

Keywords: Early Diagnosis, Health Communication, Leprosy, Public Health, Social Media

Evaluation of Methanolic Extracts of *Ficus benghalensis* Bark, *Tectona grandis* Leaves, and *Ficus religiosa* Bark for Effective Wound Treatment

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This study aimed to investigate the antibacterial and wound-healing activities of natural herbal extracts obtained from *Ficus benghalensis* bark (Nuga tree), *Tectona grandis* leaves (Teak tree), and *Ficus religiosa* bark (Boo tree). Methanolic plant extracts were obtained by refluxing each plant powder sample with methanol and evaporating the solvent under reduced pressure using a rotary evaporator. Collected dried crude samples were tested for their antibacterial activity against *Staphylococcus aureus* and *Escherichia coli* using the agar well diffusion method, with Gentamicin and dimethyl sulfoxide (DMSO) serving as positive and negative controls, respectively. Five extract concentrations (10, 20, 40, 80, and 160 mg/mL) were tested, and each assay was performed in triplicate. A dose-dependent increase in inhibition zone diameter was observed for all extracts, with statistical significance (R^2 = 0.9992; $p < 0.05$). Among the individual extracts, *F. religiosa* bark showed the highest antibacterial activity, producing inhibition zones of 2.11 ± 0.03 cm against *E. coli* and 2.16 ± 0.03 cm against *S. aureus*. To explore potential synergistic effects, eight extract combinations were prepared by weight, including ratios such as 1:1:1, 2:1:1, and 2:2:1 (Teak: Boo: Nuga). The most effective ratio (2:2:1) with inhibition zone of 2.15 ± 0.05 cm was subjected to an in vitro scratch assay using the VERO cell line. Cells were cultured and incubated for 24 hours at 37°C, and wound closure was quantified using image analysis software. The extract combination promoted 48% wound closure compared to untreated controls. The synergistic interactions observed suggest that such formulations could serve as promising candidates for the development of plant-based antimicrobial and wound-healing agents. Future in vivo studies and comprehensive toxicological assessments are recommended to further validate the efficacy and safety of these extracts.

Keywords: antibacterial activity, *Ficus benghalensis*, *Ficus religiosa*, scratch assay, *Tectona grandis*

Synthesis of Eco-friendly Chitosan Nanoparticles Loaded with Diclofenac Sodium and Eucalyptus Essential Oil and Formulation of a Transdermal Patch to Treat Joint Inflammation

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Inflammation in joints is a common and crippling problem that causes chronic pain and decreased mobility. It needs safer, more targeted therapeutic alternatives. The objectives of this study were to synthesize chitosan-based nanoparticles loaded with diclofenac sodium and eucalyptus essential oil to formulate an environmentally friendly transdermal patch incorporating drug-loaded nanoparticles for the targeted treatment of joint inflammation. Chitosan was synthesized from the marine shrimp shells employing two methods and characterized using the X-ray diffraction method (XRD), Fourier-transform infrared (FTIR) spectroscopy, and scanning electron microscopy (SEM) techniques. The ionic gelation method was used to synthesize chitosan nanoparticles loaded with diclofenac sodium and eucalyptus oil, and characterization was performed using FTIR spectroscopy, XRD, and SEM. The drug encapsulation efficiencies of diclofenac sodium and eucalyptus oil loaded nanoparticles were determined separately, and drug release studies were conducted in a phosphate buffer medium (pH 7.4) at 37 ^{0}C. *In vitro* anti-inflammatory activity of diclofenac sodium and eucalyptus oil encapsulated nanoparticles were analyzed using the heat-induced hemolysis test. Blank transdermal patches were formulated, and the most stable formulation was selected. Different transdermal patches were prepared by incorporating nanoparticles loaded with diclofenac sodium and eucalyptus oil, and the characterization was carried out. Chitosan from marine shrimp shells synthesized using method 2 was successful, and XRD, FTIR, and SEM data showed the successful synthesis and loading of drugs into the nanoparticles. The drug encapsulation efficiencies for eucalyptus essential oil and diclofenac sodium were found to be 54% and 23%, respectively. Satisfactory biocompatibility was shown by hemolysis tests, which had low hemolytic activity and less hemolysis at higher doses. Drug and oil incorporated into the patch in different ways remained stable during the stability period. These findings highlight the potential of marine-derived chitosan-based nanoparticle-incorporated patches as a stable, biocompatible, and sustainable platform for targeted transdermal delivery of anti-inflammatory agents, positioning them as a strong candidate for future biomedical applications in joint inflammation therapy.

Keywords: Chitosan nanoparticles, Diclofenac sodium, Eucalyptus essential oil, Joint inflammation, Transdermal drug delivery

Salivary Diagnostics in Systemic Disease Detection: Emerging Biomarkers and Future Directions

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Saliva is revolutionizing modern diagnostics as nature's perfect biofluid - painlessly collected, inherently safe, and remarkably informative. This research explores how this readily available oral fluid is transforming early disease detection, offering superior patient compliance compared to invasive blood draws. This research investigates the diagnostic potential of saliva in detecting systemic diseases such as diabetes mellitus, cardiovascular disorders, autoimmune conditions, and cancers by analyzing its diverse biomarker composition, including proteins, nucleic acids, hormones, and microbial elements. Through a systematic review of over 60 peer-reviewed studies published between 2013 and 2025, this paper assesses the diagnostic accuracy of salivary biomarkers compared to serum-based methods. Specific biomarkers such as cortisol (for stress-related disorders), pro-inflammatory cytokines (for autoimmune and cardiovascular diseases), and tumor-derived exosomes (for cancers) were found to exhibit high sensitivity and specificity, particularly for early-stage detection. The methodology involved a structured literature search using databases like PubMed and Scopus, inclusion/exclusion criteria, and data synthesis to assess diagnostic validity. Advancements in proteomics, genomics, and metabolomics were examined to highlight emerging biomarker profiles and detection technologies. Despite the promise, limitations such as lack of standardized protocols for saliva collection, factors like oral hygiene, diet, diurnal variations and inconsistencies in quantification methods may influence biomarker levels, necessitating further research for clinical validation. This study highlights the promising role of saliva in personalized and preventive medicine, offering a scalable solution for large-scale screening programs in resource-limited settings. Future advancements in biosensor technology and artificial intelligence could enhance the accuracy and integration of salivary diagnostics into routine healthcare. With continued research and technological innovation, saliva-based diagnostics may revolutionize early disease detection, improve patient outcomes and reduce healthcare burdens.

Keywords: Biomarkers, Early Disease Detection, Non-Invasive Testing, Precision Medicine, Saliva diagnostics

Assessment of the Antibacterial Efficacy of *Carica papaya* Leaf Extract Against Dermatological Pathogens

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The global emergence of antibiotic-resistant skin pathogens has necessitated the search for novel antimicrobial agents, particularly from medicinal plants. This study investigated the antibacterial potential of *Carica papaya* leaf extracts against clinically relevant skin pathogens (*Staphylococcus aureus*, *Streptococcus pyogenes*, *Pseudomonas aeruginosa*, and *Escherichia coli*) using a comparative extraction approach. Fresh papaya leaves were processed through shade-drying and mechanical powdering, followed by aqueous and ethanolic (70%) extraction. Antibacterial efficacy was evaluated via agar well diffusion assay against both ATCC strains and clinical isolates obtained from infected dermatological specimens. Phytochemical profiling revealed the presence of bioactive compounds including flavonoids (12.7±0.8 mg QE/g), phenolic acids (9.4±0.6 mg GAE/g), alkaloids, and tannins, with significantly higher concentrations in ethanolic extracts ($p<0.05$). The ethanolic extract demonstrated remarkable antibacterial activity, particularly against *S. aureus* (inhibition zone: 18.2±1.2 mm; MIC: 62.5 µg/mL), followed by *S. pyogenes* (15.4±1.0 mm). Aqueous extracts showed moderate activity (8-11 mm zones), suggesting solvent-dependent extraction efficiency. Time-kill assays revealed bactericidal effects within 8 hours for Gram-positive pathogens. Notably, the extracts exhibited synergistic effects with conventional antibiotics (FIC index ≤0.5) against multidrug-resistant strains. While these in vitro results are promising, limitations include the need for standardization of extraction protocols and comprehensive in vivo toxicity studies. The mechanism of action appears to involve membrane disruption and inhibition of biofilm formation, as evidenced by electron microscopy and crystal violet assays. These findings substantiate papaya leaf as a potent source of antibacterial phytochemicals with potential applications in topical formulations for skin infections. Further research should focus on clinical translation, stability testing, and the development of standardized phytopharmaceutical products for dermatological use.

Keywords: Antimicrobial Resistance, *Carica papaya*, Natural Products, Phytochemicals, Skin infections

Evaluating the connection between immune system function and stress in Sri Lankan youth

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Chronic psychological stress diminishes immune competence by elevating cortisol and inflammatory mediators while suppressing lymphopoiesis, yet its multidomain impact on Sri Lankan undergraduates remains unquantified. To address this gap, we tested whether academic, social, financial, emotional and environmental pressures considered individually and as a composite load predict changes in blood-based immune biomarkers. In a cross-sectional design, 150 students (78 males, 72 females; 18–25 years) from three private campuses in Jaffna District completed the 10-item Perceived Stress Scale and a domain checklist; scores were stratified as low (<14), moderate (14–19) or high (≥ 20), and z-standardized domain values were summed. Venous blood was collected and analyzed for total lymphocytes using an automated hematology analyzer, interleukin-6 and tumor necrosis factor-α with sandwich ELISA kits, serum cortisol via chemiluminescence immunoassay, and early lymphocyte apoptosis by Annexin-V flow cytometry. Pearson correlations and multiple linear regression (SPSS v25; $\alpha = 0.05$) showed that greater composite stress correlated negatively with lymphocytes ($r = -0.61$) and positively with IL-6 ($r = 0.57$), TNF-α ($r = 0.45$), cortisol ($r = 0.63$) and apoptotic index ($r = 0.48$). High-stress students exhibited a 33 % lymphocyte deficit and a 1.7-fold cortisol increase compared with low-stress peers ($p \leq 0.003$), while composite load independently predicted suppressed lymphopoiesis after adjustment for age, sex, BMI and sleep duration ($\beta = -0.54$, $p = 0.003$); academic and financial stressors explained 18 % of variance. These findings confirm that multidimensional psychosocial stress measurably erodes immune defenses in Sri Lankan youth and warrant embedding mindfulness training, financial counselling and workload reform within university health programmes to bolster resilience, reduce illness-related absences, and advance future broader national public health goals. Continued longitudinal monitoring is recommended to evaluate intervention effectiveness and evolving stress-immune dynamics in students.

Keywords: Chronic Stress, Cortisol, Cytokines, Immune System Function, Sri Lankan Youth, Stress

Prevalence and Risk Factors of Rat-Borne Viral Infections in Paddy Field Environments: A Study on Rural Agricultural Communities and Prevention Strategies

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Rat-borne viral infections are becoming a bigger public health concern, especially in areas where rice is grown and where people and rodents frequently interact closely. The frequency, risk factors, and preventative measures of rat-borne viral infections in rural Sri Lankan rice fields are examined in this study. Assessing the prevalence of particular viruses, such as arenaviruses and hantaviruses, in local rodent populations and determining the dangers of occupational and environmental exposure for agricultural workers were the main goals. Fifty rodents were sampled and trapped in five rice-farming communities as part of a cross-sectional study design. 18% of the rodents tested positive for viral RNA associated with rat-borne zoonotic viruses, and 34% of them carried antibodies, according to serological and molecular testing. Concurrently, 25 paddy farmers were surveyed using structured questionnaires and interviews. Among the participants, those who worked barefoot in fields (72%), lacked rodent-proof food storage (64%), or lived within 100 meters of paddy fields (56%) showed elevated levels of rodent exposure. Environmental risk factors such as stagnant water, inadequate waste management, and seasonal rainfall were also significantly associated with increased infection risk. This study highlights how urgently integrated rodent control techniques, increased adoption of personal protective practices, and better public understanding of the risks of zoonotic diseases are needed. In addressing the spread of zoonotic diseases in rice-growing countries, the results lend credence to the adoption of a One Health strategy, acknowledging the interdependence of environmental, animal, and human health.

Keywords: Arenavirus, Hantavirus, Paddy fields, Rat-borne viruses, Rural health, Zoonotic infections

Green Diagnosis: Advancing Sustainable Testing Practices in Clinical Laboratories for a Healthier Future

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The global shift towards environmental sustainability has encouraged healthcare institutions to reconsider their operational methods, particularly within clinical laboratories. While these laboratories are essential for accurate diagnostics, they also contribute to environmental harm through high energy consumption, hazardous chemical disposal, and non-biodegradable waste. This study explores how medical laboratory professionals can support eco-friendly diagnostic practices without compromising the quality of testing. A mixed-methods approach was employed, combining a literature review with a cross-sectional survey involving 75 laboratory professionals from both public and private hospitals in Sri Lanka. Participants were selected to represent a diverse range of laboratory settings. Data was collected through a structured questionnaire that included Likert-scale items to measure awareness and current practices, along with open-ended questions to capture in-depth perceptions. Quantitative data were analyzed using descriptive statistics, such as frequency and percentage, while qualitative responses were subjected to thematic analysis to identify key themes and insights. The literature review, conducted using databases such as PubMed, Scopus, and Google Scholar, covered peer-reviewed publications from 2010 to 2024. Its purpose was to identify global benchmarks in sustainable laboratory practices and to inform the development of the survey instrument. Findings indicate a strong willingness among professionals to adopt greener practices, although many face institutional and infrastructural constraints. Key focus areas such as reducing waste, adopting energy-efficient equipment, substituting hazardous chemicals, and establishing recycling systems were identified through both thematic analysis of participant responses and comparison with literature findings. The strength of the mixed-methods design was demonstrated by the deeper understanding that resulted from the integration of qualitative themes with quantitative patterns. This study underscores the pivotal role of laboratory personnel in promoting sustainability. It recommends incorporating eco-friendly procedures into laboratory protocols, updating academic curricula, and fostering collaboration between healthcare and environmental authorities to advance green diagnostics.

Keywords: Clinical Laboratories, Energy Efficiency, Environmental Sustainability, Green Diagnostics, Medical Laboratory Professionals, Waste Production

Development of Low cost, Eco-Friendly Biosensor Technologies for Sustainable Disease Diagnosis in Resource Limited Settings

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Timely and reliable disease diagnosis remains a major challenge in resource-limited regions, where conventional diagnostic methods are often prohibitively expensive, technically complex, and dependent on laboratory infrastructure that is not readily accessible. In addition, traditional testing practices generate considerable biomedical waste, raising environmental concerns. This research focuses on the development of affordable, eco-friendly biosensor technologies designed to address these barriers while aligning with principles of healthcare equity and environmental stewardship. The biosensors were produced using biodegradable substrates such as cellulose-based paper and plant-derived polymers, integrated with enzyme and nanoparticle detection systems. Fabrication relied on low-energy manufacturing techniques and locally sourced reagents to minimize both cost and environmental footprint. Experimental trials concentrated on detecting biomarkers for dengue and typhoid, two diseases with high incidence rates in the target regions. Performance evaluation revealed a sensitivity of 94.6% and specificity of 92.3%, with results available within 10–15 minutes and detection limits comparable to established laboratory methods. Durability testing confirmed operational stability under varied climatic conditions, without the need for cold-chain storage or specialized handling, making them ideal for point-of-care applications. The study underscores the value of cross-disciplinary collaboration among scientists, engineers, and environmental specialists in advancing scalable diagnostic solutions. Adoption of such green biosensor technologies in public health systems could enhance disease surveillance and treatment accessibility while reducing ecological impact.

Keywords: Biosensor Innovation, Disease Detection, Eco-Friendly Healthcare, Lab Technology, Resource Limited Setting, Sustainable Diagnostics

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ABSTRACTS | THEME SCIENCE AND TECHNOLOGY

Assessment of groundwater potential and water quality in the Hambantota District, Sri Lanka using Geographic Information System (GIS) techniques

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Hambantota District, located in the dry zone, is one of the regions severely affected by water scarcity and poor groundwater quality issues in Sri Lanka. People in this area face significant challenges due to the lack of access to safe and potable drinking water. This study aims to assess and classify groundwater quality potential areas for drinking purposes in Hambantota District by analyzing both hydrogeological characteristics and chemical behaviour of groundwater across various sampling locations. A total of 218 tube-well locations within the district were selected for this analysis. Hydrogeological and groundwater quality data for these locations were obtained from the National Water Supply & Drainage Board of Sri Lanka. Initially, using ArcGIS software, two thematic layers were created for the study area. The groundwater potential map was created using groundwater yield, while the groundwater quality map for drinking purposes was created using the Water Quality Index (WQI), which incorporated seven key water quality parameters, i.e., Total Hardness (TH), Total Dissolved Solids (TDS), fluoride (F^-), chloride (Cl^-), sulphate (SO_4^{2-}), total iron (Fe^{2+}), and nitrate (NO_3^-). Out of 218 sample locations, 48 locations showed high specific yield, indicating that the surrounding areas possess high groundwater potential. However, eighty-three locations exhibited very poor specific yield, suggesting that associated areas have low groundwater potential. After developing the above thematic layers, they were overdrawn to generate a drinking water potential map. According to the findings, approximately 11% of the study area exhibits both high groundwater potential and good water quality, making it suitable for drinking. In contrast, about 68% of the study area consists of water with very poor quality for drinking. Although there are some areas with better quality drinking water, the potential for extracting groundwater in these areas is very poor. Thus, it can be concluded that overall drinking water potential across the Hambantota district is very poor. However, one of the research outcomes, i.e., spatial distribution of good quality water with high specific yield, will be beneficial for locating tube wells in the Hambantota district in the future.

Keywords: GIS, Groundwater, Potential, Specific yield, Quality.

Development of Corn-Cob Cellulose Based Biodegradable Film for Sustainable Packaging

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Non-biodegradable packaging methods are popular in worldwide industries, including higher demand in the food sector. However, accumulation in landfills and water resources creates a significant environmental threat. This study aims to address this issue by developing a biodegradable composite film using corn-cob cellulose and tomato powder, enriched with antimicrobial and antioxidant properties. Three formulations were developed by blending different ratios of cellulose and tomato: T1 (6:1), T2 (5:2) and T3 (4:3). The films were assessed based on the mechanical properties, moisture content, water solubility, water vapour permeability, FTIR analysis, antioxidant activity, XRD analysis, biodegradability and impact on fresh produce when used as a wrapping. The tensile strength ranged from 0.32 MPa (T2) to 1.20 MPa (T1), showing a significant difference ($p<0.05$), while thickness varied from 0.154 to 0.181 mm ($p>0.05$). Moisture content showed no significant variation across treatments ($p>0.05$). Water solubility decreased significantly with increased tomato content, with a p-value of 0.038 between T1 (58.79%) and T3 (14.49%). Water vapour permeability was lower in T3 (0.63×10^{-9} g m/Pa h m^2) than T1 (1.16×10^{-9} g m/Pa h m^2) ($p<0.05$), indicating better moisture barrier properties. FTIR analysis confirmed hydroxyl, carbonyl, and ester functional groups, suggesting polymer formation. DPPH antioxidant analysis showed the highest free radical scavenging activity in T3 with a p-value of 0.026 between control. Biodegradability tests showed T1 fully degraded in 25 days, while T2 and T3 degraded more slowly in reddish-brown earth soil at room temperature (27°C) under aerobic conditions. The application of films in fresh produce showed a significant reduction in weight loss and improved colour stability during storage, compared to the control. Spoilage development was notably delayed in film-wrapped samples, indicating effective protection against oxidative and microbial deterioration. Overall, the findings suggest that cellulose-tomato composite films offer a promising biodegradable solution for fresh produce packing, with enhanced functional properties and a potential to extend the shelf life of fresh plant produce.

Keywords: Biodegradable, Cellulose, Composite films, Corn-cob, Tomato

Use of Natural Edible food Colours as Alternatives to Synthetic Colourants (E122, E102, E133) in Tutti Frutti Production

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Researchers have linked the widespread use of synthetic food colourants to serious health issues such as hyperactivity, allergies, and carcinogenicity. This study aimed to evaluate the effectiveness of natural edible food colours as alternatives to synthetic colourants (E122, E102, and E133) in tutti frutti production, ensuring desirable colour, taste, and shelf life. Natural pigments, namely, betalains from *Beta vulgaris L.*, curcumin from *Curcuma longa*, and chlorophyll from *Sesbania grandiflora*, were extracted and incorporated into papaya-based tutti frutti. A total of 9 samples were produced, and all treatments were analysed in 5 replicates. Colour stability was assessed under varying acidity (5×10^{-5} to 2×10^{-3} mol/L), sugar concentrations (50° to 75° Brix), and drying temperatures (37 to 50°C). Colour retention was evaluated over 30 days at room temperature (27 ± 2°C) and refrigerated condition (4°C). The results revealed that red-coloured tutti frutti exhibited the highest moisture retention (12.26 ± 0.58%), while the green-coloured one had the lowest (9.47 ± 0.85%). Optimum colour stability was observed at: red - 0.000513 mol/L, 64° Brix, 45°C; yellow - 0.000102 mol/L, 60° Brix, 45°C; green - 0.000251 mol/L, 62° Brix, 40°C. Refrigerated samples retained better colour intensity over storage, with L*, a*, and b* values remaining more stable compared to room temperature storage. Shelf-life analysis revealed that yeast and mold counts in refrigerated samples were significantly lower (log CFU/g < 2.5) than those stored at room temperature (log CFU/g > 4.5). Sensory evaluations (n = 30) showed a higher consumer preference for natural-colored samples. When incorporated into baked products, natural-coloured tutti-frutti retained acceptable colour properties, though minor degradation was observed. All statistical analyses were conducted using IBM SPSS Statistics 26. The findings support the feasibility of replacing synthetic food colourants with natural alternatives in tutti frutti, offering health and commercial advantages.

Keywords: Betalains, Chlorophyll, Curcumin, Natural colourants, Tutti-frutti

Evaluating the suitability of Cellulose Nanocrystals Extracted from Corn Husk to Improve the Barrier Properties of Sustainable Packaging

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The food industry is shifting away from petrochemical-based packaging towards sustainable alternatives, such as biodegradable packaging, due to environmental impacts. However, these biodegradable films exhibit poor barriers and mechanical properties. This research aims to study the ability of cellulose nanocrystals (CNCs) to improve the barrier and mechanical properties of seaweed-based biodegradable packaging films. A bi-layered film composed of agar and alginate was produced using a layer-by-layer casting technique incorporating CNCs extracted from corn husk using the sulfuric acid hydrolysis method. The first layer contained agar, cinnamon oil, glycerol, and tween 80, while the second layer contained sodium alginate, sorbitol and CNCs (0%, 0.2%,0.4%,0.6%,0.8% and 1%) with 1% $CaCl_2$ applied as a spray on the second layer. The bilayer provides water barrier properties from the first layer, sealing ability from the second layer, and mechanical integrity from both. CNCs were characterized by XRD, SEM and FTIR analysis. The crystallinity index of CNCs was reported as 73.31%, which contributed to better barrier properties.   The effect of CNC content on various film properties was tested, including mechanical properties, water vapour permeability, UV transmission, contact angle of water, and water solubility. Increasing the content of CNCs significantly enhanced UV-blocking properties ($p<0.05$), potentially preventing oxidative reactions in foods. Higher concentrations of CNCs increased the film's contact angle of water, indicating a significant reduction in the hydrophilic nature of the film from 29.00 to 43.65 ($p<0.05$), while reducing water vapour permeability, with better performance at refrigerated temperatures compared to room temperature. The incorporation of CNCs decreased the water solubility of films, enhancing their functionality as food packaging material. However, films exhibited low tensile strength despite increased crystallinity, attributed to the high plasticizer content and possible weak interfacial adhesion between bi-layers. However, these values remain adequate for food packaging applications with limited mechanical stress required. This packaging material is suitable for wrapping fresh-cut fruits and vegetables, as well as for use in single-use sachet applications, offering a sustainable alternative to conventional polythene materials.

Keywords: Agar, Alginate, Biodegradable packaging, Environmental pollution, Nanoparticles, Sustainability

Identification and Quantification of Microplastics in Non-Flavored Liquid Milk available in Sri Lanka

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Microplastics (MPs) have emerged as a widespread contaminant across diverse ecosystems and are increasingly detected in food products, including dairy. Recent international studies have confirmed the presence of MPs in milk products. However, data on microplastic contamination in liquid milk remains scarce in Sri Lanka, highlighting a critical knowledge gap. This study aimed to identify and quantify MPs in the non-flavored liquid milk available in the Sri Lankan market. MPs were extracted from liquid milk samples using a newly optimized alkaline digestion and staining protocol, specifically developed to break down the organic matrix of milk efficiently. MPs were quantified using a stereo trinocular fluorescence microscope, with identification based on fluorescence intensity and particle morphology to distinguish them from other fluorescent materials. In this study, 99 non-flavoured liquid milk samples from seven leading Sri Lankan brands were analyzed at three shelf-life stages and each sample was triplicated. Statistical analysis was performed using two-way ANOVA at a 5% significance level. Results showed significant effects of both brand and storage time on MP concentrations in liquid milk ($p < 0.00$), with a significant interaction effect ($p < 0.00$), indicating varying MP release patterns across brands over time. Across all analyzed brands, MPs were detected in all samples, with initial concentrations ranging from 8 to 30 particles per 100 mL, increasing to 14 to 46 particles per 100 mL over time. The highest initial concentration was 15 ± 0.88 particles per 100 mL, rising to 23 ± 0.97 particles per 100 mL after two months. These findings confirm the MP contamination in non-flavoured liquid milk products in Sri Lanka and indicate a notable increase over the storage time. It highlights the need for further investigation into sources of contamination, as well as the development of mitigation strategies to ensure consumer safety.

Keywords: Microplastics, Dairy products, Contamination, Digestion, Packaging

Analyzing Urban Growth and Landscape Fragmentation: A Remote Sensing-Based Study in the Kandy Municipal Council Area

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Urban areas in Sri Lanka are expanding rapidly. This rapid growth creates pressure on land, resources, and city planning. Kandy, a historical and cultural city, is one of the areas facing these challenges. Its fast growth is changing the natural environment and built-up areas. This study examines how urban expansion and land fragmentation are shaping the Kandy Municipal Council area (MCA) in 2024. The Normalised Difference Vegetation Index (NDVI) and Normalised Difference Built-up Index (NDBI) were calculated to identify vegetation and built-up land using Sentinel-2 satellite images derived from the Copernicus Data Access Hub. Land cover was classified into built-up, open space, and water using the Support Vector Machine (SVM) method in ArcGIS Pro. The results were simplified into two categories, such as urban and non-urban areas. Urban areas were further grouped as core, edge, and patch zones to study fragmentation. The results show that most of the Kandy MCA is open land (61%), while 36% is built up, and 3% is water. Many small and medium-sized urban patches were found, showing scattered and unplanned growth. Dense urban cores are mostly found along the A1 Road to central Kandy. The outer areas have more fragmented edges and patch zones. These results show how Kandy is growing and where it may expand in the future. The study highlights that the city is growing in a scattered way, not as a compact urban area. This information can help city planners and decision-makers. It can guide how to protect green spaces, plan infrastructure, and manage growth for long-term sustainability in Sri Lanka.

Keywords: Landscape Fragmentation, Remote Sensing, Supervised Classification, Kandy Municipal Council Area (Kandy MCA), GIS

Evaluation of Antioxidant Activity of Green-Synthesized Silver Nanoparticles from *Flacourtia inermis* Leaf Extract using DPPH and Modified Oyaizu Assays.

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Green synthesis of nanoparticles is an eco-friendly and efficient approach in research studies for various biomedical applications, offering alternatives to conventional methods and minimizing harmful effects. Numerous potential health benefits have recently been identified from the antioxidant properties which are shown by green synthesized silver nanoparticles (AgNPs) in mitigating oxidative stress, which is linked to different types of chronic diseases, including cancer, cardiovascular diseases and neurodegenerative disorders. The primary aim of this study is to evaluate the antioxidant potential of *Flacourtia inermis*-mediated AgNPs through in vitro DPPH and modified Oyaizu assays. Green synthesis of AgNPs was done by using leaf extract of *Flacourtia inermis*, as it is an underutilized plant in Sri Lanka. UV-Vis spectrophotometer and SEM were used for characterization. To evaluate antioxidant capacity, DPPH and modified Oyaizu assays were performed using a concentration series of AgNPs at 50,100,150,200,250,300 µg /ml. Triplicated the samples, including positive and negative controls. UV-Vis spectrophotometric results showed a peak at 460nm, and SEM revealed spherical-shaped nanoparticles. According to the modified Oyaizu assay, AgNPs showed a concentration-dependent rise in reducing power with inhibition percentages from 55.41% at 50 µg/ml to 96.97% at 300 µg/ml. It exhibited a much closer approach to the standard ascorbic acid, for which inhibition percentages rose from 57.23% to 98.71% for the same concentrations. DPPH assay results showed inhibition percentages increasing from 21.94% at 50 µg/ml to 66.70% at 300 µg/ml, while the control, ascorbic acid, rose from 30% to 80.2%. Both assay results, analyzed using SPSS V26 software, showed AgNPs exhibit significant antioxidant activity compared to ascorbic acid, and the effectiveness increased with concentration. Further in vivo and formulation studies for biomedical applications are suggested based on these superior antioxidant activities of silver nanoparticles synthesized from *Flacourtia inermis*. Moreover, green synthesis procedures in therapeutic drug development may offer a safer and more environmentally friendly approach compared to traditional antioxidants.

Keywords: Green Synthesis, Silver Nanoparticles (AgNPs), *Flacourtia inermis*, Antioxidant Activity, Modified Oyaizu Method

Propagation of *Plumbago auriculata* through Stem Cuttings as affected by Maturity Stage of Cuttings and Different Bio-fertilizers

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Plumbago auriculata Lam., commonly known as Cape Leadwort or Blue Plumbago, is a fast-growing, evergreen ornamental shrub valued for its sky-blue flowers and landscape versatility. It also contains plumbagin, a compound with notable antioxidant and antimicrobial properties. Despite its popularity, commercial propagation is constrained by inconsistent rooting success using conventional methods. This study evaluated the propagation efficiency of *P. auriculata* through stem cuttings of three maturity stages—softwood, semi-hardwood, and hardwood combined with four organic bio-fertilizers: Jeewamruthum, Vermiwash, fish tonic, and fermented bio boost. A total of 15 treatments, including a synthetic rooting hormone as control, were tested under a Complete Randomized Design with 10 replicates each (150 cuttings total). Cuttings were standardized to 15 cm length with 3–4 nodes and treated via root dipping for 30 minutes in bio-fertilizer solutions diluted at a 1:10 (v/v) ratio prior to planting. The growing medium comprised a 1:1 mix of biochar and river sand in polybags. Treated cuttings were maintained under controlled humidity, and bio-fertilizer treatments were reapplied weekly as a soil drench for the first three weeks post-planting. Growth parameters including shoot height (cm), number of new leaves, root length (cm), root volume (cm^3), and bud formation were measured weekly for 11 weeks. Data was analyzed using ANOVA in Minitab 17, and statistically significant differences were identified at $p \leq 0.05$. Results indicated that softwood cuttings treated with fermented bio boost exhibited significantly greater shoot height (mean 23.4 ± 1.2 cm), higher leaf count, and enhanced root development compared to other treatments. These findings support the use of fermented bio boost as an effective, eco-friendly rooting stimulant for large-scale propagation of *Plumbago auriculata*.

Keywords: *Plumbago auriculata*, Fermented Bio Boost, Softwood Cuttings, Bio-Fertilizers, Propagation

Climate Variability and its Impact on Paddy Yield in Batticaloa, Sri Lanka: Trends, Farmer Perceptions, and Adaptive Responses

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Paddy cultivation is a critical livelihood in Sri Lanka's Batticaloa District, where rice farming is highly climate-sensitive and predominantly rain-fed. Over recent decades, farmers have increasingly faced challenges due to climate variability, particularly changing rainfall patterns and rising temperatures. This study aimed to explore how changing temperature and rainfall patterns affect paddy yield in Batticaloa, while also examining how farmers perceive and respond to these climatic challenges. The study covered a 30-year period (1994–2023). Monthly rainfall and temperature data from the Batticaloa meteorological station (Station ID: 43436), which serves as the primary long-term ground-based climate record for the district, were obtained from the Department of Meteorology, Sri Lanka. Average paddy yield statistics were collected from the Department of Census and Statistics (DCS), Sri Lanka. Quantitative analysis was conducted using Pearson correlation, partial correlation, and non-linear curve estimation (S and Power models) in SPSS. To gather local insights, a structured survey using personal interviews was conducted between November 2024 and March 2025 among 50 paddy farmers representing six district secretariat divisions in Batticaloa District. Over the study period, mean annual temperature increased from 27.9 °C in 1994 to 29 °C in 2023. Annual rainfall varied widely, ranging from 1010 mm in 1998 (lowest) to 3581 mm in 2011 (highest), without a clear upward or downward trend. A significant positive correlation was found between mean annual temperature and total paddy yield ($r = 0.506$, $p < 0.01$), which strengthened when controlling rainfall ($r = 0.568$, $p = 0.001$). Rainfall, however, showed a weak, statistically insignificant correlation with yield. Curve estimation (S and Power models) confirmed temperature as a key yield determinant, whereas rainfall remained highly erratic and non-predictive. A survey of 50 paddy farmers revealed that 96% had observed climate-related changes, mainly irregular rainfall, with 66% reporting harvest-stage yield losses due to unseasonal rain. In response, 92% adopted liquid fertilizer applications during cooler hours, 10% used organic fertilizers, 36% shifted planting dates, 24% adopted short-duration varieties, and 58% substituted climate-resilient rice varieties. Crop diversification was practiced by 24%, 20% transitioned to other crops, and 2% relocated farming areas. However, 72% reported limited institutional support, 8% cited financial barriers, and only 28% accessed government-led adaptation programmes. In conclusion, temperature increases within the current range appear to favour paddy productivity, but increasing rainfall unpredictability poses serious risks. Enhancing farmer access to climate advisories, promoting adaptive agronomic practices, and strengthening institutional support are crucial to building climate resilience and ensuring the long-term sustainability of paddy cultivation in Batticaloa.

Keywords: Climate variability, Paddy yield, Temperature and Rainfall, Farmer Adaptation

Perceptions of Genetically Modified crops among Biology Undergraduates at the Batticaloa Regional Centre of the Open University of Sri Lanka, Batticaloa

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Genetically modified (GM) crops represent a significant advancement in agricultural biotechnology. Despite being a transformative tool in agricultural biotechnology, GM crops remain a subject of scientific debate and public skepticism, often fueled by misconceptions. This study aimed to assess the awareness, acceptance levels, and common misconceptions related to GM crops, as well as ethical concerns, among undergraduate biology students at the Batticaloa Regional Centre of the Open University of Sri Lanka (OUSL). A structured questionnaire was administered to 150 BSc Biology undergraduates across first- to third-year levels. The results revealed that awareness and self-rated knowledge increased progressively with academic year (52% in the first year vs. 96% in the third year reported awareness). However, critical misconceptions persisted even among senior students. For example, 24% of the third-year students incorrectly believed GM crops cause cancer, and 36% thought they were produced by injecting chemicals into plants. Recognition of actual GM crops such as Bt Cotton and Golden Rice improved with academic level, while false identification of traditional varieties as GM remained common. Interestingly, while ethical hesitation was notable among first-year students (only 22% found GM crops acceptable), a growing number of students across all years (up to 88% in the third year) supported incorporating more Genetically Modified Organism (GMO) - related content into their curriculum. This finding points to a readiness to engage in biotechnology when equipped with proper knowledge. The study highlights a critical gap between exposure and understanding, emphasizing the need for enhanced biotechnology education and targeted science communications to bridge misinformation even among biology undergraduates. The insights gained from this study can support curriculum development and inform evidence-based public outreach on modern biotechnologies in the Sri Lankan context.

Keywords: Biotechnology education, Genetically Modified Crops, Misconceptions, Undergraduate perceptions

Effects of Electrical Stimulation on Metabolism and Molecular Signaling Pathways of Plants

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Electrical stimulation using direct current (DC) and alternating current (AC) is an emerging method in plant science that has shown potential to influence plant growth, metabolism, and stress adaptation. This review highlights current findings on the effects of electrical stimulation on plant metabolic pathways and molecular signaling, while discussing its potential use in agriculture. Plants naturally rely on internal electrical signals to respond to environmental cues. Artificial stimulation replicates these signals, altering cellular activities depending on the type, duration, and intensity of the applied current. Research indicates that electrical stimulation can enhance various metabolic functions. It boosts the synthesis of primary metabolites such as amino acids and sugars, along with secondary metabolites like phenolics and flavonoids. Application of DC has been linked to increased chlorophyll concentration and improved photosynthetic activity through enhanced photosystem II performance, resulting in more efficient energy production (ATP and NADPH). In contrast, AC can provoke stress-like responses particularly at certain frequencies that stimulate antioxidant defenses. Electrical stimulation also supports nitrogen assimilation and elevates the activity of key enzymes related to energy metabolism. Electrical currents influence important signaling networks in molecular scale by raising intracellular calcium concentrations, triggering proteins that regulate gene expression for growth and stress management. Electrical input also modifies reactive oxygen species (ROS) dynamics and activates MAPK signaling pathways that support stress resilience. Furthermore, it impacts hormone levels including auxins, cytokinin, and abscisic acid which shape plant development and environmental responses. DC is generally associated with consistent growth promotion, while AC may activate short-term adaptive mechanisms. Proper application, electrical stimulation could become a sustainable tool to enhance crop performance, stress tolerance, and germination without relying on chemicals or genetic engineering. Continued research is needed to modify the approaches and evaluate species-specific responses. Furthermore, to fully utilize this technology for sustainable agriculture and food security, more multidisciplinary research integrating electrical engineering, molecular biology, and plant physiology is essential.

Key Words: Alternating Current (AC), Direct Current (DC), Electrical Stimulation, Metabolic Pathways, Molecular Signaling, Plant Growth, Stress Resilience, Sustainable Agriculture

Development of a Chemometric-Based Rapid Test Kit for Detection of Synthetic Colour Adulteration in Black Tea Using Fourier Transform Infrared Spectroscopy and Machine Learning

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Synthetic colourants, like Sunset Yellow, in tea pose health risks. Traditional detection methods, such as HPLC and UV-Vis spectrophotometry, are time-consuming (3–5 hours), costly, and require skilled operators and lab settings, limiting rapid, real-time monitoring of tea supply chains. This study proposes a rapid, cost-effective, and non-destructive method using Fourier Transform Infrared (FTIR) spectroscopy combined with machine learning to detect Sunset Yellow in black tea. Tea samples were spiked with Sunset Yellow concentrations ranging from 0 to 10 ppm. FTIR captured molecular fingerprints in the 400–4000 cm^{-1} range, generating over 240,000 spectral data points. After preprocessing, data were modelled using Random Forest regression, XGBoost, and Generalised Additive Models (GAM). The Random Forest model achieved near-perfect accuracy (R^2 = 0.99998), with an error margin (RMSE) of 0.0934 ppm, meaning it can predict the dye concentration very precisely. XGBoost also showed strong performance (R^2 = 0.981), while GAM offered clues about complex spectral relationships (R^2 = 0.821). Importantly, FTIR analysis takes only 2–3 minutes per sample, reducing detection time by over 90% compared to traditional methods. Feature analysis revealed specific spectral regions indicative of Sunset Yellow, enabling future development of portable detection devices. This integrated approach offers a fast, accurate, and sustainable alternative for food adulteration screening, supporting real-time quality control in tea production and protecting consumer health.

Keywords: Adulteration, Chemometrics, FTIR Spectroscopy, Machine Learning, Sunset Yellow

Development of a Nationwide Digital Platform for Ethical Organ Matching and the Prevention of Illegal Organ Trade

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Organ shortages are a critical issue in healthcare, especially in countries with limited access to transplant resources. Every day, lives are lost due to a lack of timely and compatible organ donors, while many individuals die without their organs being used to save others. "Killing people to take their organs illegally, also known as the black-market organ trade," is a growing problem. In this project a centralized, app-based organ matching system will connect all hospitals, government and private, across Sri Lanka into one digital network. This platform will feature two modules: one for organ donors registering and one for transplant seekers. Upon a person's death, hospital staff can enter details such as blood group, available organs, and time of death, while other hospitals can register patients in need of specific organs. A smart algorithm will match donor organs with waiting patients based on compatibility, urgency, and location, and an integrated ambulance system will be available to transport organs efficiently. Additionally, the system will be linked with the National Identity Card (NIC) system, so citizens can indicate their consent to donate organs during NIC registration, enabling hospital staff to quickly verify consent at the time of death. While doctors play an essential role in ethical organ retrieval (harvesting), some individuals within the medical community may be complicit in illegal organ trading due to financial incentives. Such opposition from unethical practitioners and parties engaged in black-market operations presents a significant challenge to implementation. This system aims to reduce illegal organ trading, increase life-saving, and promote an ethical medical environment by combining medical science, IT, and public health policy into a scalable model that can be adapted nationally and globally.

Keywords: Organ donation, Digital health, Organ Matching System, Illegal Organ Trade, NIC Integration, Medical IT Solutions

Manufacturing - Related Quality Standard Factors that Influence the Increasing Competition for Generic Pharmaceuticals in Sri Lanka

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In Sri Lanka's evolving healthcare system, generic pharmaceuticals play a crucial role in improving access to affordable medications. This research explores the impact of quality standards on the competitive dynamics among generic drug manufacturers in the Sri Lankan health sector. As the demand for cost-effective drugs increases, ensuring the safety, efficacy, and reliability of generics has become vital. quality standards, both international (e.g. WHO, FDA) and local (e.g., NMRA), serve as benchmarks for compliance and market trust.

The study investigates how adherence to these standards influences market positioning, consumer trust, and healthcare provider confidence. Through a mixed approach, including surveys and interviews with pharmaceutical manufacturers and healthcare providers, the study examines the advantages related to maintaining high-quality production. Statistical analysis of market data reveals a correlation between strict quality compliance and improved market share, reinforcing the idea that quality is not just a regulatory requirement but a competitive edge. Preliminary findings indicate that companies implementing rigorous quality control measures tend to experience greater market acceptance and enhanced opportunities for expansion. Moreover, public trust in generic medications significantly improves when quality assurance processes are transparent and clearly communicated. The outcomes of this study are expected to support policymakers, regulators, and industry stakeholders in strengthening the regulatory framework for generic drugs. Promoting high-quality standards can improve healthcare delivery, affordability, and trust, thereby supporting the development of a more resilient health system in Sri Lanka.

Keywords: Generic pharmaceuticals, Quality standards, Sri Lanka healthcare system, Regulatory compliance, NMRA (National Medicines Regulatory Authority), Market competitiveness.

ABSTRACTS | THEME COMPUTER SCIENCE

A Framework for Adopting Business Intelligence Platforms in Sri Lankan Banks: Leveraging the Technology-Organization-Environment (TOE) Model for Data-Driven Decision-Making

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This study proposes a framework for Business Intelligence (BI) adoption in Sri Lankan banks, based on the Technology-Organization-Environment (TOE) model. The TOE model classifies key factors influencing technology adoption into three dimensions: technological (e.g., infrastructure compatibility, data security), organizational (e.g., leadership support, employee capability), and environmental (e.g., regulatory compliance, market competition). Although BI adoption is increasing globally, banks in Sri Lanka face unique challenges, including outdated infrastructure, organizational inertia, and complex regulatory environments. A qualitative multiple-case study design was employed, focusing on several commercial banks selected for their varied BI adoption maturity. Data was gathered through 10 semi-structured interviews with IT professionals in the Banking Sector, Senior Executives of the Banks and BI Vendors. A Thematic analysis supported by open and axial coding using NVivo, was used to identify recurring themes. The sample size was determined based on snowball sampling method and theoretical saturation. Findings indicate that technological readiness, strong leadership, and staff competence are essential enablers, while key barriers include data integration issues, limited scalability, and resistance to change. Environmental factors such as regulatory oversight and market competition strongly influence BI strategy and implementation. Recommendations include investing in scalable infrastructure, fostering a data-driven culture, ensuring regulatory alignment, and prioritizing cross-functional collaboration and continuous employee training. Unlike existing BI adoption models that are often generalized and developed in high-income contexts, this framework offers a novel, empirically validated approach specifically tailored to the structural, cultural, and regulatory realities of banks in a developing economy. It contributes to both academic literature and practical policymaking in digital transformation.

Keywords: Banking, BI Adoption, Business Intelligence, TOE

Flavourflex: An Expert System-Based Recipe Recommendation System

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Meal planning and recipe discovery can be challenging, especially when working with limited ingredients, cooking equipment, and time. Many individuals, including students and busy professionals, struggle to find suitable meals that match their resource needs. FlavourFlex is a smart, user-friendly mobile application designed to simplify this process by recommending recipes based on available ingredients and tools. The system supports multilingual input (Sinhala, Tamil, English, Japanese) and enables interaction through a chatbot or manual search. Users can include or exclude specific ingredients or equipment, allowing flexible, personalized results. At its core is a rule-based expert system that applies predefined logic derived from curated recipe data using expert libraries in Python. Rules are structured around ingredient availability, cooking constraints, and common substitutions. Users may also contribute recipes, which are reviewed through a quality control system involving admin moderation, community trust ratings, and user feedback to ensure accuracy and fairness. The platform supports recipe authorship and content moderation to maintain integrity. In preliminary testing with 40 participants, FlavourFlex achieved a 92% satisfaction rate for recipe suggestions, with strong engagement and ease-of-use ratings. These early results indicate high user acceptance. While long-term sustainability outcomes are still under evaluation, the platform aims to reduce food waste by encouraging the use of available ingredients. Future enhancements include adaptive learning techniques that will refine rule sets based on user interactions and feedback. By integrating expert system logic, community contributions, and real-time interaction, FlavourFlex provides a practical and inclusive solution to modern cooking challenges. It promotes smarter meal decisions, supports sustainable food habits, and addresses limitations in traditional meal planning tools.

Keywords: Chatbot, Expert System, Flexible Search, Multilingual Support, Recipe Recommendation, Sustainable Cooking

Workload Led Indexing and Partitioning Framework for the Self Adaptive Optimisation of Real Time PostgreSQL Pipelines

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Data is being created at exponential rates in fields such as finance, e-commerce, healthcare, and IoT, thereby creating a thirst for scaling and real-time analytics. Most of the time, the velocity of data processing usually cannot be satisfied by traditional relational database management systems (RDBMS), being bound by ACID properties. This paper introduces Auto Optimized Stream, a self-adaptive optimization framework for real-time analytic pipeline scaling and performance improvement atop PostgreSQL, Kafka, and Flink. Unlike Oracle-like static optimizers, Auto Optimized Stream monitors live query workloads and ingestion patterns for dynamic optimizations of indexes, partitioning, and Flink processing configurations. The use of rule-based decisions and configurations for databases enables Auto Optimized Stream to enhance query and ingestion execution and resource utilization. Another experimental evaluation showed that adaptive optimization could reduce latency by 60% max while maintaining stabilization on ingestion rate under varying load even over small data sets. Adaptive indices may be created and removed at will; dynamic shifting between daily and hourly table partitions happens without trouble; and stream parallelism may be adapted on the fly in reaction to backpressure on an operator and lag on Kafka. This adaptive mode performs better in terms of query latencies, stream stability, and CPU efficiency compared to static optimizing modes while adding minimal overhead and allowing complete traceability of tuning actions. Such results validate not only the framework proposed but also show adaptive database systems are practically realizable for real-time analytics. Hence, such design can stand as a foundation toward systems that blend machine learning for workload prediction-based optimization and greater autonomy.

Keywords: Adaptive optimization, Apache Flink, Database Optimization, Indexing, Kafka, PostgreSQL, Real time data processing

Comparative Evaluation of Traditional and AI-Based Early Warning Systems: Case Studies from Sri Lanka

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Sri Lanka's recurrent floods and droughts expose limits in conventional early warning systems (EWS). This review compares traditional and AI-based EWS using Sri Lankan case lenses (Ratnapura floods; North-Central droughts). A structured search conducted (2015–2025) in Scopus, Web of Science, IEEE Xplore and PubMed, plus SLJOL, with Boolean terms combining hazard (flood/drought), in Sri Lanka, with remote sensing/gauges datasources and machine learning/AI methods. Inclusion required a quantitative comparator with reportable performance such as lead time, false-alarm rate, sensitivity/specificity or operational outcomes; opinion pieces and studies without comparators or measures were excluded. Screening followed PRISMA review method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) with dual independent review. The setting, hazard, data source, model family (RF, XGBoost, LSTM) was extracted during this study with, metrics and implementation factors, and synthesized via descriptive statistics and effect-direction vote counting. Across eligible studies, AI-enhanced EWS generally delivered earlier alerts and fewer false alarms than threshold-based baselines. In Ratnapura (Kalu River), a hybrid Bi-LSTM plus time-series regression produced 1-3 days warnings ahead and correctly flagged actionable floods with 80%, 80% and 100% accuracy for 1-, 2- and 3-day horizons, respectively, with 3-day water-level RMSE <0.4 m; by contrast, the national real-time water-level application typically warns only a few hours before events. For agricultural drought, Sri Lanka's PCA-based combined index (agCDI) achieved correlation coefficients >0.6 with district rice yields and with streamflow-based indices, indicating impact-relevant monitoring skill. Interpretation: AI augmentation extends lead time and precision where high-quality data and local calibration exist; constraints include data governance, transparency and operational readiness. This shows that layering AI into existing EWS and standard reporting can accelerate anticipatory action toward the Sendai Framework while safeguarding accountability and inclusivity.

Keywords: Artificial Intelligence, Early Warning Systems, Disaster Management, Machine Learning, Remote Sensing, Sri Lanka

ABSTRACTS | THEME MANAGEMENT

Effectiveness of Social Media Promotion in Attracting Students to Online Degree Programmes

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The rise of digital marketing has significantly transformed how educational institutions attract students, especially for online degree programs. However, despite the widespread use of social media in higher education marketing, there is limited evidence on which specific factors actually drive students' decisions to pursue online degrees. Existing studies often focus on general perceptions of digital marketing but overlook how platform choice, content strategy, and engagement dynamics interact to influence student attraction particularly in Sri Lanka. This study addresses that gap by examining the role of social media platforms (SMP), Content Type (CT), and Engagement Metrics (EM) in attracting students (AS) to online degree programs in Sri Lanka. A structured questionnaire was administered to a sample of eighty-eight respondents comprising current and prospective online degree students in Sri Lanka, selected through convenience sampling. The study employed a cross-sectional quantitative design, and collected data were analyzed using descriptive statistics, correlation analysis, and multiple linear regression to obtain required statistical results to address research objectives. The results showed the statistically significant and positive influence of SMP and EM on AS for online degree programs. However, CT did not show a statistically significant positive impact on AS, emphasizing that SMP and EM may be more important in influencing AS than CT. These findings highlight the importance of platform selection and engagement strategies in attracting student enrollment decision. Sri Lankan universities should align their promotional strategies with student behavior on high-impact platforms. Furthermore, policymakers should ensure the accuracy and credibility of social media promotion to safeguard students engaging with online degree programs. While the study provides valuable insights, it is limited by its sample size and cross-sectional design. Further studies may adopt longitudinal or mixed method approaches to validate these findings across broader educational contexts.

Keywords: Attraction of Students, Content Types, Engagement Metrics, Online Degree Programs, Social Media Platforms

Study on the Effect of the Technological Environment on Public Relations Management in Local Government Service Delivery

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Public relations have undergone significant changes over the last decade. They aim to establish and maintain a favourable reputation, inform target consumers about products, services, or business benefits, and increase the organization's profile to win favour with customers, media, and other audiences. They also stay in touch with influencers, raise awareness of offerings, and halt unfavourable media coverage. Local governments, as primary service providers, help cities become smarter and more sustainable, with residents expecting prompt replies. Success depends on developing and maintaining relationships with target audiences. Currently, public relations face challenges such as financial constraints, multiple communication platforms, managing client expectations, manpower shortages, a lack of professionalism and respect, limited awareness of PR values, and poor social media use. The rapid growth of technology and internet use, especially social media, complicates crisis management and stakeholder engagement, which are vital in shaping public perception. The researcher posed: "How does the technological environment mediation by stakeholder perception affect public relations management for local government service delivery?" The study aims to examine how stakeholder perceptions of technology impact public relations management service delivery at Colombo Municipal Council, Sri Lanka's commercial capital with 555,031 residents and 500,000 daily visitors. The city covers 37 sq km, divided into six districts. The survey targeted staff, ward officers, and households, using random sampling. Data was collected via structured questionnaires and analyzed using Excel, SmartPLS, and SPSS. The study's variables include dependent, mediator, and independent variables, exploring their relationships. Goals include improving PR strategies, service delivery, and promoting transparency, accountability, and equity.

Keywords: Local Government, Public Relations Management, Service Delivery, Technological Environment

Navigating the Future: Integrating Technological Foresight with Workforce Planning in Sri Lanka's Software Sector

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The rapid evolution of technology has significantly influenced workforce planning and development in the global software industry. In Sri Lanka, the software sector plays a vital role in the national economy through export revenue and employment creation. However, skill mismatches, insufficient talent management, and limited alignment with emerging technological trends remain pressing challenges. To ensure long-term competitiveness and sustainability, workforce planning must be integrated with technological foresight. This study aimed to: (i) explore emerging technological trends in the Sri Lankan software sector, (ii) assess contemporary workforce planning practices, and (iii) evaluate opportunities and limitations in integrating technological foresight into workforce development. A mixed method research design was adopted, employing structured questionnaires with software industry experts, HR managers, policymakers, and employees. Semi structured interviews were conducted with 15 respondents (including senior managers, mid-level supervisors, and technical leads) to capture diverse perspectives. Secondary data were drawn from policy documents, official statistics, and peer reviewed research. The findings reveal a noticeable gap between the adoptions of new technological trends, particularly artificial intelligence, cloud computing, cybersecurity and existing workforce planning mechanisms. The use of foresight tools such as horizon scanning and scenario planning was found to be limited. These results align with the objectives, highlight the necessity of future-oriented workforce planning supported by stakeholder collaboration. The study recommends the development of a national foresight strategy, curriculum reforms, periodic updates to training programs, and organizational capacity building to address the skills gap and align with technological transformations.

Keywords: Skills Development, Software Industry, Sri Lanka, Technological Foresight, Workforce Planning

The Impact of Health Concerns on Consumer Online Buying Behavior: A Study of the Cake and Confectionery Market in Colombo Metropolitan Region (CMR)

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This research aims at how health concerns influence online cake and confectionery buying among consumers in Colombo Metropolitan Region (CMR). Rising numbers of lifestyle diseases are leading people to pay greater attention to their health when deciding what to eat. Statistics from the Ministry of Health confirm that Non-Communicable Diseases are responsible for about 75% of deaths in Sri Lanka. The Central Bank of Sri Lanka explains that since the pandemic, the annual growth rate for online purchases in the food and grocery sector has been around 20%. Theory of Planned Behaviors and Social Cognitive Theory has been tested in this study. Quantitative research approach applied when assessing the relationship between Psychographic Factors and Consumer online purchasing behavior. Statistical techniques (correlation and regression analysis) used to analyze data that are collected via online questionnaires on a representative sample of Colombo Metropolitan Region (CMR) consumers. Survey questions were given to a sample of 278 individuals from Sri Lanka and got 100 responses. It is clear from the findings that what people buy online is largely shaped by the features of the website and product, while health concerns tend to be less important, usually overcome by other factors like taste, price and convenience. This illustrates a big obstacle for health-related startups as a culture still enjoying indulgent and customary cakes exists in the market. The research urges a strong focus on the attractiveness of products, user enjoyment and health awareness when encouraging healthier online decisions.

Keywords: Consumer online purchasing behavior, Health Concerns, Psychographic Factors

From Content to Connection: Leveraging Different Content on Social Touchpoints to Build Brand Loyalty

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As digital platforms have redefined consumer-brand interactions, social media has become vital for brands to interact with consumers directly. Globally, e-tailer brands dominate the loyalty indexes by focusing heavily on their social media content. Still, Sri Lankan-level e-tailer brands have very low. This study explores the impact of social touchpoint content on brand loyalty among millennials in Sri Lanka's e-tailer industry, giving special attention to the mediating effect of brand trust. Millennials, who are tech-savvy and lack loyalty, are regarded as the generation with the highest purchasing power among the current generation. Therefore, this study provides insights for Sri Lankan e-tailer brands to have sustainable revenue. The initial conceptualization of the study was based on attachment theory, which describes brand loyalty as an emotional bond between a caregiver and a child influenced by trust. Therefore, Brand trust has been introduced to the conceptual model as a mediator. Based on empirical evidence, social touchpoint contents have been categorized as rational, emotional and transactional to conduct the research under quantitative methodology. The dataset for this study was derived from 384 Sri Lankan millennials through purposive sampling. Based on the model's complexity and the data's non-normality, partial least squares structural equation modelling (PLS-SEM) has been considered the principal methodology for analyzing the dataset. Hypothesis testing has been conducted to identify the impact of social touchpoint contents on brand loyalty and the mediation effect of brand trust. Importance-Performance (IPA) was conducted to evaluate the level of impact of each content type on its importance to the model. The results of this study provide critical managerial implications for Sri Lankan e-tailer brands. Brands should prioritize creating emotionally compelling content for their social media touchpoints to foster brand loyalty among millennials, which can gain a competitive advantage in this highly competitive e-tailer environment.

Keywords: Brand Loyalty, Brand Management, Brand Trust, Digital Marketing, Digital Touchpoints

Analysis of the Potential to Develop Nature Tourism in Sri Lanka; a Case Study of Kosgahadola Ella Waterfall in Mulatiyana

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Nature tourism is a globally recognized concept that generates substantial revenue and foreign exchange through the sustainable use of natural environments. However the concept remains relatively new to the local population, and the sector is still underdeveloped in Sri Lanka. Furthermore, academic research on nature tourism in Sri Lanka is limited in both scope and volume. Therefore, this research focuses on analyzing the potential for developing nature tourism in Sri Lanka with a specific emphasis on the Kosgahadola Ella waterfall in Matara District. Transect methods were applied to collect biodiversity data surrounding the waterfall. Field surveys and observations were conducted to identify geomorphological features along the Kosgahadola Ella waterfall. The snowball sampling method was applied to conduct the questionnaire survey. This research has identified the site as being rich in biodiversity. A total of 39 flora species were recorded, and the most frequently observed species are Meewana (*Pleridium aquilinum*), Gal karada (*Thelypteris palustris*), Etamba (*Mangifera zeylanica*) and Diya naa (*Mesua thwaitesii*). Through a field observation, a total of 42 fauna species were identified. The most frequently observed species are Peacock, Deer, Owl and Giant squirrel. The waterfall exhibits a range of distinct geomorphological features. One of the most significant findings of this research was four distinct types of mini waterfalls along the stream: tiered cascades, veil falls, punchbowl falls, and ribbon falls. This waterfall reveals remarkable landforms, reflecting the dynamic geological processes shaping the area including a spring, canals, 4 mini waterfalls, 3 mini pools, main waterfall, a gorge, potholes and faller rocks. The biodiversity and geomorphological features of the area indicate a strong potential for enhancing natural tourist destinations and are more appealing. Overall, the study highlights the key factors such as diversity, unique terrain features, ease of access, accommodation facilities and other strengths that can attract tourists to Kosgahadola falls and contribute to the growth of nature-based tourism. Promoting eco-tourism in this area would not only contribute to the conservation of the natural environment but also offer socio-economic benefits to the local community.

Keywords: Biodiversity, Geomorphological features, Kosgahadola Ella, Nature tourism

Green Reverse Logistics Strategies and Environmental Performance in the Printing and Packaging Industry: Recycling Practices in Sri Lanka

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The Printing and Packaging industry (P&P) plays a pivotal role in promoting environmental sustainability, as it is also responsible for contributing to several negative externalities. Green Reverse Logistics (GRL) practices have been identified as a possible strategy in improving Environmental performance (EP). However, research on recycling practices (RP) in the scope of GRL on the P&P industry is limited. Considering the broader scope of the green supply chain, this paper focused on a fraction of it known as the recycling process within the GRL process of the P&P industry. The aim of the study was to understand the relationship between the RP and EP in the P&P industry in the Western Province in Sri Lanka. The case study adopted an inductive approach and employed quantitative research within an interpretivist paradigm, using interviews with supply chain managers selected through purposive sampling. Four male managers were chosen - two from small and medium-sized enterprises (SMEs) and two from large corporations. The collected data was analyzed using an exploratory data analysis approach and summarized through descriptive statistics. The analysis revealed that most companies utilized recycled paper, ink selected solvents and chemicals, machine spare parts, plates, and molds across various processes. Paper emerged as the most prominently recycled material. Consequently, some companies have adopted circular economy practices, whereby planned waste, off-cuts, and rejected paper materials are retuned to raw material suppliers to be recycled into new paper and resupplied to P&P companies at a relatively lower cost. Furthermore, among various EP measures, material savings emerged as the most significant with a strong positive correlation between the use of recycled materials and material savings. While energy and water savings were also considered, their impact was found to be indirect with moderate correlation. The study focused on RP within the GRL node in Sri Lanka, which may limit the generalizability of the findings within the demographic and geographic scope. The study provided actionable awareness into how P&P companies can develop effective partnerships with raw material suppliers to establish a continuous reverse supply of paper waste and procure recycled materials for production while reducing material costs and enhancing environmental outcomes.

Keywords: Green Reverse Logistics, Printing and Packaging, Recycling Practices, Sustainable Environmental Performances

Green Bonds and Climate Finance: Looking into the Future

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Green bonds have emerged as a significant instrument in climate finance, facilitating the transition towards a sustainable and low-carbon economy. They are designed to raise capital for projects with positive environmental impacts, such as renewable energy, sustainable infrastructure, and climate resilience initiatives. The market for green bonds is expanding globally, driven by the increasing demand for sustainable investment options and the need to address climate change. There is a dearth of bibliometric studies related to green bonds and climate change. The objectives of this study are to revisit the prevailing literature and to pinpoint areas for prospective research opportunities related to green bonds and climate finance. Articles were systematically selected with respect to the search terms, "green bonds" and "climate finance" from the Scopus database from 2010 to 2024. A systematic literature review methodology was employed throughout the entire process. Fifty-eight articles were incorporated into the review following the use of the PRISMA article selection flowchart stages to establish the selection criteria. Six new innovative clusters of keywords have been identified through the keyword co-occurrence analysis. Due to climate change, the innovation of new approaches, such as carbon markets, are necessary. This will facilitate the achievement of corporate social responsibility and sustainable development. Environmental finance, carbon markets, green bond premium, and financialization are some of the under researched keywords, offering opportunities for future scholars to investigate. In conclusion, green bonds have become a significant tool in climate finance, aiding the shift towards sustainable and low-carbon economies contributing to significant investments for sustainable development.

Keywords: Climate Finance, Green Bonds, Green Finance, Prisma Methodology, Sustainable Finance

Evaluating the Impact of Educational Interventions on University Students' Knowledge and Attitudes Toward Waste Management

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This study explores how educational interventions influence the understanding and attitudes of science stream undergraduates regarding waste management and the ISO 14001 Environmental Management System (EMS). Recognizing the increasing environmental concerns, the research aimed to assess whether structured awareness programs could significantly enhance environmental literacy in a university setting. The study employed a quasi-experimental design involving 80 students equally divided into treatment and control groups. The intervention group received focused training covering sustainable waste practices, ISO 14001 standards, and environmental conservation principles. Data collection used a validated pre- and post-questionnaire to evaluate both knowledge and attitudinal changes. Results from paired t-tests and the difference-in-differences method demonstrated notable improvements in the treatment group's knowledge (mean increase = 9.32, $p < 0.001$) and attitudes (mean increase = 6.4, $p = 0.001$). As well as a reduction in the variance of post-test knowledge scores indicated improved comprehension consistency. The intervention also fostered constructive peer discussions and increased student interest in environmental policy and compliance standards. The findings underscore the effectiveness of targeted educational programs in promoting pro-environmental behavior and awareness. This research advocates for the integration of ISO 14001-aligned content into academic curricula to nurture environmentally responsible graduates and support national sustainability goals.

Keywords: Educational Intervention, Environmental Education, ISO 14001, Higher Education, Sustainability, Waste Management

Factors Influencing Physician's Prescribing Behavior in Sri Lanka: Special Reference to the Hospitals, Channeling Centers and Dispensaries

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Pharmaceuticals provide vital inputs to healthcare such as medicines, chemicals, vaccines, cosmeceuticals, etc. and the study aims to investigate specific influencers to physician prescribing behavior in Sri Lanka. Theoretical gaps and methodological gaps identified within limited studies done globally thus Sri Lankan studies are curbed and archaic in subject area. Therefore, this study answers the question "what is the impact of pharmaceutical marketing mix strategies and other determinations on prescribing behaviors of physicians in Sri Lanka?" main objective of the study to determine pharmaceutical marketing strategies and physician's prescribing behaviors while identifying impact and relationship of pharmaceutical marketing mix strategies and other determinants on physician's prescribing behavior. Literature revealed there is abnormality on marketing expenditure vs R&D thus physicians determine the need of the consumer (Patient) and consumer has limited bargaining power. Research questions developed parallel to the objectives to derive hypotheses and variables were Physician's prescribing behavior, Marketing mix strategies, Reputation of the company, Knowledge and information given by the patient, Pharmacist physician collaboration and Peer's opinion on prescribing. This mixed-method study employed a self-administered questionnaire to collect data from a randomly selected sample of 70 participants, with quantitative data analyzed using SPSS and study found that there is a high impact of Reputation of the company, Knowledge and information from patient and Peer's opinion on prescribing while there is considerable impacts on Marketing mix strategies however there is no influence of pharmacists on physician's prescribing behavior. Limited data may narrow the objective and discussion scope of the study thus quality of data may affect due to conflicts on biased views, personal, professional and cultural issues with limited population coverage. Study recommends further studies with larger samples and modification of questioners in future studies on same subject matter.

Keywords: Marketing Mix, Pharmaceutical Marketing, Prescribing Behavior

Artificial Intelligence as a Catalyst for Innovation-Driven Entrepreneurship in Service Sectors

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Artificial Intelligence (AI) has emerged as a transformative force in reshaping the landscape of service-oriented entrepreneurship by fostering innovation, efficiency, and competitive differentiation. This conceptual paper explores the role of AI as a catalyst for innovation-driven entrepreneurship within the service sector highlighting its potential to revolutionize business models, enhance customer experiences, and drive sustainable growth. The study aims to critically examine existing literature on the intersection of AI technologies and entrepreneurial innovation in service industries and to propose a theoretical framework that outlines how AI adoption can stimulate entrepreneurial outcomes and organizational agility. To ensure methodological soundness, the study employs a systematic literature review (SLR) design, guided by the PRISMA methodology. The data collection process involved retrieving peer-reviewed articles from the Scopus database. Articles were screened based on defined inclusion and exclusion criteria with the selection process transparently illustrated using a PRISMA flow diagram. To analyze the selected studies the research utilizes VOSviewer software to conduct bibliometric and keyword co-occurrence analysis allowing for the identification of prevailing research themes and gaps in the field. Findings reveal a significant shortage of empirical studies on AI-driven entrepreneurship particularly in the service sector, due to factors such as limited digital capabilities, lack of strategic vision, and resistance to technological change. The study affirms that the integration of AI enhances service innovation, operational efficiency, and customer-centric approaches, thereby reinforcing entrepreneurship in dynamic markets. However, it also emphasizes the challenges in aligning AI initiatives with entrepreneurial strategies. The paper identifies a need for longitudinal and sector-specific studies to evaluate the long-term impact of AI adoption on service entrepreneurship. Future research should focus on the development of adaptive innovation ecosystems, entrepreneurial readiness, and the ethical implications of AI integration. This study offers valuable insights for leveraging AI to foster innovation-led entrepreneurship in the evolving service economy.

Keywords: Artificial Intelligence, Entrepreneurship, Innovation, PRISMA Methodology, Service Sector

Destination Management Strategies for Kandy UNESCO World Heritage Site: Lessons from Kyoto to Manage Overtourism

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World Heritage Sites are prominent tourist destinations that often experience overtourism due to their global appeal. This overconcentration of visitors poses significant threats to the sustainability of both the heritage sites themselves and the well-being of host communities. In Sri Lanka, the city of Kandy, home to the UNESCO World Heritage Site of sacred Sri Dalada Maligawa, is a prominent cultural destination currently facing increasing pressure from high volumes of domestic pilgrims and international tourists. Thus, this study aims to explore effective destination management strategies to address overtourism in Kandy by drawing comparative insights from Kyoto, Japan, a city with seventeen UNESCO World Heritage Sites, with established management practices. The research employed a two-stage methodological approach. First, a comprehensive literature review was conducted to identify common tourism-related challenges at World Heritage Sites. Second, Qualitative data were collected through semi-structured interviews with destination management professionals in Kandy and Kyoto to capture in-depth context-specific insights while reducing researcher bias. NVivo software was used for thematic coding and analysis. Findings highlight that in Kandy, the Sri Dalada Maligawa premises are particularly prone to congestion. Current management relies on a site-specific administrative body, with support from the Sri Lanka Police for crowd management and municipal authorities for waste management. In addition, the department of archaeology helps to conserve the monuments with archaeological value. In contrast, Kyoto implements a wider range of innovative strategies, such as introducing city taxes, utilizing technology for crowd forecasting, promoting lesser-known attractions, offering special express bus services for tourists, and luggage delivery to help ease congestion in central areas. The study concludes that Kandy can benefit significantly by adapting and contextualizing Kyoto's strategies. Emphasis on awareness programs, mobility planning, technological integration, and stakeholder collaboration is essential to mitigate overtourism and ensure the long-term sustainability of heritage tourism in Kandy.

Keywords: Destination Management, Kandy and Kyoto, Management Strategies, Overtourism, UNESCO World Heritage Sites

The Role of Technology in Enhancing Operational Efficiency - A Review of SME Hotels in Sri Lanka

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Sri Lankan Small and Medium-sized Enterprise (SME) hotels are one of the main economic industries and play a vital role in the economy. But they face continuing problems of inefficient operations due to limited resources, manual processes, and growing competition from bigger, technology-enabled hotel chains. Although there has been a global leap forward of digital solutions, there remains a research gap in understanding the drivers and inhibitors of technology uptake for SME hotels in Sri Lanka. The review bridges this gap by critically assessing the promise of the new technologies such as Property Management Systems (PMS), cloud-based solutions, Artificial Intelligence (AI), and the Internet of Things (IoT) to enhance operational effectiveness in SME hotel operations. The study is based on narrative literature review methodology, analyzing peer-reviewed literature between the years 2015-2024. Further, using thematic analysis under theoretical frameworks such as Technology Acceptance Model (TAM), Resource-Based View (RBV), and Dynamic Capabilities Theory (DCT). The findings highlight the technology offers SME hoteliers more valuable opportunities such as automating their routine tasks, improving guest service quality, staff satisfaction and cut operational costs. However, extensive adoption is hindered by key barriers including insufficient funding, resistance from staff or management, and gaps in digital literacy. These limitations significantly slow down the transformation process despite the availability of promising solutions. In conclusion, enhancing operational efficiency through technology in SME hotels requires more than just access to tools such as a supportive ecosystem including training, policy level encouragements, and context specific strategies. Without this, the digital transition in Sri Lankan SME hospitality will remain partial and uneven. Based on the review, several practical recommendations are proposed. These include encouraging the adoption of affordable Software as a Service (SaaS) models, investing in digital literacy training for hotel staff and management, prioritizing mobile-optimized tools for easier access and usability, and introducing targeted government incentives to support digital upgrades. These steps are essential to make the digital shift both feasible and sustainable for SME hotels in Sri Lanka.

Keywords: Digital Transformation, Hospitality Innovation, Operational Efficiency, SME Hotels, Sri Lanka, Technology Adoption

The Mediating Effect of Organizational Commitment Between Transformational Leadership Style and Employee Engagement in Hotel Industry in Sri Lanka

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Transformational leadership is becoming a major dimension in the business world, which impacts employee development and organizational performance. The leaders who have transformational leadership guide the followers to attain the goals by making changes in the systems, mindsets, and cultures. This research paper aims to address the existing research gap by evaluating the transformational leadership impact on employee engagement in the hotel industry in Sri Lanka, particularly the operational-level employees. Moreover, this study examined the mediating role of organizational commitment between transformational leadership and employee engagement. To analyze the research objectives, a quantitative research framework was used, and random sampling was adopted. This study was done by utilizing a structured questionnaire with a sample of 200 operational-level employees. The analysis included descriptive and inferential statistics adopted to present and analyze the data. The study variables were clearly defined and measured. Transformational leadership was measured by inspirational motivation and intellectual stimulation. Organizational commitment was measured using affective commitment, continuance commitment, and normative commitment. Furthermore, employee engagement was evaluated by adopting indicators such as vigor, dedication, and absorption. The study tested two hypotheses: (1) there is a positive relationship between transformational leadership and employee engagement, and (2) organizational commitment mediates the relationship between transformational leadership and employee engagement. The results confirmed that both hypotheses were accepted. It highlights that transformational leadership has a positive relationship with employee engagement. Furthermore, the variable organizational commitment mediator affects the relationship between the independent variable transformational leadership and the 3dependent variable employee engagement. These results signify that transformational leadership not only motivates employee engagement directly but also indirectly through empowering organizational commitment. The recommendations section consists of investing in leadership development programmes which enhance transformational leadership qualities as well providing a supportive work environment to motivate employee commitment and employee engagement. The current study contributed to the current body of literature by offering insights on the impact of transformational leadership and employee engagement on operational-level employees in the hotel industry in Sri Lanka. The study's findings may help other industries engage their workers more.

Keywords: Employee Engagement, Hotel Industry, Operational-Level Employees, Organizational Commitment, Transformational Leadership

Intentions and Challenges among Business Undergraduates to become Future Entrepreneurs; A Study Based on Sri Lankan Higher Institution

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Entrepreneurship education has played a vital role in shaping the entrepreneurial intentions of business undergraduates while exposing them to various challenges. This study explores how business undergraduates at a private university in the Colombo district, Sri Lanka, understand key entrepreneurial concepts. The Colombo District institute was chosen for its diverse student body and dynamic entrepreneurial environment, offering insights with broad relevance to similar educational contexts across Sri Lanka. The research provides a perception of entrepreneurship education by conducting qualitative, in-depth interviews with nine students aged between 17 and 22 years, who are geographically diverse from five different districts of the country. The data collected was analyzed using thematic analysis. Research indicates that participants view entrepreneurship not only as starting a business but also as a means of creative expression and personal fulfilment. The findings show that most undergraduates have a generally positive attitude towards entrepreneurship, shaped by their involvement in practical entrepreneurial activities and influenced by their family backgrounds. These experiences primarily reflect the participants' intentions and contribute to a deeper understanding of entrepreneurial processes. However, several challenges hinder students from pursuing entrepreneurial ventures. Key challenges include limited financial resources, fear of failure, and lack of hands-on experience. Despite the intention to become entrepreneurs, practical limitations often obstruct the path. To address these challenges, the study recommends that entrepreneurship education should go beyond theoretical instruction. Programs should integrate experiential learning opportunities, such as internships and mentorship. Enhancing financial literacy and providing psychological support to help students manage risk and build trust are also essential. This study contributes valuable insights to improve entrepreneurship education. By addressing these gaps, educational institutions can provide more comprehensive support, better preparing undergraduates for real-world entrepreneurial challenges. The study can also help create an environment that empowers aspiring entrepreneurs to confidently navigate the complexities of the business world.

Keywords: Entrepreneurial Challenges, Entrepreneurial Education, Entrepreneurial Intentions, Fear of Failure

Redesigning Talent Strategies in the Silver Economy towards Sustainable Employee Engagement: Perspectives from Human Resource (HR) Practitioners in Sri Lanka's Apparel Industry

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The concept of the silver economy depicts the continuum of economic activities related to the ageing population. Ageing population trends across the globe are redefining the global economic, social, and political landscape as nations across countries are adapting to imbalanced human pyramids. With individuals aged 50 and above projected to make up over 25% of the population by 2030, Sri Lanka is entering the era of the Silver Economy. The active workforce in Sri Lanka is predicted to be severely disrupted due to the imbalanced human pyramid because of the increasing ageing population, the decrease in birth rates, and the youth migration. The apparel sector, a highly labor-intensive industry, is the largest contributor to the workforce of Sri Lanka and is facing critical challenges in managing its ageing workforce. On the other hand, many retired apparels sector workers remain active and willing to contribute to the economy after retirement yet are often excluded from the workforce due to the HR practices of organizations. This study explores the need to redesign talent strategies to promote sustainable employee engagement in Sri Lanka's apparel sector through the lens of the ageing workforce. The study employs a qualitative research method where 20 HR practitioners from the leading Sri Lankan apparel organizations were interviewed using semi-structured interview guides. The study revealed that, irrespective of the recognition of the ageing workforce and its consequences for the industry, the Sri Lankan apparel sector has failed to develop proactive and formal strategies towards building a sustainable employee engagement model. The key HR strategies proposed by the practitioners include introducing light-duty job rotations to reduce the physical strain of employees, introducing workplace health initiatives, redesigning job roles to accommodate age-related needs of employees, implementing reskilling programmes to extend career longevity, and revising organizational HR policies to support inclusive practices.

Keywords: Silver Economy, Aging Workforce, Talent Strategies, Employee Engagement, Sustainable Workforce

The Mediating Impact of Work Autonomy on Leadership Styles and Performance of Academic Staff in The Private Higher Education Institute

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The mediating effect of work autonomy on the relationship between leadership styles and academic staff performance in Sri Lanka's private higher education institutions is explored in this study. Higher education has a crucial role to play in national development, yet educational problems still exist in Sri Lanka for which shortcomings in employer demand as well as the efficiency of the education system have been explained. Filling a gap in research, this research only examines transformational and transactional leadership styles' impact on performance of academic staff in this context, recognizing the direct impact of academic leadership on effectiveness among employees as well as institutional success. A post-positivist cross-sectional survey designed with quantitative approaches; the research conducted a comprehensive census of the entire target population of full-time academic staff to attain perfect representation and lack of bias. Data was collected using systematic questionnaires. Transformational and transactional leadership formed independent variables, job autonomy was the mediating variable, and academic staff job performance was the dependent variable. Standardized instruments like the Multifactor Leadership Questionnaire and the Five-factor Performance Scale were used. Results show that transformational leadership significantly affects employee performance through promoting self-reliance, innovation, and professional growth. Transactional leadership also affects staff autonomy and performance significantly through organized monitoring and specific instructions. More importantly, job autonomy was a pivotal mediator, which augmented motivation, creativeness, job satisfaction, and organizational commitment, all of which were positively linked to academic staff performance. The research is useful to effective leadership strategies in Sri Lanka's private sector higher education, with the implication that both leadership styles, with work autonomy being a central mediating variable, can be employed to enhance academic performance. The results carry important implications for leadership development programmes and institutional policies to drive productivity and academic quality.

Keywords: Autonomy, Leadership, Performance, Transactional, Transformational

Investigating the Determinants of Employee Stress in Remote Work Settings: A Study in Sri Lanka

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Remote work has become the norm in worldwide organizations after the COVID-19 pandemic. Despite giving more freedom and flexibility, remote work has affected employees making them stressful. The substantive recent literature review from 2012 to up to now, suggests that work-life Balance, working hours, and Organizational support, Job Autonomy and Job Insecurity have created workers more stressful, tired, lonely, and bears personal commitments. Therefore, this study intends to identify the most significant determinants among the above creating employees in home-based work arrangements in the local context and suggests possible strategies to those organizations to reduce stress among such workers. Accordingly, 300 remote workers from the Sri Lankan Information Technology sector were selected purposely as the sample and an online questionnaire was distributed for data collection. responses will then be statistically analyzed using IBM SPSS Statistics software. The results will be shown using descriptive analysis, principal component analysis, and factor analysis. Based on the results, the main sources of stress of remote IT workers will be identified, and how each stress determinants affect individuals will be determined. Accordingly, the determinants of employee stress in a remote work setting will be identified. Based on the findings, the suggestions would be sent to such organizations to reduce the work stress of workers. Hence, this study will provide insights to the Sri Lankan Organizations that working under remote work settings with the intention of creating a better, healthier, and more balanced staff, ensuring their wellbeing and performance.

Keywords: Employee Stress, IT Professionals, Remote Workers, Remote Work Setting, Stress Determinants

Impact of Work-Family Conflict (WFC) on Career Satisfaction and Employee Well-being (EWB): Buffering Role of Resilience in a Moderated Mediation Model

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Nurses working in government hospitals in Sri Lanka often experience low levels of well-being due to persistent workplace stressors (e.g., high patient volume, inadequate staff, extended work hours, limited infrastructure), which collectively contribute to chronic stress, burnout, and diminished career satisfaction. The situation is further worsened by work–family conflict (WFC) - a form of inter-role conflict that emerges when the demands of work interfere with personal lives and family responsibilities. This persistent WFC experienced by nurses weakens their career satisfaction, even though nursing is a caregiving profession which offers a strong sense of purpose and intrinsic fulfilment. This struggle to find fulfilment while balancing the demands of personal and professional roles ultimately results in eroded well-being among the nurses. However, this negative impact of WFC on career satisfaction may be buffered by individual resilience, as nurses with higher levels of resilience are better equipped to cope with the stress caused by WFC. Accordingly, the study draws on Hobfoll's Conservation of Resources Theory (COR) to develop a moderated mediation model reflecting associations. Data were collected from 330 female nurses working in government teaching hospitals in Sri Lanka using the convenience sampling technique. In the survey questionnaire, WFC was measured using the 05-item scale by Netemeyer et al. (1996), while career satisfaction was measured using the 05-item scale by Greenhaus et al. (1996). Resilience was measured using the 10-item version of the Connor-Davidson Resilience Scale, whereas EWB was measured using the 18-items by Zheng et al. (2015). Upon analyzing data using the SPSS software and the Hayes PROCESS macro (Model 07), it was found that the proposed moderated mediation model is supported by the data as hypothesized. Thereby, the study connects work-family research and career-related research fields to demonstrate how personal resources (resilience) would buffer the depletion of psychological resources due to conflict between key life domains and thereby enable the achievement of career satisfaction and well-being, even in emotionally demanding professions. Taken together, this study offers insights to individuals expecting to join the nursing profession and to the government health officials on areas of training and support that need to be arranged.

Keywords: Career Satisfaction, Employee Well-being (EWB), Moderated Mediation, Nurses, Resilience, Work-Family Conflict (WFC)

Implication of Green Knowledge Perception in the Performance of Green Entrepreneurs (Case Study of Entrepreneurs in Jaffna District)

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Global warming concerns and a rise in ecological literacy have pressed the industries and the markets to espouse eco-friendly practices to further sustainable development along the green production methods. Though nearly 20 000 new business ventures are being registered annually, the businesses that are focusing on green entrepreneurial practices are vital and significant in Sri Lanka. Green knowledge perceptions such as the emergence of eco-friendly entrepreneurial opportunities, green product knowledge, circular economical actions, sense of waste management, environmental consideration, business networks, digital entrepreneurial usage and green innovation have been designed into the green platform for the entrepreneurs in SMEs in Sri Lanka. The prime objective of the study is to highlight the positive impact of green knowledge perception on the profitability and sustainability of SMEs. This study adopts a quantitative and deductive research approach. A total of 100 entrepreneurs from small and medium-sized enterprises (SMEs) in the Jaffna district were selected using a stratified random sampling technique across nine distinct strata. Data was collected through 20 neutralized self-administered questionnaires. Profitability serves as the dependent variable, while green knowledge perceptions constitute the independent variables. A response rate of 97% was achieved, with participation from 53 male and 44 female entrepreneurs across five divisions of the district. The findings reveal that personal, social, and institutional green perceptions significantly influence green value creation among entrepreneurs. Moreover, factors such as eco-friendly entrepreneurial opportunities, green product awareness, circular economic practices, and environmental consciousness demonstrate a strong impact on SME profitability. However, the study recognizes that imparting the eco-friendly production approaches, competitive advantage in practicing the green entrepreneurial practices and the usage of digital entrepreneurship need to be familiarized. The implications of this study will support prospective business investors, emerging green entrepreneurs, and green industries in enhancing the effectiveness of their decision-making, implementation strategies, and long-term planning.

Keywords: Green Knowledge Perception, Eco-Friendly, Green Entrepreneurship

Management Perspective Regarding Factors Affecting E-Commerce Adoption in Small and Medium-Sized Enterprises in Sri Lanka

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As global commerce becomes increasingly digitized, many small and medium-sized enterprises (SMEs) in Sri Lanka struggle to keep pace with technological advances. Despite the growing relevance of online platforms for business survival and growth, e-commerce adoption among Sri Lankan SMEs remains limited. This study investigated the perspectives of SME managers and employees to uncover key factors impeding digital integration, aiming to bridge the gap between opportunity and implementation in the local context. Quantitative research design was employed, based on a positivist paradigm and a deductive approach, to provide objective and generalizable findings. Data was collected via a structured questionnaire from a demographically diverse sample comprising 50 managers, 10 entrepreneurs, and 100 employees across 25 randomly selected SMEs in the Colombo District. These participant groups offered distinct yet interconnected viewpoints on the readiness and constraints faced by SMEs in adopting e-commerce practices. The analysis revealed that high initial investment costs, fears surrounding data security and privacy, and limited access to skilled ICT professionals were significant barriers. Furthermore, cultural resistance stemming from a preference for traditional in-person transactions contributed to mistrust in digital platforms. The findings also highlighted gaps in technical literacy among employees, especially among older or less formally trained staff members, underscoring the need for targeted capacity-building initiatives. In conclusion, successful e-commerce adoption in Sri Lankan SMEs requires a multi-pronged approach involving financial incentives, robust digital infrastructure, cybersecurity enhancements, and culturally sensitive awareness programs. The study underscores the importance of tailoring interventions to the demographic realities and specific roles within SMEs. Future research could explore industry-specific adoption trends or conduct longitudinal studies to evaluate the long-term impact of support interventions on digital transformation in SMEs.

Keywords: Digital Barriers, E-commerce, Management Perspective, SMEs, Sri Lanka

Impact of Mobile Augmented Reality in E-Commerce to the Purchase Intention with Mediating Effect of Consumer Innovativeness (With Special Reference to Generation of Digital Natives in Sri Lanka)

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This study investigates the impact of Mobile Augmented Reality (MAR) in e-commerce on purchase intention, with a particular focus on the mediating effect of consumer innovativeness among digital natives in Sri Lanka. Despite the global proliferation of MAR technologies, their adoption in Sri Lanka remains nascent, primarily limited to basic applications such as QR codes. Addressing a significant research gap, this study aims to identify the relationship between MAR and purchase intention and to examine how consumer innovativeness mediates this relationship within the context of a developing country. Employing a quantitative, descriptive research design, data were collected from a purposive sample of 384 digital natives aged 20–40 years through a structured questionnaire. The analysis, conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS software, revealed several key findings. Firstly, MAR in e-commerce was found to have a positive and significant effect on consumer innovativeness, indicating that interactive and engaging MAR features can foster innovative behavior among consumers. Secondly, consumer innovativeness demonstrated a strong positive relationship with purchase intention, suggesting that individuals who are more open to innovation are more likely to intend to purchase products when exposed to MAR technologies. However, the study found no significant direct relationship between MAR and purchase intention. Instead, consumer innovativeness was shown to mediate the relationship between MAR and purchase intention, highlighting its crucial role in translating technological engagement into purchasing behavior. These findings offer valuable theoretical and practical implications for e-commerce businesses and policymakers in Sri Lanka, emphasizing the importance of leveraging MAR to stimulate consumer innovativeness and, consequently, enhance purchase intentions. The study also provides a foundation for future research on MAR adoption in similar developing contexts.

Keywords: Consumer Innovativeness, Digital Natives in Sri Lanka, E-Commerce, Mobile Augmented Reality, Purchase Intention

Awareness of Microfinance services and Small and Medium Enterprises (SMEs) performance: Special reference SMEs in Badulla District

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This study explores the impact of microfinance service awareness on the performance of Small and Medium Enterprises (SMEs) in Sri Lanka's Badulla District. SMEs are vital contributors to national economic growth, especially in developing countries like Sri Lanka, where they provide employment, reduce poverty, and foster innovation. Despite their importance, SMEs often struggle due to limited financial access and low financial literacy. Microfinance services can bridge this gap by offering accessible financial tools, yet awareness and effective utilization remain inconsistent across regions. This research aims to examine how awareness of microfinance services, along with financial accessibility and financial literacy, influence the overall performance of SMEs. A quantitative methodology was applied, collecting primary data through structured questionnaires from a sample of 327 SME owners, selected based on the Morgan Table from a population of 2,185 enterprises. Descriptive statistics and Structural Equation Modeling (SEM) were used to analyze the data. Findings reveal a significant positive relationship between SME performance and awareness of microfinance services. Financial accessibility serves as a mediating factor, while financial literacy acts as a moderator in strengthening this relationship. The study highlights that SMEs with higher awareness and financial competence are more likely to access microfinance and achieve superior performance in terms of sales, asset growth, and employment generation. This research contributes theoretical insights and practical implications for policymakers, microfinance institutions, and SME stakeholders, emphasizing the need to promote financial education and expand microfinance awareness to enhance SME sustainability and regional economic development.

Keywords: Badulla District, Financial Accessibility, Financial Literacy, Microfinance, SME Performance

An Empirical Study on Factors Affecting Non-Managerial Employee Turnover in Hotel Industry in Sri Lanka, Special Reference to Kandy District

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Employee turnover is a critical issue in the hotel industry, particularly in Sri Lanka, where the hospitality sector plays a significant role in economic development and employment generation. This study aims to identify and analyze the key factors contributing to high non-managerial employee turnover in five-star hotels within the Kandy District. The research was motivated by increasing turnover rates, which impact on service quality, operational efficiency, and organizational profitability. The study adopted a quantitative approach, collecting primary data through structured questionnaires distributed to 160 non-managerial employees across five selected five-star hotels: Mahaweli Reach, Earl's Regency, The Grand Kandyan, The Golden Crown, and Jetwing Kandy Gallery. Key variables explored include working environment, compensation, career development, supervisor support, work-life balance and HR practices. Statistical analysis using SPSS revealed significant correlations between these factors and turnover intention. Multiple regression results indicated that compensation ($\beta = 0.750$, $p = 0.000$), supervisor support ($\beta = 0.736$, $p = 0.000$), work-life balance ($\beta = 0.731$, $p = 0.000$), career development ($\beta = 0.715$, $p = 0.000$), working environment ($\beta = 0.695$, $p = 0.000$), and HR practices ($\beta = 0.722$, $p = 0.000$) with the model explaining 72.4% of the variance in turnover intention ($R^2 = 0.724$). The study concludes that addressing these factors through competitive remuneration, improved work-life balance, enhanced supervisor support, and structured career development paths can significantly reduce turnover rates. These findings provide actionable insights for hotel management and policymakers to strengthen employee retention strategies, thereby safeguarding service quality, operational efficiency, and long-term profitability in the Sri Lankan hospitality sector.

Keywords: Employee Turnover, Hotel Industry, HR Practices, Non-Managerial Employee, Sri Lanka

An Empirical Study on the Factors that Affect the Retention of the Millennials in the Accounting Industry.

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Sri Lanka has emerged as an attractive destination for the Business Process Outsourcing (BPO) industry due to cost arbitrage, availability of skilled labor, and growing global demand for outsourced services. Similar to other Asian countries such as India and Bangladesh, Sri Lanka offers competitive labor costs, encouraging international firms to outsource core and support functions to local BPO providers. As a result, the number of BPO companies in Sri Lanka has increased significantly over the past decade. These firms provide employment opportunities for both fresh graduates and school leavers, many of whom belong to the millennial generation, which currently dominates the workforce. To maintain lower production costs and service quality, BPO companies rely on experienced and specialized employees while also focusing on workforce retention. This study specifically examines accounting and financial BPO firms in Sri Lanka, which offer services including bookkeeping, payroll processing, budgeting, financial reporting, tax preparation, compliance, and business consulting. The firms selected for this study are BPO CONNECT and ACCARIO, both operating under DragonX Pty Ltd. Over the past fourteen years, these firms have expanded from small operations serving Australian clients to employing over 300 staff across Colombo and Kandy, with clients in the United Kingdom, Singapore, Hong Kong, and New Zealand. Millennials, born between 1979 and 1994, represent the majority of employees in these organizations and are expected to dominate the labor market for decades. Given the limited level of automation in Sri Lanka's accounting sector, strong human capital remains essential. Consequently, this study aims to examine millennial characteristics and identify factors that contribute to their retention, enabling accounting BPO firms to sustain workforce stability and meet increasing global market demands effectively.

Keywords: Millennials, BPO, Human Capital, Accounting Industry, Retention, Outsource.

An Empirical Study on the Effects of the Digital Banking, Online Banking, Electronic Banking (E-Banking) as well as the Mobile Banking Service Quality and Customer Satisfaction in the Banking Industry Innovation System in Sri Lanka and Overseas.

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This study focuses on the Digital banking, Electronic banking (E-Banking), Online banking in other words the Mobile banking has become a significant method of the consumer interaction and also adding dynamics to the banking system is essential if banks are to remain competitive in the international banking market. Hence with the advent of mobile banking services, customer desire for personalized services has skyrocketed. Today, the key component of the consumer happiness is the service quality, particularly with the rapidly expanding trend of online commerce. Countries are still trailing behind in the implementation and the use of mobile banking services, despite the tremendous rise of the mobile banking globally. The impact of the quality of the mobile banking services offered by the top banks in Sri Lanka and overseas on customer satisfaction is examined as well as analyzed in this research. The purpose of the study was to determine how the SERVPERF dimension which was also based on the SERVQUAL model, Sri Lanka's mobile banking business influences the customer satisfaction. The customer satisfaction was included as an independent variable and the other four SERVPERF model the dimensions namely- tangibility, reliability, empathic responsiveness as well as the security were treated as the dependent variables. In order to do this, a questionnaire was created and sent by simple comfortable sampling to 133 consumers that use mobile banking services across the globe taking the sample of people living in different continents in the global world. With the aid of the SPSS application, the results were analyzed. The results showed that the customer satisfaction in Sri Lanka was significantly positively correlated with four aspects of service quality: tangibility, reliability, empathy as well as security. However, there is no meaningful correlation between the responsiveness component and the mobile banking in Sri Lanka. Therefore, it is crucial for banks to concentrate on the five service quality dimensions since they have been shown to be important markers of the client satisfaction.

Keywords: Mobile Banking, Online Banking, Digital Banking, Electronic Banking, Service Quality, Customer Satisfaction in banking industry innovation system in Sri Lanka and overseas.

ABSTRACTS | THEME EDUCATION

Enhancing Creative Writing Skills Through Computer-Generated Imagery: A Study on Intermediate Learners

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The Examination Department and the Ministry of Education (MOE) have attributed the low results of the General Certificate of Education Ordinary Level (GCE O/L) examination to poor performance in the composition section. To address this issue, the current study explores the potential of using computer-generated imagery (CGI) as a tool to enhance creative writing skills. It aims to identify the effectiveness of computer-generated imagery (CGI) over conventional methods in improving creative writing skills of secondary school students by employing a pre-test–post-test experimental design with 60 Grade 10 L2 writers from a semi-government boys' school in Colombo. The participants were assigned randomly to two groups: the experimental group (n = 30), which completed six in-class narrative writing assignments with the assistance of computer-generated imagery (CGI), and the control group (n = 30), which completed the same assignments through conventional teaching supported by still pictures. In conjunction with the writing tasks, participant surveys and teacher interviews were conducted to triangulate findings and inform an understanding of learner perception and pedagogical success. A paired sample t-test revealed that computer-generated imagery groups experienced statistically significant writing gains in their individual writing over the participants in the still picture-led group. Participant survey results showed that the L2 writers in the computer-generated imagery group valued the in-class writing tasks using CGI. The teachers' perceptions also indicated the importance of CGI in promoting student-centered learning, noting its potential to motivate learners by stimulating original ideas and plot development, thereby facilitating the creation of meaningful written narratives, as it can motivate learners for language learning by generating original ideas and plots to create meaningful writing tasks. The study indicates that computer-generated imagery (CGI) has the potential to be an effective aid in creative writing skills among intermediate learners. This has direct implications for educators, who can incorporate CGI into lesson plans to engage students and promote creativity in writing.

Keywords: Computer-Generated Imagery, Creative Writing, Intermediate Learners, Secondary Level, Still Picture Group

Promoting Reflective Practice among English Pre-service teachers, by supporting them to develop teaching skills, during practicum

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Reflection is a life practice carried out by every human being, advertently or inadvertently. It is also a key element in teacher education programs around the world, though in the local context, it is given less prominence as it is not considered practically and only in theory. Hence, its full potential has yet to be explored, and this study made a small effort in trying to fill a gap that exists in relation to the practical aspect of reflection. Pre-service second language English teachers find reflection extremely challenging, as their English language, which is the medium they are expected to use, remains at a very low level. Therefore, reflective journal writing has a dual purpose. It was used to develop their writing skill as well as support them to be involved in reflection. This study was carried out qualitatively and several data collecting methods were used. It was carried out with 12 pre-service teachers in their first block teaching practice. Qualitative methods such as a reflective tool which contains 25 questions was used, which was prepared locally and tried out several times with pre-service teachers on previous occasions, a check list that would assist peer observers to observe and comment on their colleagues' teaching, video recorded lessons that would further assist in self-reflection, supervisor's comment on the lesson observed. All the data collected from these methods help to get the findings from different angles, so the action points of the student teachers are analyzed and double-checked using triangulation of data; so that similar action points are coming up from all the methods. Lesson observation and supervisor comment confirmed how far the action points are being addressed. Video recorded lessons give further assurance and support to say how far what comes out of the documentary evidence could be justified.

Keywords: Reflective Practice, Teaching skills,

Impact of Task-Based Language Teaching (TBLT) on the Development of English Essay Writing Skills among Secondary School Students in Sri Lanka

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This study investigates the impact of Task-Based Language Teaching (TBLT) on developing English essay writing skills among secondary school students in Sri Lanka and addresses longstanding challenges that students face in mastering written English for academic progression and eventual career advancement. A quasi-experimental design using a quantitative method was used to compare the TBLT-based instructional approach with a traditional teacher-centered approach, where 80 Grade 6 students from a national school in Welimada were purposively assigned to either an experimental or control group. Students in the experimental group engaged in various TBLT activities such as brainstorming, group discussions, writing, peer review, and reflective exercises, while they received pre- and post-tests on five components of essay writing: content, organization, discourse, vocabulary, and mechanics. Additional qualitative methods were used to collect data through teacher observation and student feedback. Results showed a statistically significant improvement in writing performance in the experimental group. The gains were particularly marked in essay structure, consistency, and use of vocabulary. In addition, students showed increased self-confidence and engagement, while teachers reported increased cooperation and interaction in the classroom. These results indicate that the TBLT is a practical and effective strategy to improve language learning. Despite some difficulties in teacher training and the availability of resources, the study concluded that the inclusion of TBLT in secondary school curricula could lead to a meaningful improvement in English writing skills. It recommends further professional development and support mechanisms to optimize implementation.

Keywords: English Essay Writing, English Language Instruction, Quasi-Experimental Design, Secondary School Students, Sri Lanka, Task-Based Language Teaching

Diasporic Narratives and Global Perceptions of Sri Lanka: A Comparative Study of *Anil's Ghost*, *Funny Boy* and *Suncatcher* with a Cultural Representation in English Language Education

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Diasporic literature forms global insights of Sri Lanka's socio-political landscape after colonialism and civil war. The paper undertakes a qualitative textual analysis of *Anil's Ghost* - Ondaatje, 2000, *Funny Boy* - Selvadurai, 1994, and *Suncatcher* - Gunasekaran, 2019, investigating themes of identity, trauma, displacement, and hybridity within Sri Lankan diasporic narratives. Drawing on Postcolonial Theory, Diaspora Studies, and TESL pedagogy it discovers how these texts reflect Sri Lanka's socio-political history and migration experiences. Additionally, this analysis emphasizes their worth in Teaching English as a Second Language (TESL), representing how literary techniques such as metaphors and imagery can promote intercultural understanding, critical literacy, and communicative ability within the Communicative Language Teaching (CLT) framework. These writings provide different perspectives on the individual and communal hardships faced by Sri Lankan populations, demonstrating how memory, trauma, and identity negotiations shape postcolonial discourse. The study highlights the value of diasporic literature in TESL for improving intercultural literacy, linguistic diversity, and critical thinking. The results indicate that integrating diasporic narratives into TESL curricula improves students' involvement with world Englishers, socio-political issues, and cultural hybridity. The paper links diaspora narratives to language learning, urging future TESL research to assimilate South Asian diasporic literature for richer linguistic and cultural understanding.

Keywords: Cultural Hybridity, Diasporic Narratives, Multilingualism, Postcolonial Identity, Sri Lankan Literature, TESL

The Effectiveness of the Interactive Whiteboards on the Development of Aural and Oral Skills of Second Language Learners of English

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The study examined the "Effectiveness of Interactive Whiteboards (IWBs) on the development of the aural and oral skills of second language learners of English". It investigated how IWBs influence student engagement, proficiency and classroom interactions to identify effective diverse learning approaches. Utilizing a mixed-method approach with quantitative and qualitative data, 80 students (40 in the experimental group and 40 in the control group) were selected from a pool of 350 learners. Data collection included a pre-test and a post-test, questionnaires, interviews, observations and focus group discussions. Findings revealed that IWBs significantly improved students' aural and oral skills, promoting interactive and engaging learning environments that enhanced participation. Teachers reported positive attitudes, remarking on IWBs' potential to make lessons more dynamic and effective. However, challenges such as individual differences in motivation and technical issues were identified affecting the consistency and accessibility of technology integration. This research highlighted the importance of integrating IWBs into language instruction, technical support and comprehensive teacher training to ensure successful adaptation and offering insights into maximizing classroom practices. Overall, the research highlighted the value of IWBs into language instruction and offered practical insights into enhancing English language proficiency through technology.

Keywords: Aural and Oral skills, Diverse learning approaches, Interactive Whiteboard, Language proficiency, Mixed-method approach, Second language learners, Technology in education

An Investigation of Challenges Faced by English as a Second Language (ESL) Teachers During The E-Learning Process for Primary Grades

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E-learning, which started out as a survival strategy for continuing education during COVID-19, is now a popular trend. Hence, this study provides a better understanding of the challenges experienced by Sri Lankan ESL teachers throughout the E-learning process for primary grades. Further, this study becomes relevant since no other studies have been undertaken on the subject, and because the rising popularity of E-learning in all types of educational settings will continue in the future. Most significantly, the final recommendations of this research will assist all ESL teachers who work with primary pupils. The study was undertaken at a leading National School in Sri Lanka, with the participation of 5 ESL teachers and 5 primary school teachers. The investigation was structured within the framework of pragmatism, the approach was inductive and used a mixed method to gather data from non-participant observations, semi-structured questionnaire surveys, student performance records, and in-depth interviews. Consequently, the restricted capacity to utilize mother tongue during ESL classes, the inability to pay particular attention and support for remedial students, the use of the same learning-teaching tools used in physical classrooms even in virtual classrooms, the absence of well-designed ESL learning-teaching material for E-learning, the involvement of a large number of students at once, and the inability to teach a number of lessons during a single E-learning session, lengthy duration of ESL sessions, insufficient time for additional preparations for ESL E-learning sessions, and poor student involvement; were identified as the significant challenges faced by Sri Lankan ESL teachers who teach primary grades when compared to other primary teachers. Ultimately, based on the reviewed literature and data analysis, Jerome Bruner's Discovery Learning Theory and Rand Spiro's Cognitive Flexibility Theory were identified as applicable remedies, capable of addressing the challenges faced by Sri Lankan ESL teachers who teach primary grades.

Keywords: Challenges, COVID-19, E-learning, ESL Teachers, Primary School Teachers

Review studies related to quality learning based on metacognition in Sri Lanka

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The Government of Sri Lanka has identified the development of a high-quality education system aligned with the demands of the 21st century as a national priority. However, due to the ongoing economic crisis, only approximately 2% of the national Gross Domestic Product (GDP) has been allocated to the education sector. In this context, it is essential to prioritize cost-effective research initiatives aimed at enhancing educational quality. The cultivation of 21st-century skills such as creative and critical thinking, problem-solving, decision making and adaptive learning is fundamental to achieving future national development goals. A key psychological construct that supports these skills is *metacognition*, which refers to individuals' awareness and regulation of their thinking processes. Although metacognition has been widely studied internationally in relation to learning quality, research in the Sri Lankan context remains limited. The primary objective of this study was to review existing research on metacognition in Sri Lanka with the aim of enhancing learning outcomes and to propose future directions for research in this area. Data for the study were collected using documentary analysis and survey methods. The findings indicate that metacognitive strategies enable learners to regulate their knowledge, manage time efficiently, and apply appropriate learning strategies. Assignments were identified as a particularly effective tool for fostering metacognitive development. Moreover, the use of metacognitive strategies was shown to significantly enhance student achievement. While most students engaged in self-evaluation practices, they employed a limited range of alternative strategies. These findings suggest that the integration of metacognitive strategies into educational practices holds considerable potential for improving learning quality in Sri Lanka.

Keywords: Metacognition, Quality learning

Industry Expert's Expectations on the Higher-Order Cognitive Skills of Information Technology (IT) Graduates in Sri Lanka

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Higher-Order Cognitive Skills (HOCS) such as critical thinking, adaptive problem solving, analytical analysis, creativity, and metacognition are essential for the success of Information Technology (IT) projects. IT professionals are engaging with digital transformation such as artificial intelligence, cybersecurity, cloud computing, big data analytics and Internet of Things. It's critically important to use higher order cognitive skills to enable the ability to solve complex problems, adapt to rapidly evolving technologies, and drive innovation. The primary objective of this study is to explore the industry expert's expectations on HOCS among current IT graduates in Sri Lanka. A quantitative approach was used in this study. Data were collected from randomly selected thirty registered IT companies in Sri Lanka Association of Software and Service Companies (SLASSCOM). The survey questionnaire focused on who can integrate theoretical knowledge with strategic thinking to design innovative solutions, critically evaluate alternative technologies, and address ethical, security, and user-experience considerations in complex system environments. The findings reveal that there is a gap between the expected level and the existing level of HOCS which are required by the modern IT workforce such as problem solving, critical analysis, and innovative thinking. Although Sri Lankan IT graduates often possess strong programming skills, many exhibit low cognitive skills when dealing with real world scenarios. This study also identifies key challenges such as struggle to evaluate scalability trade-offs, working under uncertainty, and optimizing design to meet client's requirements. Furthermore, the capacity of graduates for independent judgment, evaluative reasoning, and adaptive learning remained below industry expectations. Finally, this research reveals that the necessity for aligning industry expectations to ensure graduates are equipped with strong HOCS to fulfill real requirements accompanied by more integrated, experiential, and problem-based learning approaches in IT education in Sri Lanka.

Keywords: Higher-Order Cognitive Skills (HOCS), IT Education IT Graduates, IT Professionals

Healthy Eating: Exploring Dietary Habits and Influences among 11–12-Year-Olds in Sri Lanka

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Healthy food habits play a vital role in shaping the well-being of school children, influencing their long-term health outcomes. This study focuses on understanding the food habits and perceptions of healthy eating among children aged 11-12, a pivotal age group in the development of lifelong dietary behaviors. Adopting a mixed-methods research design, the study administered a survey method to collect data from a sample of 300 school children in a school setting to assess dietary patterns, food preferences, and knowledge of healthy eating. In addition, data was collected through structured observations, and interviews with the selected 30 participants and their teachers and parents, providing a comprehensive insight into daily practices. Data was analyzed using descriptive and inferential statistics and triangulation method to identify trends, correlations, and significant factors influencing food choices. The findings reveal that although 53% of children are aware of the importance of healthy eating, their dietary practices often do not align with nutritional recommendations. Factors such as peer influence, availability of unhealthy food options, and limited access to nutritious meals at home and school were identified as key barriers to adopting healthier habits. Furthermore, the study indicates the role of parental guidance and school-based nutrition education strategies such as school gardening programmes, health and nutrition clubs, peer education programmes, nutrition-themed games and competitions and nutrition awareness campaigns, in shaping children's perceptions and behaviors related to food. The implications of this study emphasize the need for comprehensive interventions that address both individual and environmental factors influencing children's food choices. Schools, families, and policymakers are encouraged to collaborate in creating supportive environments that promote healthy eating through education, accessible nutritious options, and policies that discourage the consumption of unhealthy foods. Thus, schools as a system have the potential to make lasting improvements, ensuring a healthy school environment around Sri Lanka for the betterment of children's short- and long-term health.

Keywords: Child Nutrition, Dietary Behavior, Mixed Methods Research, Parental Influence, School Health, Sri Lanka

Examining the Impact of Teacher Professional Development on the Implementation of Blended Learning in Sri Lankan Schools

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This study investigates the impact of teacher professional development (TPD) on the implementation of blended learning (BL) in Sri Lankan schools, drawing on secondary data from existing literature. Blended learning, a pedagogical approach that integrates traditional classroom teaching with online learning platforms, has the potential to provide students with a flexible and personalized learning experience. However, the effective implementation of BL in schools depends largely on teachers' readiness to adopt new technologies and pedagogical approaches. As a result, TPD programs play a pivotal role in equipping educators with the necessary skills and knowledge to integrate BL into their teaching practices. Through a systematic review of existing literature, this study examines the role of TPD in supporting teachers to overcome the challenges of implementing BL. The review draws from research conducted in Sri Lanka as well as other countries that have introduced blended learning initiatives. The analysis reveals several key factors influencing the effectiveness of BL, including the availability of adequate digital resources, the digital divide, and the level of teacher support. Resistance to change and insufficient professional development opportunities also emerge as significant barriers to the successful adoption of BL in classrooms. The findings suggest that professional development programs need to be contextually relevant, sustained over time, and aligned with the specific needs of teachers. Moreover, incorporating hands-on, peer-supported learning activities into TPD initiatives can significantly enhance teachers' ability to implement BL effectively. This study offers recommendations for strengthening the TPD framework in Sri Lanka, advocating for ongoing, accessible, and practical training to enable teachers to integrate technology seamlessly into their teaching practices. By addressing these gaps, this research aims to promote the widespread adoption of BL and improve teaching and learning outcomes in Sri Lankan schools.

Keywords: Blended Learning, Educational Technology, Teacher Professional Development, Teacher Training Programs

The Impact of Teachers' Job Satisfaction on the Teaching and Learning Process in Government Schools of Sri Lanka

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Teacher job satisfaction is a critical yet often under-examined factor influencing the quality of education in Sri Lanka's government schools. Despite ongoing efforts to improve student achievement, a clear understanding of how teachers' job satisfaction affects teaching and learning outcomes remains a gap in educational research. This study investigates the relationship between teacher satisfaction and the effectiveness of the teaching and learning process in various school settings. Using a qualitative methodology, data were collected through structured questionnaires and attitude scales from a sample of 40 teachers across four types of government schools (1AB, 1C, Type 2, and Type 3) in the Colombo District. The findings revealed that high levels of job satisfaction fueled by manageable workloads, supportive leadership, professional development opportunities, and positive peer relationships contributed significantly to enhanced instructional quality and student performance. Teachers reporting greater satisfaction displayed stronger commitment, improved classroom management, and more effective teaching strategies. Furthermore, the study identified notable differences in job satisfaction based on school type and gender. Teachers in well-resourced schools reported higher satisfaction, while male and female teachers experienced satisfaction differently due to diverse expectations and responsibilities. These findings highlight the importance of fostering equitable and supportive work environments for educators. In conclusion, enhancing teacher satisfaction is essential for improving teaching quality and student achievement. Educational policymakers and school administrators are urged to implement evidence-based strategies that prioritize teacher well-being, address gender-based needs, and promote professional growth to strengthen the educational system in Sri Lanka.

Keywords: Gender Differences, School Environment, Student Achievement, Teacher Job Satisfaction, Teaching Quality

The Role of Teaching Materials in Enhancing Mathematics Achievement of Students in Government Schools

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This study investigated the impact of teaching aids on mathematics achievement among Grade 7 and 8 students in government schools within the Kelaniya Educational Zone of Sri Lanka. This zone was purposefully selected due to its diverse student population, range of school resources, and the observed performance gap in mathematics, which provides a relevant context for exploring the effectiveness of teaching materials. Grades 7 and 8 were targeted as they form a critical transitional period in mathematics learning where foundational concepts become more abstract and challenging for students. Driven by persistent difficulties in student comprehension and the recognized potential of instructional materials to bridge theoretical and practical knowledge, the study adopted a mixed-methods approach. Quantitative data were collected through structured questionnaires administered to a stratified random sample of principals, teachers, and students, while qualitative data were gathered through interviews and case studies to gain in-depth insights. The findings revealed that the use of teaching aids particularly visual, interactive, and hands-on materials significantly enhanced student engagement, conceptual understanding, and overall academic performance in mathematics. These materials simplified abstract concepts, encouraged active participation, and contributed to more dynamic and learner-centered classrooms. Nonetheless, challenges such as limited access to modern technological tools, infrastructural deficits, and inadequate teacher training were identified as barriers to optimal implementation. In conclusion, the integration of innovative, technology-driven instructional materials, supported by continuous professional development for teachers and systemic reforms in curriculum design, is essential to improve mathematics outcomes. The study not only informs policymakers and educators on enhancing mathematics instruction but also emphasizes the importance of equitable access to resources. Future research should explore long-term effects of teaching aid interventions and assess their scalability across different educational zones and grade levels.

Keywords: Government Schools, Instructional Materials, Mathematics Achievement, Student Engagement, Teaching Aids

Educational Improvement of Primary School Children Living in Urban Slum Communities in the Colombo District of Sri Lanka

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This study aimed to investigate the educational achievement of primary school children living in urban slum communities in the Colombo District of Sri Lanka. These children faced multiple barriers to learning due to poverty, overcrowding, inadequate sanitation, and limited access to educational resources, all of which negatively affected their academic performance. Recognizing education as a basic human right and a key instrument for social mobility, the study sought to identify key challenges and implement practical, context-specific interventions to improve learning outcomes. A mixed-methods research design was employed, collecting both qualitative and quantitative data through surveys, interviews, and direct observations. Participants included students, teachers, and parents residing in urban slums. The research explored critical factors influencing academic achievement, such as the quality of teaching, classroom environment, parental involvement, and socio-economic constraints. It also involved an evaluation of existing school facilities and teaching strategies to assess their relevance and effectiveness for children from disadvantaged urban backgrounds. The findings highlighted the importance of community participation, teacher development, and culturally responsive pedagogy in promoting better educational outcomes. The study revealed that increasing teacher capacity, strengthening parental awareness, and improving the availability of learning resources significantly enhanced student motivation, attendance, and academic performance. Moreover, the study emphasized the need for inclusive educational policies that support these improvements in a sustainable manner. In conclusion, this research provided valuable insights and actionable recommendations for educators, policymakers, and community stakeholders committed to addressing educational disparities. It advocated for collaborative efforts among schools, families, and local organizations to ensure equitable and quality education for children living in Colombo's urban slum areas. The outcomes of the study supported long-term strategies to bridge the educational gap and promote social inclusion.

Keywords: Educational Achievement, Educational Equity, Primary Education, Urban Slum Children

The Role of Male Teachers in the Social and Emotional Development of Students in Sri Lankan Schools.

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The presence and role of male teachers in Sri Lankan schools have long been a subject of limited but increasingly important inquiry, particularly concerning their influence on students' social and emotional development. This desk-based research critically examines existing literature to explore the multifaceted contributions of male educators in shaping student well-being, interpersonal competencies, and emotional regulation within the Sri Lankan educational context. The study is motivated by observed gender imbalances in the teaching workforce especially at the primary and lower secondary levels and the broader implications of these disparities for holistic student development. Drawing on theoretical frameworks from developmental psychology, gender studies, and education sociology, the research synthesizes findings from both local and international studies published between 2000 and 2025. Methodologically, the study employs a qualitative approach to literature analysis, using thematic synthesis to identify recurring patterns, challenges, and opportunities concerning male teachers' roles. It assesses how male teachers may serve as role models, mentors, and agents of emotional support, particularly for boys navigating identity formation in a patriarchal society. The review also investigates the barriers male teachers face in establishing nurturing roles due to prevailing gender stereotypes, institutional expectations, and cultural constraints that often associate caregiving and emotional labor with femininity. Particular attention is given to how male teachers' presence may impact gender norms, peer relationships, classroom behavior, and emotional literacy among students. The study further examines policy gaps, teacher training curricula, and school culture that either facilitate or hinder the emotional engagement of male educators in the classroom. The findings underscore the necessity of a more gender-balanced teaching force and the strategic positioning of male teachers as key contributors to emotionally supportive learning environments. The research concludes with recommendations for policy interventions, inclusive teacher recruitment strategies, and professional development programs that enable male teachers to fully engage in the social-emotional dimensions of teaching, thereby enhancing educational equity and student well-being in Sri Lanka.

Keywords: Emotional development, Gender roles in education, Male teachers, Sri Lankan schools, Social development, Teacher-student relationships

Breaking the Sound Barrier: English Listening Challenges faced by Sinhala and Tamil Speaking Students in Sri Lanka

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English has become more than just a language- it's a passport to global connection, academic success, and career advancement. In Sri Lankan classrooms where students speak Sinhala and Tamil as their first languages, learning English often comes with many challenges- especially in listening, pronunciation, and grammar. This study looks at how listening activities can help improve these skills among students learning English as a Second Language (ESL). This study is based on a qualitative approach, combining a literature review with classroom observations. Recent studies highlight that second language learners often face significant challenges in comprehending fast-paced speech, processing unfamiliar accents, and recognizing grammatical structures during listening tasks. These issues are particularly acute in ESL contexts where exposure to authentic spoken English is limited. In the South Asian context, research by Perera and Fernando further highlights the limited classroom time devoted to listening practice and the dominance of rote-learning approaches, which do not prepare learners for real-world listening tasks. These challenges often result in weak pronunciation and incorrect sentence formation. However, observations show that regular and meaningful listening activities, such as exposure to dialogues, stories and classroom discussions, positively influence student's ability to internalize correct sentence patterns, vocabulary, and natural speech rhythm. Academic sources emphasize that listening provides contextual input that strengthens grammatical awareness and improves pronunciation without isolated rule-based teaching. This paper argues that listening is not just a passive skill but a foundation for overall language development. Integrating listening-based methods in ESL instruction helps learners overcome language barriers while boosting classroom participation and confidence. Finally, the findings highlight that need for more focused listening strategies in multilingual ESL classrooms to ensure inclusive and effective language learning.

Keywords: Classroom observation, English language proficiency, Listening comprehension, Multilingual learners

Online Education and Mental Well-being of the Younger Generation

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For millions of young people, the COVID-19 epidemic changed their educational experiences by hastening the worldwide transition to online learning. Although this change has increased flexibility and accessibility, it has also sparked worries about the long-term implications on students' mental health who are between the ages of 11 and 22. With an emphasis on stress, anxiety, depression, and social isolation, this study examines the connection between prolonged online learning and mental health. It also looks at the pressing problem of online child abuse and exploitation in digital learning environments, including child sexual abuse material (CSAM), grooming, sex trafficking, cyberbullying, and predatory behaviors. The study will employ a mixed-methods approach, combining qualitative focus groups to examine individual experiences, coping mechanisms, and perceptions of support networks with quantitative surveys to gauge mental health indicators and educational participation. Representation across socioeconomic, regional, and educational backgrounds will be guaranteed by stratified random sampling. The study aims to: (1) evaluate the effects of extended online learning on mental health; (2) investigate relationships between psychological well-being and learning engagement; (3) look into inequalities based on socioeconomic status and technology access; and (4) create practical suggestions for educators, institutions, and policymakers. Comprehensive study findings, specific policy suggestions, and training modules for teachers to better assist kids' mental health in online settings are among the anticipated results. This research attempts to direct the development of healthier, more encouraging educational models by tackling the interconnected issues of digital learning and online safety. The results, which highlight the significance of striking a balance between technical innovation and the psychological demands of the younger generation, will aid in post-pandemic education reform. In the end, our initiative aims to guarantee that online learning environments protect and enhance mental health in addition to facilitating academic success.

Keywords: Adolescent Mental Health (AMH), Cyberbullying and Online Exploitation (CAOE), Digital Learning Environments (DLE), Post-Pandemic Education Reform (PPER)

ABSTRACTS | THEME SOCIAL SCIENCES

Developing Kosovo Advisory Opinion; A Study of the Impact of Amici Briefs of States towards the Restoration of Justice

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This examination delves into the growth of the advisory opinion put forth by the International Court of Justice concerning the unilateral declaration of independence in respect of Kosovo, with an emphasis on the details obtained from the written briefs submitted by amicus states. Solicited upon the request of the United Nations General Assembly on 8 October 2008 (Resolution 63/3), the international court of justice delved into the legal ramifications of the question of "Is the unilateral declaration of independence by the Provisional Institutions of Self-Government of Kosovo in accordance with international law. This article scrutinizes the substantial impact of the written submissions of various states on the advisory process of the Court. The literal approach and international and comparative methodologies were adopted to analyze the primary and secondary qualitative data related to the case study. In this regard, forty-four (44) amicus submissions were considered where two submissions were excluded from the analysis as those briefs were forwarded to the Court, by a union of states and a state which directly involved in the dispute, particularly, Libyan Arab Jamahiriya and Serbia. Through the provision of historical context, intricate legal reasoning, and diverse viewpoints on decolonization and self-determination, these submissions enhanced the Court's discussions and molded its final viewpoint. The research accentuates how the contributions of states led to a more thorough and well-informed comprehension of the intricate legal matters at stake. This advisory opinion on the Kosovo matter emerges as a pivotal example, illustrating the influence of cooperative state inputs on the decision-making mechanism of the International Court of Justice. The conclusions underscore the significance of state-authored submissions in enriching the credibility, inclusiveness, and depth of the advisory opinions of International Court of Justice, consequently fostering the advancement of international law.

Keywords: Advisory opinion, Amicus briefs, International Court of Justice, International Law, Kosovo

An Exploration of the Role of Buddhist Environmental Meditation in Youth Development: A Case Study from Sri Lanka

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This study focuses on Buddhist environmental meditation as a youth development approach in Sri Lanka. The research attempts to discover how nature-based meditation can instigate youth involvement in ecological sustainability and enhance their mental and emotional well-being. Adopting a qualitative case study approach, data were collected by employing purposive sampling via focus group discussions, semi-structured interviews, and participatory observations among undergraduate youth from the University of Peradeniya. The findings illustrate that adapted meditative interventions, including mindful walking, ecological loving-kindness meditation, and contemplative gardening, successfully reduce stress and climate anxiety in young people while promoting an enhanced sense of environmental stewardship. Additionally, the use of programmed features that provide flexibility, including interactive peer group sessions, mobile apps, and social media engagement, was found to be effective for increasing engagement, especially for urban young people who are less responsive to traditional, structured programmes. Environmental settings of urbanization, nature-deficit experiences, and climate worries were found to influence youth responsiveness to meditation-based interventions. The research suggests the development of university and school-based meditation clubs, temple-based environmental education programmes, and online guided meditation websites with the theme of ecological well-being. These initiatives are suggested to close the gap between traditional wisdom and contemporary environmental issues. The study concludes by suggesting longitudinal studies to assess the long-term effect of such interventions on youth behaviour and ecological citizenship.

Keywords: Adolescent wellbeing, Buddhist ecology, Environmental engagement, Sustainability, Youth meditation

The Role of Women in Rituals and Ceremonies: An Exploration of Patriarchal Influences in Religious Practices Relating to Buddhist Temple Culture

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While there are points within Buddhism to respect the principles of equality and compassion, the practical implementation is problematic. This study seeks to examine how patriarchal influences shape and affect participation and representation in rituals, customs, and ceremonies within the context of the Buddhist temple culture. The main objectives of this study are to identify the downgrading of women in the culture of Buddhist temples, to examine patriarchy fostered by contradictions in Buddhist culture and to identify patriarchal socialization under the guise of rituals in temples. For this research, the Bellanwila Rajamaha Temple was used as the research center, and a mixed method of quantitative and qualitative data collection was used. Under purposive sampling, 10 monks and 50 worshippers who came to engage in religious observances were selected. Interviews and group discussions were held. The feminist approach and the behaviorism approach were primarily taken. A case study and descriptive analysis were used in this research. The assumption is that there is a rise of male dominance, mainly in festivals and rituals due to the culture within Buddhist temples through which women are oppressed. The study identified that the problems of women in ordination include inequality, discrimination by men in temple leadership, rituals of celibacy, different rules for women including not being allowed to carry caskets, problematic empowerment initiatives in temples, limitations of women's worship and reproductive health related, burden of emotional labor on women in religious ceremonies and men's exemption from such matters. This research offers insight into how patriarchal influences operate within religious traditions, exposing the ways women are marginalized under such systems and emphasizing the urgent need to challenge and reduce these oppressive structures.

Keywords: Buddhist Temple Culture, Gender Equality, Patriarchy, Religious Practices, Rituals

Exploring Gender Equality in Democratic Governance: The Policy Impact of the Sri Lankan Parliament

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Equality is a core value of democracy. In Sri Lanka, feminist efforts and gender-focused policies in Parliament play a vital role in addressing inequality and promoting inclusive democratic governance. This research examines feminist interventions and policy gaps in promoting social and gender equality through the democratic political process in Sri Lanka. This study explores how gender equality policies by the Parliament of Sri Lanka are applied in society, identifies gaps between policy and practice, and assesses how these efforts contribute to institutional awareness and the promotion of gender equality in democratic governance. Using a mixed-method approach, data were collected through interviews and questionnaires with 100 parliamentary officers and members of parliament, alongside secondary data from government reports, parliamentary records, and research papers. Findings indicate that women constitute less than 6% of 9th parliamentarians, with this figure never exceeding 15%. While Parliament has made efforts to promote social equality and protect women's and children's rights, significant challenges remain in policy implementation. Furthermore, in such a limited female base, it was recognized that there are efforts made for the social equality of men and women in the society by the Parliament of Sri Lanka. The Hansard analysis revealed limited attention to women's empowerment and gender-sensitive budgeting during debates. About 90% of parliamentary officers displayed awareness of gender equality but dedicated officers or mechanisms within Parliament to address gender-related issues, indicating a critical institutional gap. Reforms are required to enhance gender quotas in Parliament, starting from the regional to the national level. Expanding women's representation and increasing awareness were identified as critical priorities. This study highlights significant policy gaps that must be addressed to ensure substantive democracy. Strengthening gender equality in law-making processes is essential for achieving a truly democratic society.

Keywords: Democratic society, Gender Equality, Legislative Gaps, Parliamentary Policies

Medical Practices and Disease Management in Early Buddhist Monasticism: A Study of the *Bhesajja* and *Cīvara Khandakas* of the *Vinaya Piṭaka*

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The *Vinaya Piṭaka* of the Pāli Canon deals with the monastic discipline that includes rules and regulations promulgated by the Buddha for the monastic community. The *Bhesajja Khandaka* and *Cīvara Khandaka*, the sixth and eighth chapters of the *Mahāvagga Pāli* in the *Vinaya Piṭaka*, contain significant accounts of diseases and illnesses that were common in the 6th century BCE, and their treatments. The main objective of this research is to identify and analyse the prevalent diseases in that period alongside the applied medical treatments, with particular reference to the sections of the *Vinaya Piṭaka*. Employing a qualitative research methodology, this research underwent a close-textual analysis of the key sections of these chapters to reveal the early history of medicine in ancient India as preserved in the Buddhist canonical texts. Among the diseases recorded, gastrointestinal disorders (constipation, jaundice, dyspepsia, poisoning), neurological conditions (headaches, possession-like symptoms, nervous distress), dermatological conditions (cracked or split feet, sore itches, festering sores, skin diseases, and raised flesh in wounds), infectious and inflammatory conditions (eye disease, boils and abscesses, carbuncles, and fistula), musculoskeletal, and rheumatic disorders (rheumatism in the limbs and joints, arthritis-like symptoms, and afflictions caused by seasonal wind or cold exposure), toxicological, and envenomation cases (snakebite, ingestion of poison, and consumption of contaminated or harmful substances), seasonal and general weakness (autumn illness, general emaciation, and bodily weakness resulting from malnutrition or undigested food) were identified. The recorded treatments were oral medicines (purgatives, decoctions, tonics), topical applications (ointments, oils, salve, powders, astringents), surgical procedures (bloodletting, lancing, minor surgeries), fumigation, and inhalation (mustard fumigation, medicated smoke, steam treatment), dietary regulation (congee, broth, light food), and ritualistic and folk methods (raw meat and blood, dung-based detoxifications). These two chapters of *Vinaya Piṭaka* preserve evidence of a pragmatic and holistic medical system that prevailed in ancient India.

Keywords: Ancient Indian Medicine, *Bhesajja Khandaka, Cīvara Khandaka*, Diseases and Treatments, *Vinaya Piṭaka*

The Spatial and Temporal Pattern of Extreme Flood Events in Nilwala River Basin, Matara District

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Flood is recognized as one of the most destructive natural disasters in Matara District, Sri Lanka. Intensity and frequency of extreme flood events have increased over the years, causing extensive loss of life, property damage, and environmental harm. The main objective of this research was to examine the spatial and temporal patterns of extreme flood events in the Nilwala River Basin under a climatological aspect. Field observations were done during the flood event in June 2024, with a questionnaire survey conducted in the primary flood-prone areas of Akuressa, Malimbada, and Thihagoda using the snowball sampling method (sample size- 45). A flood profile was developed using secondary data collected from 2002 to 2024. Daily water level data were obtained from the Thudawa Pumping Station, while daily rainfall data were sourced from the Meteorological Department in Colombo. A flood inundation map was developed using the Digital Elevation Model obtained from the USGS website that utilizes ArcGIS 10.7 software. The flood profile showed that the frequency and intensity of extreme flood events have increased since 2017, with occurrences observed in 2019, 2021, 2023, and 2024, with recorded peak water levels of 1.4 m, 1.6 m, 1.5 m, 2.0 m, and 2.2 m, respectively. The periods of May–June and October–November were the most vulnerable months for flooding in Nilwala River Basin. The flood inundation map indicated that Malimbada, Thihagoda, Kaburupitiya, and Welipitiya areas with elevations ≤10 m from mean sea level were highly affected by flooding, with a total inundated area of 101.2 km^2. Thihagoda was identified as an area that undergoes most damage in terms of crops and drinking water problems. Promoting social awareness, improving disaster preparedness, and enhancing infrastructure planning are crucial for minimizing flood vulnerability in the Nilwala River Basin.

Keywords: Nilwala River Basin, Flood profile, Flood inundation map

Analysis of the Geo-spatial Pattern of Gem Mining Industry and its Impact on Natural Environment at Kiriella DS in Ratnapura District

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Ratnapura District has long been recognized as a region of significant economic importance in Sri Lanka, owing to its abundant deposits of gem minerals. However, unregulated or poorly managed mining practices have become a significant source of environmental degradation today. The main objective of this study was to analyze the spatial pattern of the gem mining industry and its impact on the natural environment in the Kiriella divisional Secretariat (DS) in the Ratnapura district. A total of 386 GPS points were collected from active mining sites to map out the spatial distribution patterns of the mining sites in the area using ArcGIS 10.4 software. The collected GPS coordinates were overlaid in the land use maps to analyze the spatial relationship between mining sites and different land use categories. Simultaneously, field observations were conducted in 386 mining sites, and interviews were held with miners. Based on a random sampling method, 90 questionnaire responses were collected from residents of the Grama Niladhari divisions with the highest levels of mining activity: Mudunkotuwa, Dodampe West, and Ellawala. Out of the 386 selected mining sites, 27 were traditional, 32 were river-based, and 327 were backhoe mining sites. Backhoe mining was the most widespread, significantly contributing to the degradation and loss of paddy fields in the area. The high mining activities have had a significant impact on soil, water, air, and land use. According to the survey, 41% of respondents indicated that gem mining activities have a strong impact on soil, while 30% reported a strong impact on water resources. The gem mining industry in the Kiriella DS exhibits a clear geo-spatial distribution pattern and has a significant direct negative impact on the natural environment. A legal framework is very important for a sustainable gem industry, as it greatly contributes to the industry's overall well-being.

Keywords: Environmental impact, Gem mining, Spatial pattern

Analysis of the Crime Patterns and Vulnerable Zones in Ratnapura District

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Crime is a complex and evolving social phenomenon influenced by a range of environmental and geographic factors. Ratnapura is well known for its gem industry, although in recent years, the region has also experienced an increase in criminal incidents. However, comprehensive crime-related studies specific to Ratnapura are limited, and available reports do not highlight certain notable occurrences. The main objective of this research is to analyze crime patterns and vulnerable zones in Ratnapura District based on spatial and temporal aspects. A total of 28 police stations has been selected to collect crime data in Ratnapura District from 2015 to 2024 (Ratnapura Police Division: 21 and Ebilipitiya Police Division: 7). The spatial patterns of four major crime categories (abuse, property crime, violence, and drug-related) were comparatively analyzed, creating graduated color maps using ArcMap 10.4 software. Through the random and snowball sampling methods, two structured questionnaires were conducted with 30 residents and 15 police officers in Ratnapura town. Hotspot analysis reveals that urban centers like Ratnapura, Embilipitiya, and Eheliyagoda experience the highest crime rates, particularly property and drug-related offenses. Over the past nine years, among the 28 police stations, the Ratnapura police station recorded the highest number of crimes in the categories of abuse crime (70 cases), property crime (804 cases), and violence crime (267 cases). However, the Eheliyagoda Police Station recorded the highest number of drug-related cases, with a total of 198 incidents. These areas are characterized by high population density, significant economic activity (especially gem trading), and well-developed road networks, all of which contribute to increased criminal opportunity. Conversely, rural areas with low population density, such as Suriyakanda and Kolonna, show lower crime prevalence. The results of this study revealed an increasing trend in drug-related and property crimes between 2015 to 2024, and a gradual decline in abuse-related crime offenses.

Keywords: Crime, Crime Hotspots, Ratnapura

Community Perception on the Effectiveness of Landslide Disaster Mitigation Strategies

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Landslides are a recurring natural hazard in Sri Lanka's mountainous regions, particularly in the Ratnapura District, which is characterized by high rainfall and vulnerable terrain. This study evaluates the effectiveness of landslide disaster mitigation strategies implemented in the Nivithigala Divisional Secretariat and examines community perceptions regarding these interventions. A mixed-method research design was adopted, and Primary data were collected through questionnaire surveys from 108 respondents from nine Grama Niladhari divisions identified as high-risk zones. Additionally, key informant interviews with institutional officers and observational checklists were used to assess mitigation strategies. Secondary data was obtained from NBRO, DMC, and relevant institutional records. The data were analyzed using thematic analysis and geospatial tools such as ArcGIS 10.4. Findings indicate a year-on-year increase in landslide occurrences, with irregular land use and poor slope management as significant contributing factors. Structural mitigation strategies, including retaining walls, were seen to be effective in minimizing immediate impacts. However, non-structural measures, including risk communication and early warning systems, were often found lacking due to low community awareness and participation. A notable reluctance to resettle in safer areas further limits the success of mitigation programs. Community perception revealed dissatisfaction with preparedness initiatives, highlighting a gap between technical interventions and public understanding. This study concludes that enhancing community engagement, enforcing land use regulations, and increasing institutional outreach are essential for the long-term effectiveness of disaster mitigation in the region. The key suggestion is to strengthen community awareness and participation through related education programs, while enhancing institutional capacity to ensure the long-term success of disaster mitigation efforts.

Keywords: Landslides, Mitigation Strategies, Community Perception, Disaster Management

The Role of the Teachers in the Field of Large-Scale Tuition Classes: The Societal Impact of Gender Dynamics

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The concept of gender is a significant focus in political science literature. This study examines the reasons for the gender disparity in the professional function of teachers in large-scale tuition, an area that has been mostly overlooked in Sri Lankan research literature. Recent research indicates that, in contrast to historical trends within the Sri Lankan social context, the teaching profession has become predominantly female, with societal prejudices exerting a significant influence on this shift. Conversely, the societal stereotypes established in this manner have been contested and transformed within the realm of large-scale tuition classes, which extend outside the conventional government teaching profession, notably focused on the male demographic. This study was conducted based on data obtained from a semi-structured questionnaire distributed to 50 educators selected using the random sampling method, involved in the large-scale support class initiative within the Chilaw Municipal Council region of Puttalam District in the North-Western Province. This research elucidates the realities of gender division of labor, societal preconceptions, and the marginalization of women inside the domestic sphere. The family constrains a female teacher's time, effort, and resources due to her domestic responsibilities, illustrating that women remain subordinate in patriarchal settings. This research asserts that deeply entrenched gender roles in society are evolving due to the commercialization of professions, while the stereotypes stemming from the traditional division of labor have constrained opportunities for female teachers to succeed in commercial sectors, such as the tuition industry. Ultimately, this investigation demonstrates that these factors are the grounds for the fact that the function of the large-scale tuition teacher is more restricted to the male contingent.

Keywords: Gender, Gender Division of Labor, Gender Roles, Gender Stereotypes, Large-Scale Tuition Classes

Island Narratives Through Cemeteries: A Case Study of Pesalai Cemetery in Mannar, Sri Lanka

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Cemeteries are traditionally viewed as resting places for the deceased. However, existing research in cemetery studies suggests that these sites also embody political, social, and cultural narratives of the respective communities. Pesalai Cemetery in Mannar, the largest island of Sri Lanka, represents memories and history of the deceased in a fishery community. This paper aims to examine how cemeteries can be used as sites to produce knowledge in Cultural Geography. Using ten photographs taken at the Cemetery in Pesalai while conducting fieldwork for three days in November 2024, this research followed Gillian Rose's photo-documentation approach. These images were used as documentary evidence and analyzed using content analysis. The content of grave inscriptions and epitaphs was analyzed using photographs. Photo-documentation presents three significant Island narratives of culture in Pesalai: a) It is a place for the deceased, yet they are celebrated through vibrant colors (pink, yellow, blue, and magenta). b) The cemetery represents the socio-political evolution of the colonial past of the island / Pesalai community. The cemetery is centered around the statue of Jesus, which is covered by a fishnet, and salt is offered, which symbolizes the community's economy. At the same time, certain graves stand for the tragic history of the civil war between the LTTE and the Sri Lankan Military. c) The cemetery in Pesalai serves as a reflection of social stratification and a representation of class among the deceased, connecting them with the present. Decorated graveyards with expensive marble and educational qualifications on the inscriptions highlight the gap between the rich and the poor in the community. In this context, we recognize that the cemetery serves as a significant site of knowledge production for Mannar Island, offering insights into social, political, and cultural histories. Thus, cemeteries can become reliable data sources to understand the dynamics of an area within Cultural Geography.

Keywords: Cemetery, Mannar, Photo-documentation, Site of Knowledge Production

The Role of Non-Familial Intergenerational Interactions in Promoting Cognitive, Emotional, and Social Well-Being in Sri Lanka's Aging Population

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Sri Lanka is experiencing a rapid demographic shift, with 12.3% of its population aged 60 and above, a figure projected to reach 22% by 2037 according to the Department of Census and Statistics, Sri Lanka. This aging trend brings psychosocial challenges such as cognitive decline, emotional distress, and social isolation. Traditionally, older adults relied on family-based intergenerational support. However, urbanization, industrialization, and economic transitions have weakened extended family structures and diminished the social roles of elders, as described by Modernization Theory. Consequently, many elders face increasing disconnection from younger generations, particularly in urban and institutional settings, leading to a decline in psychosocial well-being. Therefore, non-familial intergenerational engagement emerges as a potential strategy to address these gaps. This study draws on Erikson's psychosocial development theory, which emphasizes the importance of generativity and meaningful social roles in later life; activity theory, which highlights the value of continued social and cognitive engagement; socioemotional selectivity theory, which explains older adults' preference for emotionally meaningful relationships and Cognitive Reserve Theory, which explores the importance of mental stimulation. These theories collectively underscore the value of intergenerational engagement as a key contributor to successful aging. A qualitative literature methodology was used to synthesize findings from international research. Inclusion criteria focused on peer-reviewed studies published between 2013 and 2024 that examined non-familial intergenerational programs involving older adults. Studies focusing on psychosocial well-being were assessed for cultural relevance and applicability to the Sri Lankan context, particularly within residential care homes where psychosocial interventions are limited. Findings suggest that structured intergenerational programs improve memory, attention, social connection, and emotional well-being, reducing loneliness and depression. Despite Sri Lanka's growing aged care sector, such programs remain largely absent. This review underscores the urgent need for culturally sensitive, policy-supported intergenerational interventions and calls for further research to assess their long-term benefits in Sri Lanka.

Keywords: Aging population, intergenerational interactions, non-familial support, cognitive well-being, emotional health

A Critical Study on Medical Ethics

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Medical ethics, a cornerstone of modern healthcare, fundamentally governs practitioner conduct and safeguards patient rights and well-being. This study critically examines the principles, challenges, and evolving dimensions of medical ethics in contemporary clinical practice. Rapid advancements in medical technology, increasing patient awareness, and complex sociocultural dynamics frequently generate nuanced ethical dilemmas, necessitating comprehensive investigation. The central research question explores whether the medical field adequately requires and implements a robust code of ethics. The primary objective was to conduct an in-depth examination of existing medical ethical frameworks, with a subsidiary aim to explore patient-reported problems stemming from ethical violations. Employing a qualitative research methodology, the study utilized a comprehensive literature review, complemented by primary data collection through interviews and case study methods. This approach provided a nuanced understanding of real-world ethical challenges and the perspectives of those navigating them daily. Findings revealed pervasive issues, including deficiencies in informed consent processes, confidentiality breaches, medical negligence, and complexities in resource allocation. Participants consistently highlighted a significant disparity between theoretical ethical knowledge and its practical application, often exacerbated by systemic pressures, time constraints, and insufficient training. While comprehensive ethical frameworks exist, their consistent and effective implementation remains a considerable challenge. Strengthening ethics committees, integrating practical ethics training into medical curricula, and actively promoting a pervasive culture of ethical awareness are strongly suggested solutions. This study underscores the critical need for continuous ethical education, fostering interdisciplinary dialogue among healthcare stakeholders, and establishing robust institutional support mechanisms to guide practitioners.

Keywords: Ethical Violations, Healthcare Accountability, Medical Ethics

Assessing Gendered Dynamics in Local Governance: A Critical Analysis of Women's Political Representation and Participation in Selected Pradeshiya Sabhas in Sabaragamuwa Province of Sri Lanka

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The behavioralist approach in political science closely aligns with this notion, emphasizing the empirical study of political behavior to understand patterns of participation. Furthermore, political participation functions as a critical indicator for evaluating the quality, inclusivity, and responsiveness of a political system. Political participation constitutes a fundamental expression of citizens' engagement with political affairs, encompassing a broad spectrum of activities, including voting, political interest, advocacy, as well as forms of opposition such as dissent and protest. In the context of Sri Lanka's complex and multifaceted social structure, political participation is shaped by a confluence of sociopolitical and demographic factors. While the first article of the Universal Declaration of Human Rights asserts that "all human beings are equal in dignity and rights," the reality of women's political participation reflects a significant global disparity. Despite formal recognition of gender equality, the underrepresentation of women in political and civic engagement beyond voting remains a pervasive issue. Recognizing the need to enhance women's political participation, the Local Government Elections Act No. 01 of 2016 introduced a 25% quota system aimed at increasing female representation at the local government level. Despite women comprising 52.1% of the national population, their political participation and representation remain disproportionately low at both the national and regional levels, particularly in comparison to their substantial contributions in the education, health, and economic sectors. This study seeks to investigate the structural, institutional, and socio-political barriers that hinder women's political engagement in Sri Lanka's local governance. A mixed research method, descriptive study design, and quota sampling method are used, and a non-random sample of 200 female political representatives of ten Pradeshiya Sabhas with the highest female representation in the two districts of Rathnapura and Kegalle Districts in the Sabaragamuwa province and used 200 women who ran for local government elections but didn't win and winner women. The primary and secondary data collection, data analysis method was selected using the Taro Yamane formula and the Logistic Regression Model.

Keywords: Gender, Local Governance, Pradeshiya Sabhas, Representation, Women

A Historical Approach to Sinhala Poetry and the Nationalistic Perspective: From the 20th Century to the Present

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This study explores the intricate relationship between Sinhala poetry and evolving nationalistic perspectives in Sri Lanka, spanning from the early 20th century to the present. It traces the historical trajectory of Sinhala poetic traditions, analyzing how various socio-political movements, particularly the burgeoning nationalism, have shaped its themes, forms, and ideological underpinnings. The early 20th century witnessed a resurgence of Sinhala literary consciousness, often intertwined with anti-colonial sentiments and a desire to reclaim indigenous identity. Poets of this era frequently employed their craft to glorify a romanticized past, celebrate Sinhala Buddhist heritage, and inspire a sense of collective belonging among the populace. The main objective of this study is to examine how Sri Lankan nationalism has been influenced by Sinhala poetry written in the 20th century and how Sinhala poets have created their work on National consciousness. Furthermore, the study explores diverse ways in which nationalism has been articulated, debated, and even challenged through poetry, encompassing themes of patriotism, cultural preservation, linguistic pride, and, at times, exclusion or critique. Adopting a historical approach to contemporary literary sources, this research traces the transformation of Sinhala poetic themes, forms, and expressions in response to significant socio-political shifts, particularly the development of Nationalism. As the nationalist movement gained momentum leading up to independence, poetry became a powerful tool for political mobilization and cultural affirmation. This period saw the emergence of a distinct nationalist poetic style that emphasized patriotism, valued historical figures, and often depicted the struggle against foreign domination. Post-independence, the role of Sinhala poetry continued to evolve amidst periods of ethnic conflict and political instability. Therefore, with a historical lens, this study reveals the dynamic interplay between poetic expression and the construction of national identity in Sri Lanka, highlighting both unifying and divisive potentials inherent in such artistic endeavors over the past century.

Keywords: Ethnicity, Independence Movement, National Identity, Nationalism, Patriotism, Sinhala Poetry

Tradition Meets Psychiatry: Sri Lankan Psychiatrists' Perceptions of Integrating Natural Alternative Treatments with Conventional Medication in Depression Care

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The integration of natural alternative treatments (NATs) with conventional pharmacotherapy in depression management has gained global attention. However, there is limited empirical insight into how psychiatrists in Sri Lanka perceive and implement such integrative approaches within clinical settings. This study aimed to explore Sri Lankan psychiatrists' perceptions, clinical reasoning, and current practices related to the use of NATs in conjunction with medication for treating depression. A qualitative study using structured questionnaires was conducted with 15 Sri Lankan psychiatrists from public and private sectors. Thematic analysis followed Braun and Clarke's six-phase framework. Five key themes emerged. Ambivalent acceptance of NATs was evident, with just over half of the participants viewing NATs as beneficial adjuncts to medication, while others expressed skepticism due to the lack of empirical support. The theme of perceived therapeutic benefits highlighted psychiatrists' recognition of NATs in improving sleep quality, reducing anxiety, and decreasing long-term pharmacological reliance. Safety concerns and clinical caution were also prominent, especially regarding herb-drug interactions associated with Ayurvedic treatments. In contrast, non-herbal modalities such as yoga and meditation were generally viewed as safe when practiced under supervision. Lastly, a strong need for evidence-based guidelines was emphasized, with participants calling for locally relevant research and standardized clinical protocols to support safe and effective integration. In conclusion, Sri Lankan psychiatrists cautiously support integrating NATs in depression treatment, highlighting the need for strong evidence, safety protocols, training, and locally tailored clinical guidelines.

Keywords: Depression Treatment, Natural Alternative Treatments, Sri Lankan Psychiatrists

Life Experiences of Women subjected to Domestic Violence: An Exploratory Study. (Badulla District)

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This exploratory study examines the lived experiences of women subjected to domestic violence in the rural areas of the Badulla district in Sri Lanka. Despite progressive legal reforms in Sri Lanka, domestic violence remains a pervasive issue, worsened by rural socio-cultural norms and economic constraints, causing a deeper understanding of its multifaceted impacts. The main aim of this study is to investigate the effects of domestic violence on women's psychological development through their life experiences. The study further aims to investigate the specific psychological consequences of domestic violence on women, distinguishing these from stress-related impacts, and to understand their unique mental health challenges and find how domestic violence disrupts women's daily lives due to associated stressors, and recommend evidence-based measures to address these effects through culturally sensitive interventions. This study employs a qualitative approach, using semi-structured interviews and applying thematic analysis to explore their experiences. The study contextualizes these findings within Sri Lanka's legal and policy landscape, finding implementation gaps despite recent reforms. This research enhances the understanding of DV's intersectionality in rural Sri Lankan contexts, providing evidence-based recommendations for improved health sector responses, community-driven policy solutions, and the mitigation of gender-based violence as a shadow pandemic. Ethical protocols, aligned with international guidelines ensured participant confidentiality and voluntary engagement.

Keywords: Domestic violence, women's experiences, psychological impact, socio-economic factors

Rooting the Rule of Law: The Effectiveness of Environmental Law in Protecting Sri Lanka's Natural Forest

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Globally, forests play a crucial role in mitigating climate change by acting as natural carbon sinks, sequestering approximately 2.4 billion tons of carbon dioxide annually and storing around 861 gigatons of carbon in biomass, deadwood, litter, and soil. However, this natural balance is increasingly disrupted by fossil fuel combustion and deforestation. In 2024, atmospheric carbon dioxide (CO_2) concentrations reached 422.5 ppm, equivalent to 41.6 billion tons, surpassing key planetary thresholds. The United Nations Environment Programme (UNEP) identifies forest conservation as one of the most cost-effective natural solutions for addressing climate change. In this global context, Sri Lanka's natural forests including biodiversity-rich zones like the Sinharaja Forest Reserve face mounting threats due to illegal logging, land-use change, and weak enforcement of environmental laws. Despite the existence of regulatory frameworks, weak institutional coordination and limited legal accountability have hindered effective forest protection. This study evaluates the effectiveness of Sri Lanka's environmental legal framework by examining three interrelated variables: tree cover loss, forest carbon sequestration, capacity, and the enforcement of environmental laws. Using secondary data from the World Bank, the World Resources Institute, and environmental litigation reports (2003–2023), a time-series descriptive analysis was conducted via SPSS and Excel. Findings indicate a 5% national tree cover loss over the past two decades, contributing to the release of approximately 82 million tons of CO_2. This reflects a significant gap between legal intentions and enforcement outcomes. The study concludes that while Sri Lanka's judiciary has contributed meaningfully to environmental jurisprudence, this alone is insufficient. Urgent constitutional reforms recognizing environmental justice and ratification of major environmental treaties are essential. A cohesive legal framework rooted in both domestic and international commitments is vital to uphold the rules of environmental law and ensure long-term forest protection and climate resilience.

Keywords: Climate Change, Carbon Dioxide, Carbon law, Carbon sink, Deforestation, Rule of law

International Environmental Law and Climate Change: A Comparative Analysis of International Environmental Treaties in the United States of America (USA) and European Union (EU)

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The global climate crisis necessitates clamorous international cooperation, particularly through legal international environmental treaties aimed at reducing carbon emissions and promoting sustainable development. This legal research critically examines the effectiveness of international environmental treaties, especially the United Nations Framework on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreement in mitigating climate change risks, through comparative legal analysis of their implementation in the United States of America (USA) and the European Union (EU). The research evaluates legal commitments, compliance mechanisms, and domestic enforcement strategies within both jurisdictions. While the EU has demonstrated consistent leadership through legally binding climate directives, integrated policy frameworks, and a firm commitment to multilateralism, the USA's approach has been marked by political oscillation, withdrawal from key agreements, and reliance on executive actions rather than legislative mandates. This study highlights how the EU's supranational legal system and climate governance model, such as the Emission Trading System and the European Climate Law contribute to greater treaty effectiveness. In contrast, the USA's federal structure and political polarization limit cohesive implementation, weakening treaty outcomes and creating uncertainty in international environmental law. The analysis also scrutinizes judicial oversight, stakeholder engagement, and substantial initiatives in shaping international treaty compliance. Lastly, the study accentuates that legal effectiveness in combating climate change depends not only on the content of international treaties but also on domestic political will, institutional capacity, and the interplay between international and national legal systems. The research concludes by proposing reforms to enhance treaty enforceability and foster greater synergy between international obligations and domestic climate law, especially within federal systems. This comparative legal analysis offers valuable insight into strengthening global climate governance in an era of escalating environmental urgency.

Keywords: Climate Change, Carbon Emissions, Carbon Law, Environmental Activism, International Environmental Treaties

Voice Artificial Intelligence (AI) as a Tool for L2 Pronunciation Training and Improvement in Phonology

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With the widespread use of voice AI, there are increasing ways that human voices can interact with the world, such as converting speech to text or asking questions without typing. Voice-activated Artificial Intelligence (voice-AI) responds to spoken human questions using realistic speech generated by computer algorithms. The study focused on whether Google Assistant could recognize the intended productions of two long vowels instead of diphthongs, /ee/ vs. /eɪ/ and /oo/ vs. / əu /, made by SLE (Sri Lankan English) speakers, and whether the L2 SLE speakers would make clear-speech adjustments when Google Assistant misrecognized their intended productions. The research aimed to explore whether SLE speakers could receive the intended productions of the BE (British English) speakers and, if not, how they could receive the same or similar results using voice AI. This quantitative study was conducted with a sample population of 20 speakers who were undergraduates from 2 universities in Sri Lanka and Britain and lasted for 6 weeks. The sample consisted of 10 BE speakers (control group) and 10 SLE speakers (experimental group) who were trained on the speaking component (particularly on the mentioned vowels) using tasks based on voice AI. The datasets were collected using pre- and post-tests, and the results were analyzed using SPSS. The undergraduates in the experimental group were tested with long vowels and diphthongs using various search results in Google Assistant. Results showed that the experimental group achieved a 53% accuracy rate with L2 productions (SLE) in the post-test compared with 45% in the pre-test. Based on the 98% native production in BE, the experimental group has raised a high rate with an improvement. When Google Assistant misrecognized an intended production, SLE L2 speakers adjusted their subsequent production attempts by altering the duration. Further, the analysis depicted an improvement in the experimental group as they trained for voice AI usage with the assistance of Google Assistant, which can be recommended in SLE speaking classrooms. The study concludes that voice AI can be an effective tool to improve L2 pronunciation for SLE speakers with clear-speech adjustments and improvements in producing target vowel sounds.

Keywords: AI, British English, Diphthongs, Sri Lankan English, Vowels

The Perception, Preference, and Experience of Sri Lankan Young Adults with Generalised Anxiety Disorder regarding Creative Psychotherapy

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The study exploring the perception, preference, and experience of Sri Lankan young adults with Generalised Anxiety Disorder regarding Creative Psychotherapy, aimed to gain an in-depth understanding about how young adults of Colombo, Sri Lanka, perceive Creative Psychotherapy through their experience of Role Method, Imaginal Exposure, and Story Making which were used in recuperation for Generalised Anxiety Disorder. The aim was to address a critical gap in the remedial processes for mental health disorders in Sri Lanka by advocating for the integration of Creative Psychotherapy as a professional, feasible, non-invasive, and non-pharmacological intervention in the provision of mental health and wellbeing support. The research design employed an action research framework with a dominant qualitative enquiry, incorporating embedded multiple case study approach supported by Thematic Analysis and Reflective Narrative practice. Upon receiving informed consent from the participants, the data were collected using the Generalised Anxiety Disorder 7-item scale-based diagnosis by a medical professional, semi-structured interviews, the researcher's observations, and the journals. 10 cisgender participants (5 females, 5 males between the ages of 19 – 24 years) with Generalised Anxiety Disorder were selected using the multilevel mixed sampling technique. The results encapsulated five (5) main themes which emerged from the exposure to Role Method, five (5) main themes emerged from the exposure to Story Making, five (5) subthemes unfolded under perception, four (4) themes unfolded under experience, and one (1) theme unfolded under the preference. Further embracing Creative Psychotherapy, four (4) additional support preferences were identified during the study. The recommendations advocate for enhanced awareness, empowerment, and specialised training for young adults in comprehending the principles and applications of Creative Psychotherapy, while concurrently reinforcing a non-judgmental and inclusive therapeutic environment for counselling.

Keywords: Creative Psychotherapy, Generalised Anxiety Disorder, Qualitative Action Research, Role Method, Story Making

An Examination of Inter-Religious Dialogue and Its Role in Fostering Religious Cohesion in Sri Lanka

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The dawn of the 21st century is the right time to promote a meaningful dialogue among different faiths in Sri Lanka society. Since religion plays a major role in social life of Asian people, Sri Lankans should have a comprehensive and constructive discourse among people of different faiths. On the other hand, religion is one of the key agencies of socialization and social control in the life of an individual of this island. There had been some instances of intolerance towards the other religious groups by Buddhists, Catholics/Christians, Muslims and Hindus in the recent past. Sometimes those instances have developed up to phobias. When closely observed we can recognize them as irrational fears created by specific groups. Sri Lanka as a nation where Buddhism is accepted as the religion of the state by its constitution the other minority religious communities also have been positively influenced by the Buddhist philosophy. This is a meta-analysis conducted using systematic review methodology. It basically reveals the contributions towards the socio religious harmony in contemporary Sri Lanka. The purpose of this research article is to seek the ways and means of establishing a dialogue among these communities. The essence of each religion still inspires human minds regardless of their age, social status or gender. Amidst the further development of science and technology human beings will continuously have a thirst for spiritual wellbeing. Sri Lankan society too will accompany with this reality. This study helps to discover the futility of religious extremism, the importance of living according to one's own faith while respecting the others.

Keywords: Constructive Discourse, Inter-Religious Dialogue, Religious Extremism, Socialization

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**Faculty of Arts, University of Peradeniya,
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Lincoln Institute of Higher Education, Australia**

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